

Chapter 6

Attitude Structure and Change

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Attitudes refer to general evaluations people have regarding people (including oneself), places, objects, and issues (e.g., “Ice-cream is good”; “I favor capital punishment”). Attitudes are accorded special status in social psychology because of their influence on people’s choices and actions. In particular, modifying attitudes is one way to influence people’s behavior. That is, all else equal, people will decide to buy the brand they like the most, attend the university they evaluate most favorably, and vote for the candidate they approve of most strongly, though as we will see, some attitudes are better at predicting behavior than others. Our review of basic social psychological approaches to attitudes is divided into four main sections.

We begin by focusing on definitional issues regarding attitudes and the properties of attitudes that are particularly relevant for making them consequential. In this section, we describe the functions of attitudes (i.e., what purpose they serve) as well as their common bases and structure. One important point we emphasize is that the various functions, origins, and structural variables can be assessed in a relatively objective way or in a more subjective way, and this has implications for various attitude-relevant outcomes.

The second section turns to some of the most popular approaches to understanding attitude change. We begin with some of the early persuasion theories, which tended to focus on single processes by which variables could produce attitude change such as proposing that getting people to learn your message was the key to effective influence. We then move to more contemporary multiprocess perspectives. We describe the fundamental psychological processes by which any variable relevant to persuasion can exert its effects on attitudes and attitude change. We see that although changing attitudes is complex, it can be understood by breaking the underlying psychological processes responsible for influence into a finite set and specifying the circumstances under which these processes are more versus less likely to operate.

The third section describes research on attitude change organized around the key variables that determine the extent of influence—the source, the message, and the recipient of influence. We describe how many seemingly different variables (e.g., an attractive message source, a message recipient in a good mood) can each affect attitudes by the same fundamental processes. We explain how these variables can not only have direct effects on attitudes but also interact with each other in affecting persuasion processes and outcomes.

In our fourth section, we turn to the issue of why we should care about the underlying processes of persuasion. Of most importance, knowing something about the particular process behind an attitude change can tell us whether the change is likely to be consequential (i.e., whether the attitude change lasts over time, resists counterpersuasion, and predicts behavior). In this final section, we examine implications of the extent of thinking involved in attitude change for both explicit and implicit measures of attitudes.

Part I: Attitude Function, Strength and Structure

Definition of Attitudes and Attitude Strength

Although attitudes refer to the general and relatively enduring evaluations people have of other people, objects, or ideas (Petty, Briñol, & DeMarree, 2007), attitudes can vary in a number of important ways. Most obviously, attitudes can vary in *valence*. Some attitudes are positive, some are negative, and others are relatively neutral. Moreover, attitudes can differ in their *extremity*, or the extent to which they deviate from neutrality (i.e., just how positive or negative they are). In addition to these, attitudes can differ in other ways such as their underlying *bases* (i.e., what serves as input to the attitude such as whether the attitude is based more on emotion or cognition), and attitudes can also differ in their *strength*—the extent to which attitudes are durable and impactful (Petty & Krosnick, 1995).

The durability of an attitude refers to its ability to persist over time and resist attacks. Impact refers to the attitude's influence over thoughts, feelings, and behavior. In general, strong attitudes exert greater influence (e.g., produce more attitude-consistent thinking) and behavior (e.g., produce more attitude-consistent behavior) than do their weaker counterparts. Attitude strength can also be a crucial moderator of persuasion effects—making it harder to change attitudes in some cases than in others (e.g., it is more difficult to change attitudes of which people are certain). Thus, one might aim to reduce an attitude's strength before attacking it (e.g., instilling doubt in the attitude before it is challenged).

Research has identified a number of indicators of whether a given attitude is relatively strong or weak. Some indicators of strength relate to the underlying structural properties of the attitude such as how quickly the attitude comes to mind (i.e., accessibility; see Fazio, 1995) or the extent to which the attitude contains mostly one-sided information (e.g., all positive) or is linked to mixed information (i.e., both positive and negative; Kaplan, 1972). Attitudes that are based on both positive and negative information are ambivalent, and people experience conflict in the presence of objects for which they hold ambivalent attitudes (Priester & Petty, 1996). Low-accessibility and high-ambivalence attitudes tend to be weak rather than strong.

In addition to structural indicators of strength, perceptions of one's attitudes can also index strength. For example, when people see an attitude as important (e.g., Boninger, Krosnick, Berent, & Fabrigar, 1995), or the attitude is believed to be based on considerable knowledge (Davidson, Yantis, Norwood, & Montano, 1985), or a person has high confidence in the validity of the attitude (Rucker, Tormala, Petty, & Briñol, 2014), the attitude is stronger (more consequential) than when the attitude is seen as unimportant or believed to be based on little information or when the attitude is held with doubt.

Many of the structural indicators of attitude strength are based on relatively objective measures. For instance, a reaction-time measure of attitude accessibility (Fazio, 1995) does not require people to introspect and report their perception of how quickly and easily the attitude comes to mind. Similarly, inferring amount of elaboration based on effects of argument quality on evaluative judgments (e.g., Petty, Wells, & Brock, 1976) does not require research participants to introspect about how much they elaborated (Blankenship & Wegener, 2008). However, these same attitude strength constructs could be assessed in a

more subjective way such as by simply asking people how quickly the attitude comes to mind or how much they thought about the issue.

In contrast to the fact that most structural features of attitudes such as accessibility have been assessed with both objective and subjective measures, for some of the most commonly employed subjective strength indicators (e.g., importance, certainty), there is no widely accepted objective indicator. Nonetheless, regardless of whether the attitude strength dimension is assessed in a relatively objective or subjective manner, the dominant perspective in the field is that each dimension of strength is somewhat independent of the others and that each dimension of strength matters because it helps to shape the attitude's durability and impact (Krosnick & Petty, 1995). Furthermore, as explained shortly, objective and subjective assessments of the same attitude strength construct can predict different outcomes (e.g., See, Fabrigar, & Petty, 2013).

