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Chapter 7

Attitude Change

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Persuasion plays an essential role in everyday social life. We use the term persuasion to refer to any procedure with the potential to change someone's mind. Although persuasion can be used to change many things such as a person's specific beliefs (e.g., eating vegetables is good for your health), the most common target of persuasion is a person's *attitudes*. Attitudes refer to general evaluations individuals have regarding people (including yourself), places, objects, and issues. Attitudes can be assessed in many ways and are accorded special status because of their presumed influence on people's choices and actions (e.g., attitude change mediates the impact of belief change on behavior change). That is, all else being equal, when making choices people will decide to buy the product they like the most, attend the university they evaluate most favorably, and vote for the candidate they approve of most strongly.

In the typical situation in which persuasion is possible, a person or a group of people (i.e., the recipient) receives a communication (i.e., the message) from another individual or group (i.e., the source) in a particular setting (i.e., the context). The success of a persuasive attempt depends in part on whether the attitudes of the recipients are modified in the desired direction. Designing appropriate strategies for attitude change depends on understanding the basic mechanisms underlying persuasion. Therefore, the primary goal of this chapter is to explain the psychological processes that are responsible for attitude change and provide an overview of the main theories and research findings from social psychology.

Implicit versus Explicit Attitudes

After a long tradition of assessing the impact of persuasion treatments on attitudes using people's responses to self-report measures (e.g., Is fast food good or bad?), more recent work has also assessed attitude change with measures that tap into people's more automatic or gut-level evaluations. Such techniques are often referred to as *implicit measures,* whereas assessments that tap a person's more deliberative and acknowledged evaluations are referred to as *explicit measures*.

Using implicit measures can be important because these measures do not always reveal the same evaluations as explicit self-reports. For example, an explicit measure could reveal that a person claims to dislike cigarettes but an implicit measure might show a more favorable reaction (e.g., stronger associations between cigarettes and positive words than negative words). Implicit measures can be useful because they often bypass social desirability concerns and have been shown to predict spontaneous information processing, judgment, and behavior (see Wittenbrink & Schwarz, 2007; Petty, Fazio, & Briñol, 2009b, for reviews). In contrast, deliberative attitude measures are especially important in predicting behaviors that also are undertaken with some degree of thought (e.g., Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997). Because implicit and explicit measures of attitudes are useful in predicting behavior separately (e.g., Greenwald, Poehlman, Uhlmann, & Banaji, 2009) and in combination (e.g., Briñol, Petty, & Wheeler, 2006), it is useful to understand how each is modified by various persuasion techniques. Before turning to research on attitude change, we will provide a brief discussion of our assumptions regarding attitude structure because it is important for understanding some of the consequences of attitude change that will be described throughout this chapter (see Fabrigar & Wegener, Chapter 6, this volume, for an extended discussion of attitude structure).

Attitude Structure: The Meta-Cognitive Model

In addition to associating attitude objects with general evaluative summaries (e.g., good/bad), people sometimes develop an attitude structure in which attitude objects are separately linked to both positivity and negativity (see also Cacioppo, Gardner, & Berntson, 1997). Furthermore, we assume that people can tag these evaluations as valid or invalid, or held with varying degrees of confidence. Our framework for understanding attitude structure is called the

Meta-Cognitive Model (MCM; Petty & Briñol, 2006a; Petty, Briñol, & DeMarree, 2007). For many attitude objects, one evaluation is dominant and is seen as valid. This evaluation would come to mind on encountering the attitude object, though the speed at which this occurs can vary (e.g., see Bargh, Chaiken, Govender, & Pratto, 1992; Fazio et al., 1986). However, sometimes a person considers both positive and negative evaluations to be valid; this person's attitude is best described as being *explicitly ambivalent* because both positive and negative associations come to mind and are endorsed (e.g., de Liver, van der Plight, & Wigboldus, 2007). At other times, however, people might have two opposite accessible evaluations come to mind, but one is seen as valid and the other is rejected. A denied evaluation can be a past attitude (e.g., I used to like smoking, but now I find it to be disgusting) or an association that was never endorsed but is nonetheless salient due to the person's culture (e.g., from the mass media). One example of the latter is when a person has automatic negative associations to a minority group but recognizes consciously that these associations are inaccurate (e.g., Devine, 1989).

When one evaluation that comes to mind is accepted but the other is rejected, the MCM refers to the attitude structure as one of *implicit ambivalence* (Petty & Briñol, 2009). At the conscious level, people do not report any ambivalence because they accept one evaluation (e.g., cigarettes are bad) but not the other (e.g., cigarettes are good). However, in cases of implicit ambivalence, despite the fact that one evaluation is negated (i.e., the idea that "cigarettes are good" is tagged as "wrong"), both positive and negative evaluations might come to mind spontaneously in the presence of the attitude object. To the extent that the invalidity or "wrong" tag is not retrieved, the person might find him or herself reaching for a cigarette! This conflict at the level of automatic associations can produce some discomfort even though the person does not explicitly endorse opposite evaluations of the same attitude object (Rydell, McConnell, & Mackie, 2008). In one study, for example, when people who had changed their attitudes from negative to positive were given a chance to process information about the attitude object, they engaged in more scrutiny of this information than people who were always positive. That is, even though the individuals who had changed their attitudes clearly rejected their old attitude at the explicit level, they still acted as if they were somewhat ambivalent by engaging in more processing of attitude-relevant information (see Petty, Tormala, Briñol, & Jarvis, 2006).

The MCM holds that automatic evaluative associations only determine explicit self-reports of attitudes to the extent that people endorse these associations. On the other hand, automatic evaluative associations, whether endorsed or not, can affect implicit attitude measures (see also Gawronski & Bodenhausen, 2006). That is, the perceived validity tags tend not to influence implicit measures

until these tags become so well learned that that are automatically activated (see Maddux, Barden, Brewer, & Petty, 2005).

Classic Processes of Persuasion

With our definitions of attitudes and persuasion in mind, we can now turn to the classic approaches to understanding attitude change. The earliest studies were guided by relatively simple questions (e.g., is an appeal to the emotions more effective than an appeal to reason?). When the science of persuasion began a century ago, researchers tended to focus on just one outcome for any variable (e.g., positive emotions should always increase persuasion) and only one process by which any variable had its effect (see Petty, 1997). As data accumulated, however, researchers began to recognize that any one variable did not always have the same effect on persuasion (e.g., sometimes positive emotions could decrease persuasion), and each variable could affect attitudes by more than one process. Furthermore, the fact that some attitude changes tended to be relatively durable and impactful (e.g., guiding behavior), but other attitude changes were rather transitory and inconsequential, was puzzling. Contemporary theories of persuasion, such as the Elaboration Likelihood Model (ELM; Petty & Cacioppo, 1986), the Heuristic-Systematic Model (HSM; Chaiken, Liberman, & Eagly, 1989), and the unimodel (Kruglanski & Thompson, 1999) were generated to articulate multiple ways in which variables could affect attitudes in different situations (see Petty & Briñol, 2008, for an historical overview). Before turning to contemporary theories, it is useful to briefly review some of the classic approaches that focused on single processes of persuasion.

Learning and Reception Theories

A prominent early approach to persuasion assumed that the same learning principles that applied to learning how to avoid touching a hot stove were also involved in learning whether to like or dislike something new. Thus, at the simplest level, it was proposed that merely associating some object, person, or issue with something else about which you already felt positively or negatively could make the previously neutral object take on the same evaluation (e.g., Staats & Staats, 1958). We discuss this *classical conditioning* process in more detail later in the chapter.

Perhaps the most influential learning approach stemmed from Carl Hovland's attempt to apply verbal learning principles to persuasion during

World War II (Hovland, Janis, & Kelley, 1953). The core assumption of this approach was that effective influence required a sequence of steps leading to absorption of the content of a message (e.g., exposure, attention, comprehension, learning, retention; see McGuire, 1985). Once the relevant information was learned, people were assumed to yield to it. Thus, the core aspect of persuasion was providing incentives (e.g., an attractive source) to get people to learn the material in a communication so that they would be persuaded by it. In one important variation of this approach proposed by McGuire (1968), the reception phase (e.g., attention, learning) was separated from the yielding phase because several variables could have opposite effects on each step. For example, the intelligence of the message recipient is related positively to learning processes (more intelligence makes it easier to learn), but negatively to yielding (more intelligence makes it less likely to yield to what is learned). The joint action of reception and yielding processes implies that people of moderate intelligence should be easier to persuade than people of low or high intelligence because moderate intelligence maximizes the impact of reception and yielding on persuasion (see Rhodes & Wood, 1992, for a review).

Self-Persuasion Approaches

Despite how sensible the message learning approach seemed, the accumulated evidence showed that message learning could occur in the absence of attitude change and that attitudes could change without learning the specific information in the communication (Petty & Cacioppo, 1981). The *cognitive response approach* (Greenwald, 1968; Petty, Ostrom, & Brock, 1981) was developed to account for this. In contrast to the message learning view, the cognitive response approach proposes that persuasion depends on the thoughts people generate to messages rather than learning the message per se. Thus, appeals that elicit primarily favorable thoughts toward a particular recommendation produce agreement (e.g., "if that new laundry detergent makes my clothes smell fresh, I'll be more popular"), whereas appeals that elicit mostly unfavorable thoughts toward the recommendation are ineffective in achieving attitude change—regardless of the amount of message learning.

A person's thoughts in the absence of any explicit message can also produce attitude change. The persuasive effect of self-generated messages was shown in early research on *role-playing*. For example, in one study, individuals who generated arguments through playing a role (e.g., convincing a friend to quit smoking) were more turned off to cigarettes than those who received the same information passively (Elms, 1966; see also, Janis & King, 1954; Greenwald & Albert, 1968; Huesmann, Eron, Klein, Brice, & Fischer, 1983; Watts, 1967).

In addition to generating messages, other work has shown that people can be persuaded when they try to remember past behaviors, imagine future behaviors, explain some behavior, or merely think about an event. For example, people who are asked to imagine hypothetical events come to believe that these events have a higher likelihood of occurring than before they thought about them (e.g., Anderson, 1983; Anderson, Lepper, & Ross, 1983; Sherman, Cialdini, Schwartzman, & Reynolds, 1985). Similarly, Tesser and his colleagues showed that merely thinking about an attitude object without being told what to think about it can lead to attitude change. In one study, thinking about a person who did something nice led that person to be evaluated more favorably than when distracted from thinking, whereas thinking about a person who was insulting led to more negative evaluations than when distracted (see Tesser, Martin, & Mendolia, 1995). Similar effects have been observed in studies of self-presentation where people generate information about themselves (e.g., Baumeister, 1982; Tice, 1992; Wicklund & Gollwitzer, 1982).

Meta-Cognition

The self-persuasion approaches just mentioned focus on the initial or primary thoughts individuals have about attitude objects. Recent research suggests that people not only have thoughts, but they can have thoughts about their thoughts, or *meta-cognition* (Petty, Briñol, Tormala, & Wegener, 2007). One feature of thoughts that has proven to be useful is the confidence with which people hold their thoughts. That is, two people can have the same favorable thought about the message (e.g., "the proposed tax increase should help our schools"), but one person can have considerably more confidence in the validity of that thought than another person. According to *self-validation theory* (Petty, Briñol, & Tormala, 2002), people should rely on their thoughts more when they have confidence rather than doubt in those thoughts. In support of this idea, Petty et al. (2002) found that when the thoughts in response to a message were primarily favorable, increasing confidence in their validity increased persuasion, but increasing doubt in their validity decreased persuasion. When the thoughts to a message were mostly unfavorable, however, increasing confidence reduced persuasion, but undermining confidence increased persuasion.

An early demonstration of the importance of meta-cognition for persuasion came from research on what is called the *ease of retrieval* effect. In a classic study, Schwarz and colleagues (1991) asked participants to rate their own assertiveness after recalling 6 versus 12 examples of their own assertive behavior. They found that people viewed themselves as more assertive after retrieving just 6 rather than 12 examples. This result was initially surprising because a

straightforward application of the self-persuasion approach would have suggested that people generating 12 instances of assertiveness would have judged themselves to be more assertive than those generating 6 instances. So, something other than the mere content of the thoughts generated must have played a role. Schwarz and colleagues reasoned that people also considered the ease with which the thoughts could be retrieved from memory.

Why would ease matter? One possibility suggested by Schwarz and colleagues (1991) is based on the *availability heuristic* (Tversky & Kahneman, 1974). That is, the easier it is to generate information in favor of something (e.g., your own assertiveness), the more supportive information people assume there must be. Although this heuristic explanation makes sense when people have limited ability to think, more recent work has suggested that when people are engaged in thoughtful judgments, ease affects attitudes by affecting thought confidence. Thus, when people have an easy time generating thoughts they are more confident in them and use them more than when they have a difficult time generating them (Tormala, Petty, & Briñol, 2002; Tormala, Falces, Briñol, & Petty, 2007). To date, numerous studies have appeared showing the importance of perceived ease across various issues, and measures, including implicit measures (Gawronski & Bodenhausen, 2005; see Schwarz, 1998, 2004, for reviews).

Motivational Approaches

The approaches just reviewed tend to have in common the idea that attitude change is based on the positive and negative beliefs and emotions that are associated with an attitude object and the perceived validity of these beliefs and emotions. That is, each attitude object is associated with salient information, and people either add up (Fishbein & Ajzen, 1981) or average (Anderson, 1981) this information, either deliberatively or automatically (see Betsch, Plessner, & Schallies, 2004), to arrive at their attitudes. People are sometimes rather impartial in their information-processing activity, carefully assessing whatever is presented for its merits or attempting to generate information on both sides of an issue. At other times, however, people are rather biased in their assessment.

Persuasion theorists have examined a number of motives that lead people away from impartial information processing. Sometimes people want to achieve a particular answer rather objectively weighing all possibilities (Kruglanski & Webster, 1996). As we discuss in more detail later, perhaps the most studied biasing motive is based on the need for cognitive consistency as evident in Festinger's (1957) theory of *cognitive dissonance*. However, other motives can also bias information processing such as a desire to be free and independent or

to belong to a group (see Briñol & Petty, 2005, for a discussion). When motives bias thinking, people actively try to generate favorable or unfavorable thoughts. Biased thinking does not require a specific motive, however, as some variables can bias thinking outside of conscious intentions such as when a good mood makes positive thoughts spring to mind (Forgas, 1995; Petty et al., 1993).