Understanding how to change attitudes is important because attitude change increases the likelihood that behavior will change as well, especially if the new attitudes produced are strong ones (e.g., based on extensive knowledge, held with certainty, highly accessible, etc.). Later in this review, we discuss when changes in attitudes are more or less likely to spread to related thinking, judgment, and behavior.

Functions of Attitudes

Attitudes not only can guide behavior and influence thoughts and feelings, but they can also serve to define and express who we are (give us identity), providing people with a sense of consistency, self-worth, belonging, and acceptance. When an attitude is self-defining, people are more likely to advocate it spontaneously to others (Zunick, Teeny, & Fazio, 2017). Attitudes can also serve other needs that people have—such as understanding the world, fitting in with others, expressing important values, and so forth (for a review, see Maio & Olson, 2000). For example, Katz (1960) proposed that attitudes can serve a knowledge function, helping to organize and structure a person's environment and provide consistency in one's frame of reference. Attitudes can also help to maximize the rewards and minimize the punishments obtained from objects in the environment. Furthermore, attitudes guide attention, especially when they are strong (Fazio, 1995), and they can serve to build and maintain self-esteem in a variety of ways. For example, a person might develop a prejudice toward a minority group because this negative evaluation of the outgroup makes the person feel better about the ingroup and himself or herself.

In addition to different attitudes serving different functions for the same person, some attitudes toward might serve a common function for most people. For example, attitudes toward aspirin might be based primarily on utilitarian or practical concerns such as how well aspirin works to alleviate pain (e.g., Abelson & Prentice, 1989; Shavitt, 1989). Similarly, some situations might invoke the same attitude function for most people. For example, when at a party, the social-adjustive function of attitudes (i.e., how well the attitude helps one fit in socially with other people) might dominate. Finally, attitudes might chronically serve different functions for different people. For example, for some people, most of their attitudes might serve a value-expressive function, but for others, most attitudes might serve a social-adjustive function (Snyder & DeBono, 1985).

Considering attitude functions is important because persuasive messages that appeal to or match the function served by an attitude can be more persuasive than messages that are irrelevant to or mismatch the function served by that attitude (see Briñol & Petty, 2018; Petty, Wheeler, & Bizer, 2000; Salovey & Wegener, 2003). For example, people who score highly on the self-monitoring scale (Snyder, 1974) are oriented toward social approval whereas low self-monitors are more motivated to be consistent with their internal beliefs and values. Messages can often be made more effective by matching the message to a person's self-monitoring status. For example, in one early study, Snyder and DeBono (1985) exposed high and low

self-monitors to advertisements for a variety of products that contained arguments appealing either to the social adjustment function (i.e., describing the social image that consumers could gain from the use of the product) or to the value-expressive function (i.e., presenting content regarding the intrinsic quality of the product). High self-monitors were more influenced by ads with image content than ads with quality content. In contrast, low self-monitors were more vulnerable to messages that made appeals to values or quality. As we explain shortly, there are multiple processes by which this matching effect can come about.

Basis of Attitudes

People's attitudes can be based on a number of underlying factors. For example, attitudes can be based on behavioral information, as illustrated by research on *embodiment* (Briñol & Petty, 2008; Briñol, Petty, Santos, & Mello, 2017). Embodiment or *embodied cognition* refers to situations in which one's posture or movement of one's body affects one's judgments (Shapiro, 2011). For example, placing your face in a smiling expression can produce more positive attitudes (Noah, Schul, & Mayo, 2018; Strack, Martin, & Stepper, 1988) as can nodding your head while listening to a message (Tom et al., 1991; Wells & Petty, 1980). Beyond behavioral components, one important and classic distinction is whether attitudes are based more on emotion (affect) or cognition (Zanna & Rempel, 1988).

A number of studies have shown that it is possible to determine whether a given attitude is based on emotion, cognition, or a combination of the two. This can be done, for example, by seeing whether a global measure of people's attitudes (e.g., to what extent the attitude object is rated as good versus bad) is more congruent with their ratings of various emotion-relevant qualities (e.g., to what extent the attitude object is rated as producing happiness vs. sadness) or cognition-relevant qualities (e.g., to what extent the attitude object is rated as useful vs. useless; see Crites, Fabrigar, & Petty, 1994). Another possibility is to examine the words people use to describe their attitudes and see whether they contain emotional content or not (e.g., Rocklage & Fazio, 2015).

Differences in the cognitive versus affective structural basis of attitudes have important consequences. For example, persuasive messages with emotional content tend to be more successful in changing emotion-based attitudes than cognition-based attitudes, with the reverse tending to hold for cognitive persuasive appeals (Fabrigar & Petty, 1999). This matching effect is amplified when people have high certainty in their attitudes (Clarkson, Tormala, & Rucker, 2011). Just as individual attitudes can be based more on affect or cognition, so too some people tend to base most of their attitudes primarily on affect or cognition (e.g., Aquino, Haddock, Maio, Wolf, & Alparone, 2016; Haddock, Maio, Arnold, & Huskinson, 2008; Huskinson & Haddock, 2004; for a review, see Maio & Haddock, 2015). Research suggests that attitudes based on emotion tend to be stronger than those based on cognition in that they are more accessible in memory (Giner-Sorolla, 2004; Rocklage & Fazio, 2018) and tend to predict behavior better (Lavine et al., 1998).

Independent of the extent to which attitudes actually are based on affect or cognition, people also differ in their *perceptions* of the basis of their attitudes (See, Petty, & Fabrigar, 2008). These self-perceptions of attitude bases (called meta-bases) tend to be uncorrelated with structural bases and predict advocacy and persuasion independent of the assessed structural basis. For example, in a series of studies on advocacy (Teeny & Petty, 2018), the more people's attitudes were perceived to be based on affect versus cognition, the more they expressed interest in spontaneously advocating their views to others. However, the more people's attitudes were perceived to be based on cognition versus affect, the more willing they were to advocate when requested.