Fundamental Processes Underlying Attitude Change

Now that we have described some general orientations to persuasion, we turn to the fundamental processes underlying attitude change. Attitudes are sometimes changed by relatively low thought mechanisms (e.g., conditioning), although at other times they are changed with a great deal of thinking (e.g., role playing). Sometimes the thinking is relatively objective and sometimes it is biased by various motives that are present. Notably, the research on persuasion shows that variables such as using an attractive source or putting people in a good mood sometimes have a positive effect on persuasion and sometimes the effect is negative. To understand these complexities, contemporary multiprocess theories of persuasion were developed. We use one of these theories—the elaboration likelihood model (Petty & Cacioppo, 1986)—to organize the literature.

Elaboration Likelihood Model (ELM) of Persuasion

The ELM (Petty & Cacioppo, 1981, 1986) was developed in an attempt to integrate the literature on persuasion by proposing that there was a limited set of core processes by which variables could affect attitudes, and that these processes required different amounts of thought. Thoughtful persuasion was referred to as following the *central route*, whereas low-thought persuasion was said to follow the *peripheral route*. A common finding in ELM research is that the attitudes of people who are motivated and able to think about a message are influenced by their own thoughts following an assessment of the merits of the appeal, but when they are relatively unmotivated to think, attitudes are influenced by their reaction to simple cues in the persuasion setting (see Petty & Wegener, 1998, for a review).

The ELM is an early example of what became an explosion of dual process (see Chaiken & Trope, 1999) and dual system (see Deutsch & Strack, 2006) theories that distinguished thoughtful (deliberative) from nonthoughtful (gut, experiential, snap) judgments. According to the ELM, the extent of thinking is

important not only because it determines the route to persuasion and the process by which a variable affects attitudes, but also because more thoughtful persuasion tends to be more persistent over time, resistant to change, and predictive of behavior than is persuasion produced by low-thought processes (Petty, Haugtvedt, & Smith, 1995). In the remainder of this section we outline the ways in which the ELM specifies that the many source, message, recipient, and context variables can affect the extent of persuasion. We will review each of the five roles that variables can serve in the persuasion process. That is, variables can affect (1) the amount of thinking that takes place, (2) the direction (favorable or unfavorable) of the thinking, (3) structural properties of the thoughts generated, or serve as (4) persuasive arguments for the merits of a proposal, or (5) as simple cues to desirability. We will describe some of the variables that operate in each of these ways.

Amount of Thinking

One of the most fundamental things that a variable can do to influence attitudes is affect the amount of thinking about a communication (Petty, Ostrom, & Brock, 1981). We will review some key variables that affect the extent of thinking.

Motivation to Think Perhaps the most important determinant of a person's motivation to process a message is its perceived personal relevance. Whenever the message can be linked to some aspect of the message recipient's "self," it becomes more personally relevant and more likely to be processed. Linking the message to almost any aspect of the self, such as a person's values, goals, outcomes, and identities, can enhance self-relevance and processing (Blankenship & Wegener, 2008; Fleming & Petty, 2000; Petty & Cacioppo, 1990). In one early demonstration of this, Petty and Cacioppo (1979a) told undergraduates that their university was considering a proposal for comprehensive examinations in their major area as a requirement for graduation. The proposal was said to be under consideration for next year (high relevance) or 10 years in the future (low relevance). The students then received a message on the topic containing either strong (cogent) or weak (specious) arguments. The key result was that enhancing the relevance of the issue led the students to think more about the arguments that were presented. As depicted in Figure 7.1, when the arguments were strong, increasing relevance led to more persuasion as enhanced thinking led people to realize the merits of the arguments. When the arguments were weak, increasing relevance led to reduced persuasion as enhanced thinking led people to see the flaws in the message. In another study showing the power of linking a message to the self, Burnkrant and Unnava (1989) found that simply

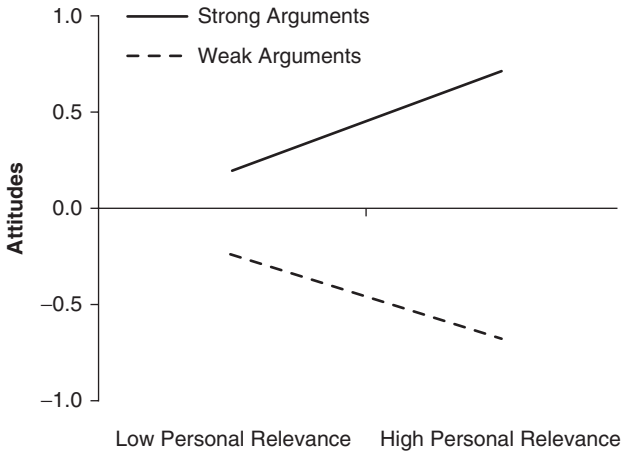

FIGURE 7.1. Personal relevance can increase or decrease persuasion by enhancing message processing. Means represent standardized attitude scores (adapted from Petty & Cacioppo, 1979a).

changing the pronouns in a message from the third person (e.g., "one" or "he and she") to the second person (i.e., "you") was sufficient to increase personal involvement and message processing.

Other ways that have been shown to motivate more thinking when it ordinarily would not have occurred include making people individually accountable for message evaluation (Petty, Harkins, & Williams, 1980), summarizing the key arguments as *questions* rather than as *assertions* (Howard, 1990; Petty, Cacioppo, & Heesacker, 1981; Swasy & Munch 1985), having the message presented by multiple sources rather than just one (Harkins & Petty, 1981), and inducing some sense of doubt or uncertainty regarding the message such as when the proposal is surprising or unexpected (Baker & Petty, 1994; Ziegler, Diehl, & Ruther, 2002). In each case, motivating more thinking led attitudes to be more affected by the quality of the arguments in the message.

Because evaluative conflict is typically experienced as uncomfortable (e.g., Abelson & Ronsenberg, 1958; Higgins, 1987; Newcomb, 1968; Osgood & Tannenbaum, 1955), people attempt to reduce it. Perhaps the most common approach to dealing with feelings of inconsistency is enhanced information processing (e.g., Abelson et al., 1968; Aronson, 1969; Festinger, 1957; Heider, 1958; Hass, Katz, Rizzo, Bailey, & Moore, 1992; Maio, Bell, & Esses, 1996; Nordgren, van Harreveld, & van der Pligt 2006). By considering additional information, individuals presumably hope to gain enough information to

resolve or minimize the inconsistency (e.g., Hänze, 2001; Jonas, Diehl, & Bromer, 1997). Or, in a more biased way, they might seek out and think about information that supports their dominant reaction to an issue rather than their subordinate one (Clark, Wegener, & Fabrigar, 2008). As mentioned earlier, the ambivalence that enhances information processing can be explicit or implicit (Briñol et al., 2006; Petty et al., 2006).

Before closing, it is important to note that in addition to the situational factors described, there are also individual differences in people's motivation to think about persuasive communications. Some people like to engage in thoughtful cognitive activities, but others do not. The former are described as being high in *need for cognition* (NC) whereas the latter are low in this trait (Cacioppo & Petty, 1982). Individuals high in NC tend to form attitudes on the basis of an effortful analysis of the quality of the relevant information in the persuasive proposal, whereas people low in NC tend to be more reliant on simple cues (although this pattern can be reversed in some circumstances; See, Petty & Evans, 2009 see Cacioppo, Petty, Feinstein, & Jarvis, 1996; Petty, Briñol, Loersch, & McCaslin, 2009, for reviews).

Ability to Think Having the necessary motivation to process a message is not sufficient for the central route to occur. People must also be able to process it. For example, a complex or long message might require more than one exposure for maximal processing, even if the recipient was highly motivated to think about it (Cacioppo & Petty, 1989; Ratneshwar & Chaiken, 1991). Of course, repetition is just one variable that can exert an impact on a person's ability to think. For example, if a message is accompanied by distraction (Petty, Wells, & Brock, 1976) or if the speaker talks too fast (Briñol & Petty, 2003; Smith & Shaffer, 1995), thinking about the message will be disrupted, leading people to fail to distinguish strong from weak arguments.

Just as there are individual differences in motivation to think about messages, there are also individual differences in ability to think. For example, as general knowledge about a topic increases, people become more able to think about issue-relevant information (Wood, Rhodes, & Biek, 1995), particularly if the knowledge is accessible (e.g., Brucks, Armstrong, & Goldberg, 1988).

Direction or Valence of Thinking

When motivation and ability to think are high, people will engage in careful thought. In such situations, the quality or cogency of the information presented will be an important determinant of whether the thoughts generated are largely favorable or unfavorable. With cogent arguments, thoughts will be predominantly favorable, and with specious arguments, thoughts will be largely unfavorable.[1]

However, as noted earlier, a person's thoughts can also be biased by factors outside of the message itself. Some factors in the persuasion setting, such as being in a positive mood or having the message presented by an expert source, can increase the likelihood that positive thoughts or favorable interpretations of information are generated (e.g., DeSteno, Petty, Wegener, & Rucker, 2000; Petty et al., 1993). Other factors, such as being the target of an explicit persuasion attempt, can increase the likelihood that counterarguing occurs (Petty & Cacioppo, 1979b). This could be why "overheard" communications are often more influential than explicit persuasion attempts (e.g., Walster & Festinger, 1962). In general, biasing influences tend to be more impactful when people are already thinking about the message and the message itself is somewhat ambiguous in its quality (Chaiken & Maheswaran, 1994).

Any time a message takes a position opposed to an existing attitude, people are likely to be biased against it—wanting to reject it. And when a message takes a position in favor of your attitudes, you likely will be biased in favor of it—wanting to accept it. Similarly, if a message is perceived as counter to your outcomes, or values, or identities, you will be biased against it, but if it is perceived to be supportive, you will be biased in favor of it. As noted earlier, when a message is framed as simply relevant to the self (our outcomes, values, or identities), the *amount* of information processing is affected because the message is seen as more personally relevant. But when a message takes a particular position (pro or con) with respect to the self, the *valence* of the processing can be affected (Petty & Cacioppo, 1990).

Motivational Biases As noted earlier, a wide variety of motives have been studied in the persuasion context. For example, consistent with the theory of *psychological reactance* (Brehm, 1966), telling people that they must believe something motivates them to restore freedom by adopting a position counter to that advocated. But telling people that they cannot believe something motivates them to accept what is advocated (see Wicklund, 1974).

As noted earlier, perhaps the most studied motive in the persuasion literature is the need to maintain consistency among attitudes, beliefs, emotions, and behaviors (Festinger, 1957; Heider, 1958; Kiesler, 1971; Rosenberg, 1960), and the most prominent consistency theory is the theory of *cognitive dissonance.* In Festinger's (1954) original formulation of dissonance theory, two elements in a cognitive system (e.g., a belief and an attitude; an attitude and a behavior) were said to be consonant if one followed from the other (e.g., I voted for Candidate X; She has the same positions that I do on the major issues) and dissonant if one belief implied the opposite of the other (e.g., I voted for Candidate X; His political party is opposed to mine). Festinger proposed that the psychological state of dissonance was aversive and that people would be motivated to reduce it.

One of the more interesting dissonance situations occurs when a person's behavior is brought into conflict with his or her attitudes or beliefs. For example, one common way of producing dissonance in the laboratory is by inducing a person to write an essay that is inconsistent with the person's attitude under high choice conditions and with little incentive (e.g., Zanna & Cooper, 1974). Because behavior is usually difficult to undo, dissonance can be reduced by changing beliefs and attitudes to bring them into line with the behavior. Dissonance can result in a reanalysis of the reasons why a person engaged in a certain behavior or made a certain choice, and cause a person to rethink (rationalize) the merits of an attitude object. The end result of this effortful but biased cognitive activity can be a change in attitude toward the object.[2]

In perhaps the most famous dissonance experiment, undergraduates were induced to engage in the quite boring task of turning pegs on a board (Festinger & Carlsmith, 1959). Following this, some of the students were told that the experimenter's assistant was absent today and they were asked to take his place and try to convince a waiting participant that the peg turning task was actually quite interesting and exciting. Some of these students were informed that they would be paid $1 for assuming this role and others were told that the pay was $20 (worth about $8 and $160 in 2010). After agreeing to serve as the accomplice and talking to the waiting student, all participants reported to a psychology department secretary who gave them a presumably standard department survey that asked how interesting they found the experimental task to be. As expected by dissonance theory, the participants who received $1 rated the task as more interesting than those who received $20. This result was expected because the $1 participants had insufficient justification for their behavior, whereas the $20 participants had sufficient justification. Thus, the former participants experienced cognitive dissonance and felt a need to justify their actions (i.e., they convinced themselves that the task really was interesting).

The focus of subsequent research has been on understanding the precise cause of the tension that sometimes accompanies counterattitudinal action. Various theorists have questioned Festinger's view that inconsistency per se produces tension in people or that inconsistency reduction is the motive behind attitude change. Some theorists argue that people must believe that they have freely chosen to bring about some foreseeable negative consequence for themselves or other people (e.g., Cooper & Fazio, 1984; Scher & Cooper, 1989). Other theorists argue that the inconsistency must involve a critical aspect of ourself or a threat to our positive self-concept (e.g., Aronson, 1968; Greenwald & Ronis, 1978; Steele, 1988; Tesser, 1988). Of course, bringing about negative consequences for other people is inconsistent with most people's views of themselves as caring individuals. If people are provided with social support for their

actions (Stroebe & Diehl, 1988) or are given an opportunity to restore or bolster their self-esteem in some other manner (Tesser, 2001), dissonance-reducing attitude change is less likely (for a review, see Sherman & Cohen, 2006).[3]

In fact, a strategy of bolstering the esteem of the persuasion target can serve as a general avenue to undermine resistance to persuasion (Knowles & Linn, 2004). That is, one means that has been promulgated to decrease a person's resistance to change is to provide some self-affirmation prior to an attacking message. *Self-affirmation theory* (Steele, 1988) holds that affirming an important aspect of the self prior to receipt of a counterattitudinal message can buffer the self against the threat imposed by the message and thereby increase the likelihood that participants will respond to the message favorably (e.g., Cohen, Aronson, & Steele, 2000).