With respect to persuasion, structural and meta-bases predict some different outcomes. For example, in one study (See, Fabrigar, & Petty, 2013), more affective structural bases of attitudes predicted faster

reading time for affective than cognitive information whereas more cognitive structural bases predicted faster reading time for cognitive than affective information. This was presumed to reflect the greater processing efficiency that is possible when information is matched to one's structural basis. This same study showed that when people simply perceived their attitudes to be based primarily on emotion (high affective meta-basis) regardless of whether or not they objectively were, they showed a slower reading time for affective than cognitive information. The opposite was true when people rated their attitudes as being based primarily on cognition (high cognitive meta-basis). These individuals showed a slower reading time for cognitive than affective information. Slower reading times were presumed to reflect the greater interest in processing that occurs when information is matched to one's meta-basis.

With respect to the affective versus cognitive bases of people's attitudes, research suggests that when people are asked to consider why they hold the attitudes they do, what comes to mind may not be representative of the actual structural content of their attitudes. For instance, in one study (Wilson, Dunn, Bybee, Hyman, & Rotondo, 1984), when participants were asked to examine why they liked or disliked an attitude object, they were able to do so, but attitudes assessed shortly after this were largely unpredictable of behavior. Wilson et al. (1984) suggested that this was because the reasons people listed as supporting their attitudes were not complete. In particular, people often underestimated the role of affect in determining attitudes. Moreover, even if people could identify a representative sample of the bases of their attitudes (both affective and cognitive), they would also have to be able to gauge the unique contribution of each basis to their global evaluation to have an accurate assessment. This is likely to be difficult, particularly when affect and cognition are evaluatively consistent. Thus, true insight into the actual affective versus cognitive basis of many attitudes is likely to be rare.

In sum, attitudes can vary in their underlying structure or bases, with some attitudes being based relatively more on behavior, affect, or cognition. Furthermore, perceptions of one's attitude basis can differ from reality. Other variations are also important with regard to the basis of attitudes. For instance, some attitudes are based on direct experience whereas others are based on semantic information from other people (i.e., indirect experience; Fazio & Zanna, 1978). Attitudes are sometimes based on issue-relevant ambivalent (evaluatively mixed; Kaplan, 1972) or univalent (one-sided) information (DeMotta, Chao, & Kramer, 2016; Haddock, Foad, Windsor-Shellard, Dummel, & Adarves-Yorno, 2017; Reich & Wheeler, 2016), whereas at other times attitudes are based on largely irrelevant information and transitory states (e.g., feelings of power; Briñol et al., 2017). Some people may hold attitudes that are linked to moral principles (Day, Fiske, Downing, & Trail, 2014; Feinberg & Willer, 2015; Skitka, Morgan, & Sargis, 2005) and general values (Blankenship, Wegener, & Murray, 2015; Maio, Rakizeh, Cheung, & Rees, 2009) whereas others do not link attitudes to values. Some of these differences are important with regard to attitude change, and we will refer to them where relevant later in this review.

Explicit versus Implicit Measures of Attitudes

After a long tradition of assessing attitudes using people's responses to self-report measures (e.g., "Is soup good or bad?"), more recent work has also assessed attitudes with measures intended to focus on people's automatic evaluations. Techniques that assess automatically activated evaluations without directly asking people to report their attitudes are often referred to as *implicit measures*, and assessments that tap more deliberative and acknowledged evaluations are referred to as *explicit measures* (Gawronski & Payne, 2010; Petty, Fazio, & Briñol, 2009a; Wittenbrink & Schwarz, 2007). Implicit measures aim to assess whether positivity or negativity comes to mind spontaneously when the attitude object is presented and are akin to "gut reactions" to objects. Common explicit measures include the semantic differential (Osgood, 1964) and Likert (1932) scales, whereas common implicit measures include the Implicit Association Test

(Greenwald, McGhee, & Schwarz, 1998), the evaluative priming measure (Fazio, Sanbonmatsu, Powell, & Kardes, 1986), and the Affect Misattribution Procedure (Payne & Lundberg, 2014).

Because implicit and explicit measures of attitudes are useful in predicting behavior separately (e.g., Greenwald, Banaji, & Nosek, 2015; 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 persuasion, we provide a brief discussion of attitude structure because it is important for understanding some of the consequences of attitude change described throughout this chapter (for a more extended discussion of attitude structure, see Fabrigar & Wegener, 2010).

Attitude Structure: How Attitudes Are Represented in Memory

Some theorists have argued that all attitudes are constructed anew each time an evaluation is needed (e.g., Schwarz, 2007). One well-developed example of this approach is the associative propositional evaluation (APE) model (Gawronski & Bodenhausen, 2006, 2007). This theory holds that people respond positively or negatively to attitude objects based on the affect (feelings) or the propositions that come to mind when confronted with the object. These reactions are then evaluated for their validity by examining whether the reactions are consistent with other knowledge. In this model, global attitudes need not be stored in memory but only affect and beliefs associated with objects that serve as input to an expressed attitude.

Although some models do not rely on stored attitudes, most scholars in the field believe that many attitudes are represented in some form in memory (Eagly & Chaiken, 1993; Fazio, 2007; Petty & Cacioppo, 1981). An attitude strength approach (Petty & Krosnick, 1995) helps to resolve the dichotomy between a purely constructivist perspective and a stored representation view by proposing that it is mostly strong attitudes (e.g., those that are highly accessible, held with high certainty) that are stored in memory and come to mind spontaneously when the attitude object is encountered. In contrast, some attitudes may exist in a weaker form (e.g., low in accessibility or certainty) and require some (or a complete) online construction process (Nayakankuppam, Priester, Kwon, Donovan, & Petty, 2018).

There has been much speculation about how attitudes that are stored in memory are structured. Perhaps the most basic approach for understanding the structure of attitudes is represented by the motivation and opportunity as determinants of attitude to behavior processes (MODE) model. This theory holds that attitude objects are linked in memory to an overall evaluation (e.g., candy—good; see Fazio, Towles-Schwen, 1999). The MODE model is the most well-known example of what has been called the *single attitude* approach because people are presumed to hold just one true attitude in memory toward any given object (Petty et al., 2007). However, retrieval of this evaluation can vary in its speed (accessibility) and what is reported on an explicit measure can be modified by what a person considers after their initial evaluation is activated. The MODE model holds that a person's attitude can guide behavior either spontaneously, without conscious reflection, when motivation and opportunity to think are low, or more deliberately when a person is motivated and able to carefully consider their attitudes toward all behavioral options and then decide upon a behavioral plan (cf. Ajzen & Fishbein, 2005).