Ability Biases Although most studies of bias in persuasion contexts fall in the motivational category, ability factors can also produce bias. For example, people who possess accessible attitudes bolstered by considerable attitude-congruent knowledge are better *able* to defend their attitudes than those who have inaccessible attitudes or attitudes with a minimal underlying foundation (Fazio & Williams, 1986; Wood 1982). For some variables, a combination of motivational and ability factors could be at work. For example, being in a positive mood might make it easier for positive thoughts to come to mind (an ability bias; Bower, 1981), but might also motivate people to want to stay in that positive state by generating positive thoughts (e.g., Wegener & Petty, 1994).

Meta-Cognitive Processes

In addition to affecting the amount of thinking and the direction of the thoughts, variables can also have an impact on attitudes by affecting what people think about their thoughts (Petty, Briñol, Tormala, & Wegener, 2007). We describe some of these meta-cognitive factors next.

Expectancy–Value Model Two key aspects of thoughts are the expectancy (i.e., likelihood) and value (i.e., desirability) of consequences considered in a thought. In Fishbein and Ajzen's (1975; 1981) *expectancy–value* formulation, for example, if a person has a thought in response to an advertisement such as "using this new detergent will make my clothes smell fresh," the key aspects of the thought relevant for attitude change are the desirability of smelling fresh and the likelihood that the new detergent will produce this outcome. According to this framework, a persuasive message will be effective to the extent that it produces a change in either the likelihood or the desirability component of a consequence that is linked to the attitude object (e.g., Johnson, Smith-McLallen,

Killeya, & Levin, 2004; see Fabrigar & Wegener, Chapter 6, this volume for further discussion).

Self-Validation Theory Whatever likelihood or desirability is provided for each consequence considered, the thoughts themselves can vary in the confidence with which they are held. For example, if a person thinks that getting his or her clothes clean is highly desirable and the likelihood of this occurring is quite high, but these judgments are not held with much certainty, they will not have as much impact on the person's evaluation of the product as if they were confidently held. In addition to thought certainty being affected by the likelihood and desirability certainties (Petty et al., 2002), as we describe next, it is also affected by numerous other situational and individual factors. Earlier in this chapter we explained how the ease of generation of thoughts could affect their perceived validity (Tormala et al., 2002, 2007), but there are many others.

Other variables that affect perceived validity of thoughts include simple bodily movements. For example, in one study (Briñol & Petty, 2003), undergraduates were asked to move their heads up and down (nodding in a vertical manner) or from side to side (shaking in a horizontal manner) while listening to a message containing strong or weak arguments on the topic of carrying magnetic ID cards around campus. Earlier research had indicated that nodding the head was associated with more favorable attitudes than shaking (Wells & Petty, 1980). One possibility is that nodding imparts a sense of validity to what we are thinking and shaking imparts some doubt. According to this framework, whether nodding is good or bad for persuasion should depend on what people are thinking. Indeed, students who were exposed to a strong message and were generating favorable thoughts showed more persuasion when nodding than shaking. In contrast, students listening to a weak message who were generating mostly negative thoughts showed less persuasion when nodding than shaking. This is because the nodding validated whatever thoughts the students were having, increasing their impact on attitudes.

Many other variables have been shown to affect perceptions of thought validity and thereby attitudes. For example, research has shown that thought confidence is higher when after generating thoughts in response to a persuasive message people learn that the message was generated by an expert versus a nonexpert source. Thought confidence is also increased if people are made to feel happy, powerful, or they are self-affirmed after message processing (see Briñol & Petty, 2009a). In each case, using a confidence manipulation after thought generation caused people to rely more on their thoughts such that when thoughts were primarily positive, increased confidence was associated with more persuasion, but when thoughts were primarily negative, increased confidence was associated with less persuasion.

In the domain of explicit attitudes, confidence in thoughts has been found to be an especially potent determinant of judgment when the amount of thinking at the time of attitude formation or change is relatively high. It is also useful to consider the extent of thinking permitted during response to the attitude measure. In general, if attitudes are not well formed or practiced at the time of attitude measurement, an implicit measure is unlikely to reflect thought confidence effects (Gawronski & Bodenhausen, 2006). However, if the attitude is well formed and practiced at the time of attitude measurement (i.e., people have already considered the confidence in their thoughts in developing their attitudes), the implicit attitude measure is likely to reflect the same factors as the explicit measure (see Briñol, Petty, & McCaslin, 2009).

Flexible Correction Processes Just as enhanced confidence in thoughts leads to greater reliance on them, increased doubt leads people to discard their thoughts. Sometimes, people might be so doubtful of their thoughts that they think the opposite is true. In such cases, doubt can lead to reversed effects with positive thoughts leading to less positive attitudes than negative thoughts. If people have doubt in their thoughts because they fear that their thoughts might have stemmed from some biasing factor in the situation (e.g., an attractive source) or some prejudice they have, they could attempt to explicitly correct for their biased thoughts in accord with the mechanism specified by the *Flexible Correction Model* (FCM; see Wegener & Petty, 1997, for a review). That is, people might estimate the magnitude and direction of the perceived biasing effect on their judgments and attempt to correct for it. To the extent that they correct too much, reverse effects of variables can be obtained (Petty & Wegener, 1993; Wegener & Petty, 1995; Wilson & Brekke, 1994). For example, in one study (Petty, Wegener, & White, 1998), when people became aware that a likable source might be biasing their attitudes, they became more favorable toward the proposal when it was endorsed by a dislikable source. Such explicit corrections typically require relatively high degrees of thinking. However, if certain corrections are practiced repeatedly, they can become less effortful and even automatic (e.g., Glaser & Banaji, 1999; Maddux et al., 2005).

Serving as Arguments

According to the ELM, when the amount of thinking in a persuasion situation is high, people assess the relevance of *all* of the information available. That is, people examine source, message, recipient, and contextual and internally generated information as possible arguments for favoring or disfavoring the attitude object. Interestingly, variables that serve as simple cues when the likelihood of thinking is low can be processed as arguments when thinking is high.

For example, when thinking is low, an attractive source, as a simple cue, would enhance the favorability of attitudes toward almost any advocacy because all that matters when thinking is low is the positive valence of the source. Under high thinking conditions, however, message recipients scrutinize the merits of the information presented so that an attractive source would enhance attitude favorability if it was relevant to the advocacy (e.g., a beauty product), but not when it was irrelevant (e.g., a home loan; see Kruglanski et al., 2005; Miniard, Bhatla, Lord, Dickson, & Unnava, 1991). Of course, what information serves as a cogent argument can vary with individuals and with situations (see Petty & Wegener, 1998).

Serving as Cues

The final role for variables is the most basic—serving as a simple cue. According to the ELM, under low thinking conditions, attitudes are influenced by a variety of low effort processes such as mere association or reliance on simple heuristics and inferences. This is important because it suggests that attitude change does not always require effortful evaluation of the information presented. Next, we briefly describe some of the psychological processes that can produce attitude change with relatively little (if any) effortful thinking.

Attribution Theory In an influential paper introducing *self-perception theory*, Bem (1965) suggested that when people have no special knowledge of their own internal states, they simply infer their attitudes in a manner similar to how they infer the attitudes of others [e.g., "if I (she) walked a mile to Target, I (she) must like that store"]. During much of the 1970s, self-perception theory was thought to provide an alternative account of dissonance effects (Bem, 1972). Subsequent research indicated, however, that both dissonance and self-perception processes can operate, but in different domains. In particular, the underlying "discomfort from inconsistency leading to biased processing" mechanism of dissonance theory operates when a person engages in attitude-discrepant action that is unacceptable to a person whereas self-perception processes are more likely when a person engages in attitude-discrepant but more agreeable behavior (Fazio, Zanna, & Cooper, 1977). Self-perception theory also accounts for some unique attitudinal phenomena. For example, the *overjustification effect* occurs when people come to dislike a previously liked behavior when they are provided with more than sufficient reward for engaging in it (e.g., Lepper, Greene, & Nisbett, 1973; see Deci, 1995).

Use of Persuasion Heuristics The term heuristics refers to simple rules or shortcuts that people can use to simplify decision making (Shah & Oppenheimer, 2008). The *Heuristic/Systematic model* of persuasion (HSM represents an

explicit attempt to use heuristics to explain why certain variables such as source expertise or message length have their impact (Chaiken, 1987; Chaiken et al., 1989). That is, the HSM proposes that in contrast to "systematic" (central route) processes, many source, message, and other cues are evaluated by means of simple schemas or cognitive heuristics that people have learned on the basis of past experience and observation.

According to the HSM, the likelihood of careful processing increases whenever confidence in our attitude drops below the desired level (the "sufficiency threshold"). Whenever actual and desired confidence are equal, heuristic processing is more likely. For example, because of prior personal experience, people could base their acceptance of a message on the number of arguments contained in it by invoking the heuristic "the more arguments, the more validity" (a length implies strength heuristic; Petty & Cacioppo, 1984a; Wood, Kallgren, & Preisler, 1985). For the most part, the HSM makes predictions that are similar to the ELM, though the language and specific mechanisms of each theory are a bit different (see Eagly & Chaiken, 1993; Petty & Wegener, 1998, for further discussion).

Conditioning The attribution and heuristic models focus on simple cognitive inferences that can modify attitudes. Other approaches emphasize the role of relatively simple association processes. One of the most direct ways of associating affect with attitude objects is through classical conditioning. In brief, conditioning occurs when an initially neutral stimulus such as an unfamiliar shape (the conditioned stimulus; CS) is associated with another stimulus such as electric shock (the unconditioned stimulus; UCS) that is connected directly or through prior learning to some response such as feeling bad (the unconditioned response; UCR). By pairing the UCS with the CS many times, the CS becomes able to elicit a conditioned response (CR) that is similar to the UCR. Over the past several decades, a wide variety of conditioning stimuli have been used to create positive or negative attitudes including unpleasant odors and temperatures, harsh sounds, pleasant pictures, and elating and depressing films (e.g., Gouaux, 1971; Staats, Staats, & Crawford, 1962; Stuart, Shimp, & Engle, 1987). People have been found to be especially susceptible to conditioning effects when the likelihood of thinking is rather low (Cacioppo, Marshall-Goodell, Tassinary, & Petty, 1992; see also, Shimp, Stuart, & Engle, 1991).

Theorists have suggested that classical conditioning applied to attitudes might actually be a somewhat different phenomenon more appropriately called *evaluative conditioning* (Martin & Levey, 1978). This is because the conditioned attitudes do not follow the same properties as do the behaviors examined in typical classical conditioning paradigms (e.g., the conditioning of a salivary response in dogs). In classical conditioning, the phenomenon works best when there is some awareness of the paring of the CS and UCS so that the UCS comes

to signal the appearance of the CS. In evaluative conditioning, this contingency awareness is not necessary. Perhaps because of this, the conditioned response in evaluative conditioning tends not to be extinguished when the UCS is no longer presented, unlike classical conditioning (see De Houwer, Thomas, & Baeyens, 2001, for a review).

If the mechanism of attitude change is not classical conditioning, then what is it? One possibility suggested recently by Jones, Fazio, and Olson (2009) is that evaluative conditioning occurs because of misattribution of the feelings elicited by the UCS to the CS. In a series of studies in which the UCS (pleasant or unpleasant pictures) and CS (Pokémon cartoon characters) were presented simultaneously over many trials, Jones et al. (2009) showed that the easier it was to confuse the source of the affect, the greater the conditioning effect. For example, when the UCS and CS were presented spatially close together, conditioning was greater than when the stimuli were further apart. This research suggests that evaluative conditioning might be reliant on relatively simple misattribution inferences similar to the self-perception and heuristic inferences described earlier.

Mere Exposure The mere exposure effect occurs when attitudes toward stimuli become more favorable as a consequence of their mere repeated presentation without any need to pair the stimuli with other positive stimuli as in evaluative conditioning (Zajonc, 1968). In one representative study, Kunst-Wilson and Zajonc (1980) presented people with a series of polygon images and found that even when these images could not be consciously recognized, the more frequently they were presented, the more they were liked. This effect has been demonstrated with a wide variety of stimuli such as foreign words, photographs, music, ideographs, and nonsense syllables (see Bornstein, 1989, for a review). Moreover, it has been shown that mere exposure can affect mood, and that this mood can spread to other, related stimuli that were not even presented (Monahan, Murphy, & Zajonc, 2000).

Perhaps the most accepted explanation of this effect today relies on the notion of *perceptual fluency*. Much research suggests that previous or repeated exposure to stimuli can make those stimuli easier to process, and that this fluency enhances subsequent liking. Specifically, the feeling of ease of processing is thought to be misattributed to a positive evaluation of the stimulus (Bornstein, 1989; Bornstein & D'Agostino, 1992; Jacoby, Kelley, Brown, & Jasechko, 1989), at least when people perceive fluency as something good (Briñol, Petty, & Tormala, 2006). The fluency process is most likely to occur when the repeated stimuli are not thought about much (e.g., are presented very quickly or are meaningless; see Bornstein, 1989). When the repeated stimuli already have some meaning, or elicit an initial dominant response in one direction or another, repeated exposure can accentuate that dominant response (Brickman, Redfield,

Harrison, & Crandall, 1971). Repeatedly presenting negative information, for instance, can make that information seem more negative (Cacioppo & Petty, 1989; Grush, 1976). One possible reason for these polarization effects is that our positive assessments of positive information might seem more valid or plausible as exposure increases, as do our negative assessments of negative information (Kruglanski, Freund, & Bar-Tal, 1996).

Implicit Change through Automatic Processes Although the research just described on simple mechanisms of attitude change has assessed change using explicit attitude measures, these same mechanisms are capable of affecting implicit measures of attitudes. For example, in one study, Dijksterhuis (2004) found that automatic evaluations of the self were affected by subliminal evaluative conditioning trials in which the word "I" was repeatedly associated with positive or negative trait terms (see also Baccus, Baldwin, & Packer, 2004; Olson & Fazio, 2001; Petty et al., 2006; Walther, 2002).

Perhaps the domain in which researchers have examined implicit changes from seemingly simple processes the most is prejudice (see Bodenhausen & Richeson, Chapter 10, this volume). For example, automatic evaluations of blacks have been shown to be affected by exposure to admired black individuals (e.g., Dasgupta & Greenwald, 2001; Dasgupta & Rivera, 2008). Although some studies likely involve invoking a different attitude object rather than attitude change (e.g., the manipulation makes the subtype of a black professional salient and this subtype is evaluated; see Barden, Maddux, Petty, & Brewer 2004), there are a sufficient number of studies in which it is clear that automatic evaluations of the same attitude object are being modified to conclude that automatic attitudes can be changed by simple associative processes requiring little elaborative thinking (for other illustrations, see Petty & Briñol, in press).