A second approach, called a *dual attitudes* perspective, assumes that people can hold separate deliberative and automatic attitudes in memory that can take on different values (e.g., Wilson, Lindsey, & Schooler, 2000). Although there are several versions of the dual attitudes perspective, in the most extreme renditions it is assumed that the two attitudes have separate representations and may be stored in different areas of the brain (e.g., DeCoster, Banner, Smith, & Semin, 2006). It is also sometimes assumed that the different attitudes stem from different psychological processes, with automatic attitudes deriving

from simple associative processes such as classical conditioning and deliberative attitudes deriving from propositional reasoning (e.g., Rydell, McConnell, Mackie, & Strain, 2006). Finally, automatic attitudes are typically assumed to govern automatic behavior whereas deliberative attitudes are assumed to guide deliberative behavior (e.g., Dovidio, Kawakami, Johnson, & Howard, 1997).

A third view draws on features of each of the prior approaches and is called the *meta-cognitive model* (MCM) of attitude structure (Petty & Briñol, 2006a; Petty et al., 2007). In contrast to *primary cognition*, which refers to people's initial thoughts about an object (e.g., "Candy is sweet"), *meta-cognition* refers to people's thoughts about their thoughts (e.g., "I am sure that candy is sweet"; Jost, Kruglanski, & Nelson, 1988). The MCM holds that 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 linked to both positivity and negativity separately (see also Cacioppo, Gardner, & Berntsen, 1997). Furthermore, the MCM assumes that people can have meta-cognitive validity tags for these evaluations that indicate whether they believe the evaluation is relatively valid or invalid. Thus, in contrast to the exclusively online validation process in the APE, in the MCM, people can store and later retrieve the perceived validity of their positive and/or negative reactions to an object. For many attitude objects, one evaluation is dominant and is seen as valid (the default; see Gilbert, 1991). In such cases, the MCM is similar to the MODE (Fazio et al., 1986).

The MCM postulates that evaluative associations in memory (positive or negative) only determine explicit attitude measures to the extent that people endorse them or perceive them as valid. On the other hand, evaluative associations whether endorsed or not can affect automatic 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 they are automatically activated (Maddux, Barden, Brewer, & Petty, 2005). One of the more interesting and useful aspects of the MCM is that it points to a difference between explicit versus implicit attitudinal ambivalence. Specifically, *explicit ambivalence* occurs when people have an attitude object linked in memory to both positivity and negativity and they further believe that both of these reactions are valid (e.g., "Candy tastes good, but it is also bad for you"). In *implicit ambivalence*, however, a person also has an attitude object linked to both positivity and negativity in memory, but one of these reactions is tagged as invalid. This person does not report being ambivalent because the person does not consider both reactions to be valid. A person's evaluative reaction to an attitude object might be seen as invalid for a number of reasons including that (a) the person believes the reaction is a mere cultural association (e.g., from the media) and does not represent what he or she truly believes (e.g., "I have a negative reaction to Hispanics because they are portrayed as criminals on TV, but I know that is not true") and (b) the reaction represents a prior attitude (e.g., "I used to like cigarettes, but now I no longer do"; Petty, Tormala, Briñol, & Jarvis, 2006; see also Wilson et al., 2000).

When people endorse both positive and negative reactions to an attitude object, they report feeling conflicted, confused, and mixed about the object (e.g., Priester & Petty, 1996; Thompson, Zanna, & Griffin, 1995). This conflict is especially apparent when people are about to make an attitude-relevant decision (van Harreveld et al., 2009). Other causes of explicit feelings of ambivalence include holding attitudes that differ from one's friends (Priester & Petty, 2001) and having attitudes that are different from those one wants to have (e.g., wanting to be less positive about ice cream; DeMarree, Wheeler, Briñol, & Petty, 2014). In contrast, in cases of implicit ambivalence, the person does not report being conflicted or mixed about the object, but he or she can nevertheless feel generally uncomfortable when considering the object because unendorsed gut feelings conflict with endorsed evaluations (see Epstein, 2003; Petty & Briñol, 2009; Rydell, McConnell, & Mackie, 2008). Both explicit and implicit ambivalence can lead to enhanced information processing about the attitude object (Briñol et al., 2006; Johnson, Petty, Briñol, & See, 2017; Maio, Bell, & Esses, 1996).

Part II: Processes of Persuasion

Traditional Psychological Approaches

We now turn to some of the classic approaches to understanding attitude change. The earliest studies were guided by relatively simple questions such as: 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 (e.g., positive feelings became classically conditioned to the target; for discussion, see Petty, 1997). As data accumulated, however, researchers began to recognize that any one variable did not always have the same effect on 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 and produce divergent outcomes (for an historical overview, see Petty & Briñol, 2008). Before turning to these more contemporary theories, we briefly review some approaches that highlight a single mechanism of influence.

Message Learning and Reception Approaches

A prominent early approach to persuasion 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. 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 often be easier to persuade than people at the extremes because moderate intelligence maximizes the impact of reception and yielding on persuasion (for evidence and a review, see Rhodes & Wood, 1992).

One enduring contribution of the learning approach was identification of a *sleeper effect* in persuasion (i.e., when an initially ineffective source of low credibility becomes more effective over time; Hovland & Weiss, 1951; Kelman & Hovland, 1953). This unusual effect was later shown to be most likely to occur when the low credible source followed presentation of a strong message (Pratkanis et al., 1988), and the initial message was processed carefully (Priester, Wegener, Petty, & Fabrigar, 1999). Under these conditions, the message is initially discounted because of the low credible source, but because of the high processing of the message, it recovers once the source is forgotten (for a review, see Kumkale & Albarracín, 2004).

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) proposed that persuasion depended on the thoughts people generated to messages rather than learning the message per se. Thus, appeals that elicited primarily favorable thoughts toward a particular recommendation (e.g., "If that new laundry detergent makes my clothes smell fresh, I'll be more popular") produced more persuasion than appeals that elicited mostly unfavorable thoughts toward the recommendation—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, individuals who actively generated arguments through playing a role (e.g., convincing a friend to quit smoking) were more turned off to cigarettes than those who passively received the same information (Elms, 1966; see also Greenwald & Albert, 1968; Janis & King, 1954; Watts, 1967). Although most work on self-persuasion focused on incidental persuasion when one attempted to persuade another person, more recent work has compared the effectiveness of intended self-persuasion versus other persuasion. In general, the outcome appears to depend on whether the topic is pro- or counterattitudinal. For a counterattitudinal issue, people are more effective in convincing themselves when they rather than a friend are the presumed target of the message, but the opposite occurs when the topic is proattitudinal (Briñol, McCaslin, & Petty, 2012). The explanation is that people work harder at the persuasion task when they try to convince themselves of a counterattitudinal position, but when it is proattitudinal, they work harder at convincing others than themselves.

People can also 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; Sherman, Cialdini, Schwartzman, & Reynolds, 1985). Similarly, Tesser and his colleagues showed that merely asking people to think about an attitude object 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-Cognitive Approaches

The self-persuasion approaches focus on the (primary) thoughts individuals have about the attitude object. Recent research suggests that people can also have thoughts about their thoughts (i.e., *meta-cognitions*; Petty, Briñol, Tormala, & Wegener, 2007). One feature of thoughts that has proven to be useful is the perceived validity of those thoughts, or 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, the reverse occurred.

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 et al. (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 must have played a role. Schwarz et al. 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 et al. (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, Falces, Briñol, & Petty, 2007; Tormala, Petty, & Briñol, 2002).

To date, numerous studies have appeared showing that not only feelings of ease (for reviews, see Schwarz, 1998, 2004), but many other variables can influence attitudes by affecting thought confidence. For example, if people feel happy following a message it can increase confidence in one's thoughts to a message thereby making people rely more on their thoughts, whether positive or negative (Briñol, Petty, & Barden, 2007). Simply writing one's thoughts on a piece of paper and placing that paper in one's pocket (to protect it) can lead to more use of those thoughts than throwing the paper in the trash (Briñol, Gascó, Petty, & Horcajo, 2013). Thought confidence also plays a role in the mere thought polarization effect mentioned earlier. With more time to think (up to a point) people not only generate more attitude consistent thoughts, but they also become more confident in them (Clarkson, Tormala, & Leone, 2011). Although as a single process, self-validation can account for the results of numerous studies (for a review, see Briñol & Petty, 2009a), as we explain shortly, multiprocess theories of persuasion specify the conditions under which this process of thought validation is mostly likely to occur.

Motivational Approaches

The previous approaches tend to treat each attitude object as associated with salient information that people either add up (Fishbein & Ajzen, 1981) or average (Anderson, 1981), either deliberately or automatically (see Betsch, Plessner, & Schallies, 2004), to arrive at their attitudes (sometimes weighting their mental content by its perceived validity). 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 bias people toward a particular conclusion rather than objectively weighing all possibilities (Kruglanski & Webster, 1996).

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 (*reactance* motive; Brehm, 1966; Wicklund, 1974) or to belong to a group (for a discussion, see Briñol & Petty, 2005). When particular motives bias thinking (sometimes called *motivated reasoning*; Kunda, 1990), people actively try to generate favorable or unfavorable thoughts consistent with their desired conclusion. 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

simply makes positive thoughts more accessible in memory (Forgas, 1995; Petty, Schumann, Richman, & Strathman, 1993).

The Elaboration Likelihood Model (ELM) of Persuasion

To organize and understand the fundamental processes underlying persuasion, we rely on a key notion of the ELM (Petty & Cacioppo, 1986). This theory holds that the core processes of persuasion fall along an elaboration continuum. That is, sometimes attitudes are changed by relatively low thought mechanisms (e.g., as in mere association of emotion to an object), but at other times considerable thinking is involved (e.g., such as when people generate their own arguments). Furthermore, sometimes the thinking is relatively objective, and sometimes it is biased by various motives or abilities that are present.

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* (the high end of the elaboration continuum) whereas low thought persuasion was said to follow the *peripheral route* (the low end of the elaboration continuum). 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 reactions to variables in the persuasion setting serving as simple cues such as the attractiveness of the message source (for reviews, see Petty & Briñol, 2012; Petty & Wegener, 1998a).

The ELM is an early example of what became an explosion of dual process and dual system theories that distinguished thoughtful (deliberative) from nonthoughtful (gut, experiential, snap) judgments (Petty & Briñol, 2006b; for reviews, see Chaiken & Trope, 1999; Sherman, Gawronski, & Trope, 2014). According to the ELM, the extent of thinking is important not only because it can determine the process by which a variable affects attitudes but also because more thoughtful persuasion is postulated to be more consequential than is persuasion produced by lower thought processes (Petty et al., 1995).

In the next section, we review each of the five roles that variables can serve in producing persuasion according to the ELM. Variables in persuasion settings can be part of the communication source (e.g., credibility), the message itself (e.g., complexity), or the recipient of influence (e.g., one's mood). In the ELM, these variables can affect (a) the amount of thinking that takes place, (b) the direction (favorable or unfavorable) of the thinking, (c) the structural properties of the thoughts generated (e.g., thought confidence), or can serve as (d) persuasive arguments for the merits of a proposal, or (e) as simple cues to the desirability of the proposal. We rely on the ELM primarily because it has guided numerous studies in persuasion, and it is comprehensive in outlining the multiple processes by which variables can impact attitudes depending on a person's extent of thinking.

Variables Can Affect the Amount of Thinking

One of the most important and fundamental ways in which variables can influence attitudes is by affecting the amount of thinking in which people engage when making an evaluation. This effect is most likely to occur when thinking is not already constrained to be high or low by other variables.