The Influence of Communication Variables on Persuasion

In addition to specifying the general mechanisms of persuasion just reviewed, the ELM postulates that any communication variable (i.e., whether source, message, recipient, or context) influences attitudes by affecting one of these key processes. Because of the very long list of persuasion variables that have been studied and the thousands of published studies, our review of variables is meant to be illustrative of how understanding the basic mechanisms of persuasion is useful in analyzing any possible variable of interest, even if it has never previously been studied.

Source Factors

Consider first the multiple processes by which source factors, such as expertise, attractiveness, race, or gender, can have an impact on persuasion. When the likelihood of thinking was low (e.g., low personal relevance topic), source factors have influenced attitudes by serving as a peripheral cue, affecting implicit (Forehand & Perkins, 2005; McConnell, Rydell, Strain, & Mackie, 2008) as well as explicit attitudes (Petty, Cacioppo, & Goldman, 1981; Chaiken, 1980) in the same direction as their valence.

When the likelihood of thinking is set to be very high (e.g., high personal relevance of the message topic), source factors have taken on other roles. For example, if a source factor is relevant to the merits of a message, it can serve as a persuasive argument. Thus, an attractive endorser can provide persuasive visual evidence for the effectiveness of a beauty product (Petty & Cacioppo, 1984b). Another role that sources can play under high thinking conditions is biasing information processing. For example, Chaiken and Maheswaran (1994) found that when recipients under high thinking conditions received an ambiguous message (i.e., not clearly strong or weak), sources high in expertise led to more favorable thoughts about the message and thus more favorable attitudes than did sources of low expertise. Under high elaboration conditions, source factors have also been shown to influence persuasion by affecting the confidence people have in the validity of their thoughts. As noted earlier, this effect is most likely to occur when the source information follows rather than precedes the persuasive message (Tormala, Briñol, & Petty, 2007).

If the likelihood of thinking is not set to be very high or low by other variables then source factors such as expertise and attractiveness have affected how much thinking people did about the message (e.g., DeBono & Harnish, 1988; Moore, Hausknecht, & Thamodaran, 1986; Puckett, Petty, Cacioppo, & Fisher, 1983). For example, Priester and Petty (1995) demonstrated that if source expertise is high, people process messages more carefully when they come from a source whose trustworthiness is in doubt than from a clearly trustworthy source. If trustworthiness is high, however, then people are more likely to process a message from an expert source than from a source who lacks expertise (Heesacker, Petty, & Cacioppo, 1983; see, Briñol & Petty, 2009b, for an extended review of source factors).

Message Factors

Message variables can also serve in multiple roles. For example, think about the number of arguments that a persuasive message contains. This variable serves

as a simple peripheral cue when people are either unmotivated or unable to think about the information (Petty & Cacioppo, 1984a). That is, people can simply count the arguments in a message and agree more with the advocacy as more information is presented, regardless of the cogency of that information. When motivation and ability to think are high, however, the informational items in a message are not simply counted, but instead the information is processed for its quality. Thus, under low thinking conditions when the number of arguments in a message serves as a cue, adding weak reasons in support of a position enhances persuasion, but when the informational items in a message are processed as arguments, adding weak reasons reduces persuasion (Alba & Marmorstein, 1987; Friedrich, Fetherstonhaugh, Casey, & Gallagher, 1996; Petty & Cacioppo, 1984a).

The mere number of arguments is only one of the many message factors that can influence persuasion by serving in different roles in different situations. Other variables include whether the message emphasizes affect or cognition, is complex or not, matches the recipients' characteristics in some way, and argues in favor or against previous views (see Petty & Wegener, 1998). Finally, we note that as was the case with source factors, implicit measures are also affected by message factors (see Petty & Briñol, 2010).

Recipient Factors

There are many recipient variables that are relevant for persuasion, ranging from motives such as the need for cognition (Cacioppo & Petty, 1982), abilities such as intelligence (McGuire, 1968), and individual differences in personality such as self-monitoring (Snyder & DeBono, 1985; see Briñol & Petty, 2005, for a review). Perhaps the recipient factor that has been studied most extensively, however, is a transitory one—the emotions the target of persuasion is experiencing at the time of persuasion. In accord with the ELM, prior research has shown that a person's emotions can serve in all of the roles for variables that we have summarized (see Petty et al., 2003, Briñol, Petty, & Rucker, 2006, for reviews).

Most simply, when thinking is constrained to be low (e.g., distractions present), emotions tend to serve as simple associative cues and produce evaluations consistent with their valence (e.g., Petty et al., 1993). When thinking is high, however, emotions serve in other roles. First, emotions can be evaluated as evidence (e.g., negative emotions such as sadness or fear can lead to positive evaluations of a movie if these are the intended states; e.g., see Martin, 2000). Also, when thinking is high, emotions can bias the ongoing thoughts (e.g., positive consequences seem more likely when people are in a happy than sad state;

e.g., DeSteno et al., 2000). The bias is emotion specific. For example, in one study (DeSteno et al., 2004), participants made to feel sad were more persuaded by a message pointing to sad consequences of a proposal rather than angry ones whereas those participants made to feel angry were more persuaded by a message pointing to angering consequences than sad ones. This is because the consequences seem more likely when the consequence matches rather than mismatches the emotional state.

If an emotion is induced after people have finished thinking about the message, then emotions can affect confidence in our thoughts (Briñol, Petty, & Barden, 2007) because of the certainty appraisals associated with specific emotions. Because emotions such as happiness and anger are associated with certainty, these would validate thoughts, whereas emotions such as sadness would create doubt in thoughts and lead to less use of them (Tiedens & Linton, 2001). Finally, when the likelihood of thinking is not constrained to be high or low, emotions can affect the extent of thinking. Either happiness or sadness could lead to more thinking depending on whether the emotion signals a problem to be solved (Schwarz, Bless, & Bohner, 1991), conveys a sense of uncertainty (Tiedens & Linton, 2001), or invokes a motive to manage one's emotions by thinking (Wegener & Petty, 1994). As was the case with the other variables we have reviewed, recent research has revealed that the emotions experienced by a person can influence implicit measures of attitudes (e.g., Sassenberg & Wieber, 2005).

Consequences of Different Persuasion Processes for Explicit Measures

Now that we have articulated the various mechanisms by which variables can impact persuasion, we turn to the final issue of why we should care about process. Knowing something about the process can indicate whether the attitude change that is produced will be consequential or not. Sometimes a high and a low thought process can result in the same attitude, such as when being in a good mood produces a favorable attitude by serving as a simple associative cue under low thinking but biasing the thoughts generated under high thinking (Petty et al., 1993). According to the ELM, attitudes formed or changed through high thinking processes are more persistent, resistant to change, and predictive of behavior than attitudes changed via low thinking processes. There are both structural and meta-cognitive reasons for this. First, as thinking increases during attitude change, people should acquire more support for their attitudes (knowledge) and their attitudes should become more accessible. Furthermore, people should become more confident in their views. Each of these factors

would increase the likelihood that attitudes would be consequential (see Petty et al., 1995, for a review).