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

involvement in the issue and processing of related messages (Blankenship & Wegener, 2008; Fleming & Petty, 2000; Petty & Cacioppo, 1990). In one of the earliest demonstrations, Petty and Cacioppo (1979b) 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 the participants' own university (high relevance) or for a distant university (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. When the arguments were strong, increasing relevance led to more persuasion, but when the arguments were weak, increasing relevance led to less persuasion.

Beyond perceived *personal relevance*, variables that increase motivation to think include making people individually accountable for message evaluation (Petty, Harkins, & Williams, 1980), summarizing the key arguments as *questions* rather than as *assertions* (Petty, Cacioppo, & Heesacker, 1981), introducing interruptions to the message (Kupor & Tormala, 2015), and having the message presented by multiple people rather than just one (Harkins & Petty, 1981). In addition, any combination of variables that produces a sense of surprise, uncertainty, or incongruity also tends to increase information processing such as when the message source has both positive and negative traits (e.g., is likable but not expert or expert but not likable; Ziegler, Diehl, & Ruther, 2002) or when an expert source expresses uncertainty or a nonexpert expresses certainty (Karmarkar & Tormala, 2010; see also Smith & Petty, 1996). In each case, motivating more thinking led attitudes to be more affected by the quality of the arguments in the message (for a review of many motivational variables that interact with argument quality to influence attitudes, see Carpenter, 2015).

In addition to these situational factors, 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* whereas the latter are low in this trait (Cacioppo & Petty, 1982). Individuals high in need for cognition tend to form attitudes on the basis of an effortful analysis of relevant object-relevant information, whereas people low in need for cognition tend to be more reliant on simple cues. However, this pattern can be reversed in some circumstances such as when people think the message will be very easy to process and thus unchallenging for those high in need for cognition (See, Petty, & Evans, 2009; for a review, see Petty, Briñol, Loersch, & McCaslin, 2009).

One interesting discovery is that the impact of some variables on the motivation to think changes when the message advocacy becomes proattitudinal rather than counterattitudinal. For example, Baker and Petty (1994) found that endorsement from a small minority rather than a majority led to more message processing when a message took a proattitudinal position but majority endorsement led to more processing than minority endorsement when the message was counterattitudinal. As another example, when a message is proattitudinal, people with ambivalent attitudes tend to process it more than people who are univalent, whereas the opposite is the case when the message is counterattitudinal (Clark, Wegener, & Fabrigar, 2008b). Similarly, when a message is proattitudinal, people whose attitudes are low in accessibility tend to process it more than those whose attitudes are high in accessibility, whereas the opposite is the case when the message is counterattitudinal (Clark, Wegener, & Fabrigar, 2008a).

Integrating these seemingly diverse findings, the *discrepancy-motives model* (Clark & Wegener, 2013) holds that a proattitudinal message serves recipients' goals to bolster their current views and this bolstering is more necessary when one's attitudes are weak (e.g., ambivalent, inaccessible) or there is little other support for one's view (e.g., endorsed by a minority rather than a majority). In contrast, a counterattitudinal message threatens one's attitude, and people respond with attempts to defend against this threat more when one's attitudes are strong (e.g., univalent, accessible) and when there is a lot rather than a little support for the contrary view (e.g., endorsed by a majority rather than a minority).

Ability to think. Having the necessary motivation to process a message is not sufficient for high levels of processing. People must also be able to think. 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 instance, as general working knowledge about a topic increases, people become more able to think about issue-relevant information (Wood, Rhodes, & Biek, 1995).

Variables Can Affect the Direction of Thinking

A second mechanism by which variables can influence attitudes is by affecting not the amount, but the valence (favorability) of the thinking. This mechanism is most likely when thinking is already set to be high by other situational and dispositional variables. In such cases, the cogency of the information presented will be an important determinant of the valence of the thoughts generated (with greater cogency leading to more favorable thoughts). However, thoughts can 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 in response to the message 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, 1979a). In general, biasing influences tend to be more impactful when the message itself is somewhat ambiguous in its quality and thus more open to biased interpretation (Chaiken & Maheswaran, 1994).

Any time a message contradicts an existing attitude, people are likely to be biased against it. And when a message supports one's attitude, people likely will be biased in favor of it. Similarly, if a message is perceived as counter to one's outcomes, values, or identities, people will be biased against it, but if it is perceived to be supportive, people will be biased in favor of it (Petty, Cacioppo, & Haugtvedt, 1992). As noted earlier, when a message is framed as simply relevant to the self, the *amount* of information processing is affected. 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).

Individual differences can also motivate or enable people to either increase the likelihood of generating favorable thoughts or unfavorable thoughts. For example, optimists are more likely to generate favorable thoughts to a message whereas pessimists are more likely to do the opposite (Geers, Handley, & McLarney, 2003; Geers, Wellman, & Fowler, 2013). The distinction between amount and direction of thinking suggests that some individual differences are more likely to be associated with enhancing relatively objective (undirected) thinking whereas others are more likely to enhance biased (directed) thinking. For example, with respect to motives, the need to know is likely to be associated with extensive and largely objective elaboration since the motive to understand is relatively independent of the content. In contrast, the need for self-worth could focus information processing activity in a particular direction if one side or the other reflected more favorably on the self.

Motivational biases. As noted earlier, the most studied biasing motive in the persuasion literature is the need to maintain cognitive consistency (e.g., Heider, 1958; Kiesler, 1971; Rosenberg, 1960), and the most prominent consistency theory is the theory of *cognitive dissonance*. In Festinger's (1957) original formulation of dissonance theory, two elements in a cognitive system (e.g., a belief and an attitude; an attitude and a behavior) are consonant if one follows 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 implies 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 interesting dissonance situation occurs when a person's behavior contradicts his or her attitudes. For example, one common laboratory procedure for producing dissonance is inducing a person to write an attitude-inconsistent essay 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 attitudes to be consistent with the behavior. Dissonance can result in a reanalysis of the reasons why a person engaged in a particular behavior 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 (Cooper, 2007).

In perhaps the most famous dissonance experiment, undergraduates were induced to engage in a boring task (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 task was actually quite interesting. 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. After talking to the waiting student, all participants completed an ostensibly 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 predicted from dissonance theory 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 by convincing themselves that the task was interesting.

The focus of subsequent dissonance research has been on understanding the precise cause of the tension that sometimes accompanies counterattitudinal action. Various theorists have questioned that inconsistency per se produces tension in people or that inconsistency reduction is the motive behind attitude change. For example, the *new look approach* argues that dissonance requires that people believe that they have freely chosen to bring about some foreseeable and unwanted negative consequence for themselves or others (e.g., Cooper & Fazio, 1984; Scher & Cooper, 1989). The *action-based model* (Harmon-Jones & Harmon-Jones, 2008; Harmon-Jones & Mills, 1999) contends that discomfort results from inconsistent beliefs especially when the conflict has the potential to immobilize people and prevent action. For example, if an attitude object had both positive and negative qualities, either choosing it or rejecting it could cause dissonance. Thus, focusing on either the positive or negative features (making one's attitude more positive or negative) would lead to a more clear choice and thus reduce the discomfort (see also van Harreveld, van der Pligt, & De Liver, 2009).

Still other theorists argue that the inconsistency must involve a critical aspect of the self or a threat to one's positive self-concept for dissonance to occur (e.g., Aronson, 1968; Greenwald & Ronis, 1978; Steele, 1988; Tesser, 1988). Of course, bringing about negative consequences for others 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).

In fact, bolstering the esteem of the persuasion target can serve as a general avenue to undermine resistance to persuasion (Knowles & Linn, 2004). That is, one proposed method of decreasing a person's resistance to attitude 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 (e.g., thinking about one's cherished values) 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).

Although different conceptual approaches to dissonance phenomena have emerged in contemporary research, there have been attempts to integrate these varying perspectives. Most notably, the *self-standards model* (Stone & Cooper, 2001, 2003) postulates that when inconsistent behavior is judged against a personal standard (i.e., one's own idiosyncratic expectancies for behavior), self-driven processes (e.g., Aronson, 1968; Steele, 1988) are responsible for dissonance effects. However, when behavior is judged against a normative standard (i.e., the expectancies of most people in a given culture), the self is not implicated in dissonance effects, and dissonance is instead caused by perceptions of the negative consequences of one's behavior (Cooper & Fazio, 1984).

Ability biases. Although most studies of bias in persuasion explore motivational processes, 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).

Variables Can Affect Meta-Cognitive Processes

A third way in which variables can influence attitudes is via meta-cognitive processes. This occurs when variables affect what people think about their own thoughts. That is, in addition to affecting the number of thoughts (amount of thinking) and the valence of the thoughts (whether they are positive or negative), variables can also affect meta-cognitive features of the thoughts such as how much confidence people have in them, how much they like them, or how desirable and biasing they are perceived to be.

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 that is part of their *theory of reasoned action*, 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. Thus, messages are effective to the extent that they produce changes in either the likelihood or the desirability component of a consequence that is linked to the attitude object (e.g., making smelling fresh seem more desirable and/or likely; Johnson, Smith-McLallen, Killea, & Levin, 2004).

Emotions have been shown to affect the perceived likelihood of the outcomes in a persuasive message. For example, DeSteno, Petty, Rucker, Wegener, and Braverman (2004) induced sadness or anger in participants before exposing them to arguments that articulated the sad or angering consequences for failure to enact a policy. When the emotion was matched to the type of argument, persuasion was higher than when it was not. Importantly, these effects were mediated by the perceived likelihoods that the angering and sad events included in the message would happen (e.g., when angry, participants saw the angering but not the sad events as more likely to occur, but when sad, the opposite was true). When the events were seen as more likely to occur, they led to more persuasion (for additional examples, see Petty & Briñol, 2015; Petty, Fabrigar, & Wegener, 2003).

The self-validation hypothesis. Whatever the likelihood or desirability of a given consequence, the thoughts themselves can vary in the confidence with which they are held (i.e., the extent to which the thought is seen as valid). Confidence in thoughts is important because the greater the confidence in a given thought, the more likely it will be used in forming judgments. The notion that thought confidence determines thought usage is referred to as the *self-validation hypothesis* (Petty, Briñol, & Tormala, 2002).

As described earlier in our discussion of meta-cognitive approaches to persuasion, many variables have been shown to affect perceptions of thought validity and thereby influence attitudes (see Briñol & Petty, 2009a). In general, variables that enhance confidence after thought generation (e.g., feelings of power) produce greater reliance on thoughts such that when thoughts are primarily positive, these variables are associated with more persuasion, but when thoughts are primarily negative, variables increasing confidence are associated with less persuasion.

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 (e.g., Briñol, Petty, & Barden, 2007). If people have doubt in their thoughts because they fear that their thoughts stemmed from some source of bias (e.g., an attractive source), they could attempt to correct for their biased thoughts in a manner specified by the *flexible correction model* (FCM; for a review, see Wegener & Petty, 1997). According to the FCM, people estimate the magnitude and direction of the perceived biasing effect on their judgment and attempt to adjust for this bias. If 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).

Variables Can Be Evaluated as Persuasive Arguments

Another way that variables can affect attitudes is by serving as persuasive arguments for a proposal. When thinking is high, people assess the relevance of *all* of the information in the context and that comes to mind to determine the merits of the attitude object under consideration. That is, people examine source, message, recipient, and contextual information as possible arguments or reasons for favoring or disfavoring the attitude object. Here, the same variable (e.g., one's mood) that served in other roles in other circumstances (e.g., biasing thinking when motivation and ability to think are high) can itself be scrutinized as to whether it provides a meaningful reason for adopting the advocated position. For example, whereas an attractive source might affect the amount of thinking about a message when thinking is unconstrained by other variables (e.g., people might be interested in what an attractive person has to say), under high elaboration conditions, people scrutinize whether the attractiveness of the source is relevant to the advocacy and provides evidence for it.