Attitude Persistence and Resistance

When attitude changes are based on extensive issue-relevant thinking, they tend to *persist* (endure). For example, research has shown that encouraging self-generation of arguments (e.g., Elms, 1966; Watts, 1967), using interesting or involving communication topics (Ronis et al., 1977), leading recipients to believe that they might have to explain or justify their attitudes to other people (e.g., Boninger et al., 1990; Chaiken, 1980), and having them evaluate a message during its receipt rather than afterward (Mackie, 1987) are all associated with increased persistence of attitude change. Also, people who characteristically enjoy thinking (high need for cognition) show greater persistence of attitude change than people who do not (e.g., Haugtvedt & Petty, 1992; Wegener et al., 2006; see, Petty et al., 2009 for a review).

Resistance refers to the extent to which an attitude change is capable of surviving an attack from contrary information. Although attitude persistence and resistance tend to co-occur, their potential independence is shown in McGuire's (1964) classic work on cultural truisms. Truisms such as "you should brush your teeth after every meal" tend to last forever if not challenged, but are surprisingly susceptible to influence when attacked because people have no practice in defending them. In his work on *inoculation theory*, McGuire (1964) demonstrated that two kinds of bolstering can be effective in facilitating resistance. One relies on providing individuals with a supportive defense of their attitudes (e.g., see Ross, McFarland, Conway, & Zanna, 1983) and a second provides a mild attack and refutation of it (the inoculation). Just as people can be made more resistant to a disease by giving them a mild form of it, people can be made more resistant to discrepant messages by inoculating their initial attitudes (see Petty, Tormala, & Rucker, 2004).

Prediction of Behavior

Once a person's attitude has changed, behavior change requires that the person's new attitudes rather than the old attitudes or previous habits guide action. If a new attitude is based on high thought, it is likely to be highly accessible and come to mind automatically in the presence of the attitude object. Therefore, it will be available to guide behavior even if people do not think much before acting (see Fazio, 1990, 1995). However, even if people do engage in some thought,

attitudes based on high thinking are still more likely to guide behavior because these attitudes are held with more certainty and people are more willing to act on attitudes in which they have confidence (e.g., Barden & Petty, 2008; Brown, 1974; Cacioppo, Petty, Kao, & Rodriguez, 1986; Leippe & Elkin, 1987).

Of course, behavior is determined by more than individuals' attitudes even if those attitudes are based on high thought. The *theory of reasoned action* (Fishbein & Ajzen, 1975) highlights social norms (what others think you should do) as an important determinant of behavior, and the *theory of planned behavior* (Ajzen, 1991) points to a person's sense of self-efficacy or competence to perform the behavior (see Ajzen & Fishbein, 2005). These theories make it clear that although attitude change can be an important first step, it might still be insufficient to produce the desired behavioral responses even if appropriate new attitudes were formed by the central route.

Certainty: Strength without More Thinking

We noted earlier that when attitudes change as a result of high thinking processes, they are likely to be held with greater certainty than when they are changed to the same extent by low thinking processes. Certainty generally refers to a sense of validity concerning our attitudes (Gross, Holtz, & Miller, 1995) and is an important construct because it can cause attitude strength. That is, attitudes held with greater certainty are more resistant to change (e.g., Kiesler, 1971), persistent in the absence of a persuasive attack (Bassili, 1996), and more predictive of behavior (Fazio & Zanna, 1978) than attitudes about which there is doubt.

Initial conceptualizations of attitude certainty tended to assume that certainty sprang solely from structural features of attitudes such as having attitudes based on more issue-relevant knowledge, direct experience, or thought (e.g., Fazio & Zanna, 1981). And, indeed, structural factors can play an important role in determining attitude certainty. However, recent research has examined how people sometimes infer greater certainty in the absence of any structural differences. Notably, people can even come to infer greater certainty in their attitudes if they are merely led to believe that they have done much thinking about the attitude object even if they have not (Barden & Petty, 2008). Of greatest importance is that the certainty that comes from simple inferences rather than structural differences can also cause the attitudes to be more consequential (Rucker, Petty, & Briñol, 2008; Tormala & Petty, 2002). Consistent with the meta-cognitive model of attitude structure (Petty et al., 2007), it appears that attaching a sense of validity or certainty to our attitudes by whatever means can have long-term implications.

Attitude Change Today

In this review we have argued that persuasion can be understood by breaking the processes responsible for attitude change into a finite set. These processes relate to some of the classic topics of persuasion (e.g., credibility, emotion), and explain how any one variable can produce opposite outcomes, and how the same outcome can be produced by different processes. We emphasized that understanding the underlying mechanisms of persuasion is important because different processes are associated with different consequences.

Contemporary research has begun to examine the consequences of deliberative and automatic persuasion processes not only for explicit but also for implicit attitude measures. For example, attitude change processes that require thinking deeply about the attitude object are likely to result in attitude representations that are well integrated and connected with other relevant material in memory (see, e.g., McGuire, 1981; Tesser, 1978). High thought attitude change can also spill over and influence related attitudes such as when attempting to change attitudes on abortion leads to changes on the issue of contraception (e.g., Crano & Chen, 1998). Such effects on related attitudes have been especially prevalent in the literature on minority influence whereby the minority does not produce change on the focal issue but does on a related topic (see Moscovici, Mucchi-Faina, & Maass, 1994; Mugny & Perez, 1991). It turns out that implicit measures can also be useful in mapping the interconnections among attitudes. For example, in one study, when a message was aimed at changing attitudes toward the color green, automatic attitudes toward a product associated with this color (*Heineken* beer) were also changed (see Horcajo, Petty, & Briñol, 2009). Research on changing automatic attitudes and understanding their relationship to more deliberative attitudes is likely to increase. One other area that is likely to see an exponential increase in interest concerns how persuasion processes can be mapped with new brain imaging techniques (e.g., see Cunningham, Packer, Kesek, & Van Bavel, 2009). Such measures are likely to add to our knowledge of persuasion just as prior measurement techniques have each led to substantial progress in the field.

Footnotes

1. Although there is relatively little research on what makes an argument cogent or specious, among the factors that contribute are whether the argument presents a consequence that is good or bad for the target and whether this consequence is seen as likely

or unlikely, important or unimportant, unique or already known (see Petty & Wegener, 1993).

2. In contrast to dissonance theory, *balance theory* (Heider, 1958) states that inconsistency pressures sometimes lead to attitude change by a simple inference process rather than because of a reanalysis of the merits of the attitude object. This theory states that balance occurs when people agree with people they like or disagree with people that they dislike and can account for why a person would come to like a candidate more after he or she is endorsed by a favored celebrity (i.e., to restore balance; see Insko 1984, for an extended discussion). A related formulation, congruity theory, states that attitudes toward *both* source and object change to restore "congruity" (Osgood & Tannenbaum, 1955).

3. There are still other approaches to understanding dissonance that might be of interest to readers (e.g., the *self-standards model*: Stone & Cooper, 2001; the *action-based model*: Harmon-Jones & Harmon-Jones, 2008; the *model of ambivalence-induced discomfort*: van Harreveld, van der Pligt, & de Liver, 2009; see Cooper, 2007; Harmon-Jones & Mills, 1999, for reviews).

Suggestions for Further Reading

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