Thus, under high thinking conditions, an attractive source will exert little impact as an argument when people view the attractiveness as irrelevant to the merits of the advocacy. However, when attractiveness is relevant (e.g., the source is advertising a beauty product), then physically attractive sources could be more persuasive than unattractive sources by serving as a cogent argument (i.e., providing visual evidence; Kruglanski et al., 2005; Miniard, Bhatla, Lord, Dickson, & Unnava, 1991; Petty & Cacioppo, 1984b). Importantly, individuals can vary in what type of information is viewed as relevant persuasive evidence. For example, attractiveness is more likely to serve as a relevant argument for individuals high in self-monitoring than those low in this trait because the former individuals care more about image than the latter (DeBono & Harnish, 1988).

Variables Can Operate as Simple Cues

The final role for variables is the most basic—serving as a simple cue. When variables serve as cues, they influence attitudes in accord with their valence. For example, under low thinking conditions or for people

who don't like to think, source attractiveness is likely to increase persuasion regardless of its relevance to the advocacy because people are not carefully assessing all information for its merits (i.e., source attractiveness would work as well in an advertisement for a bank as a beauty product; Haugtvedt, Petty, & Cacioppo, 1992). Thus, attitude change does not always require effortful evaluation of the information presented. Next, we briefly describe some specific attitude change processes that involve relatively little (if any) effortful thinking.

Attribution theory. According to *self-perception theory* (Bem, 1965), people have no special knowledge of their own internal states. Instead, 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). However, research indicates that both dissonance and self-perception processes can operate, but in different domains. In particular, dissonance processes operate 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. For example, if someone paid you to eat your favorite food, you might reason that you are only eating it for the money, and liking for the food would decrease (e.g., Lepper, Greene, & Nisbett, 1973; also see Deci, 1995).

Use of persuasion heuristics. The term *heuristics* refers to simple rules or shortcuts used to simplify decision-making (Shah & Oppenheimer, 2008). A number of simple heuristics that can be processed very quickly have featured prominently in the literature on social influence (Cialdini, 2008). That is, under low thinking conditions, appeals tend to be more effective when they are merely associated with scarcity, authoritative or likable sources, and consensus from others (see also Chapter 7).

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 one's 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 mere number of arguments it contains by invoking the heuristic "The more arguments, the better" (Petty & Cacioppo, 1984a; Wood, Kallgren, & Preisler, 1985). Generally, the HSM makes predictions that are similar to the ELM, though the language and specific mechanisms of each theory are a bit different (for further discussion, see Eagly & Chaiken, 1993; Petty & Briñol, 2012; Petty & Wegener, 1998).

Conditioning processes. The attribution and heuristic models focus on simple cognitive inferences that can modify attitudes. Other approaches, such as *classical conditioning*, emphasize the role of relatively simple association processes. 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. Thus, pairing an unfamiliar shape with electric shock many times will cause you to dislike that shape. Over the past several decades, a wide variety of conditioning stimuli have been used to create positive or negative attitudes (e.g., see Gouaux, 1971; Staats, Staats, & Crawford, 1962; Stuart, Shimp, & Engle, 1987). People are especially

susceptible to conditioning effects when the likelihood of thinking is rather low (Cacioppo, Marshall-Goodell, Tassinari, & Petty, 1992; see also Shimp, Stuart, & Engle, 1991).

Theorists have suggested that classical conditioning applied to attitudes might 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 pairing of the CS and UCS so that the UCS comes to signal the appearance of the CS. In evaluative conditioning, contingency awareness is not necessary, though it can aid conditioning (e.g., Schmidt & de Houwer, 2012). Perhaps because contingency awareness is not necessary, evaluative conditioning is somewhat resistant to extinction when the UCS is no longer presented, unlike classical conditioning (for a review, see Hofmann, De Houwer, Perugini, Baeyens, & Crombez, 2010).

If the mechanism of attitude change is not classical conditioning, then what is it? Jones, Fazio, and Olson (2009) suggested 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 and CS were presented simultaneously over many trials, Jones et al. (2009) showed that the easier it was to confuse the source of one's feelings, 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 self-perception and heuristic inferences.

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). Mere exposure effects have been found even when the stimuli could not be consciously recognized (e.g., Kunst-Wilson & Zajonc, 1980). 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 the mere exposure effect relies on the notion of *perceptual fluency*. Repeated exposure to stimuli can make those stimuli easier to process, and 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 (Bornstein, 1989). When the repeated stimuli already have some dominant meaning, repeated exposure can accentuate that dominant response (Brickman, Redfield, Harrison, & Crandall, 1972; see also Cacioppo & Petty, 1989; Grush, 1976). One explanation for these polarization effects is that people's positive assessments of positive information might seem more valid or plausible as exposure increases, as do their negative assessments of negative information (Kruglanski, Freund, & Bar-Tal, 1996).

Attitude change on implicit measures of attitudes. Although the research just described on simple (relatively low thought) mechanisms of attitude change has assessed change using explicit attitude measures, these same mechanisms are capable of affecting implicit measures of attitudes. For example, 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 area in which researchers have examined changes on implicit measures from seemingly simple processes the most is in the domain of prejudice (see Chapter 12). For example, automatic evaluations of Blacks have been shown to be affected by exposure to various exemplars of admired Black individuals (e.g., Dasgupta & Greenwald, 2001; Dasgupta & Rivera, 2008; Rudman, Ashmore, & Gary,

2001; for a review, see Gawronski & Payne, 2010). In general, research suggests that automatic measures of attitudes can be affected by relatively low thought attitude change processes. In fact, implicit measures of attitudes have sometimes been assumed to change only (cf. Smith & DeCoster, 1999) or to a greater extent (Gawronski, Strack, & Bodenhausen, 2009; Rydell & McConnell, 2006) as a result of low rather than high thought processes.

However, other work contradicts the general idea that automatic attitude measures respond mostly to simple persuasion techniques via relatively low thinking processes. For example, recent research has shown that automatic evaluations can be affected by thoughtful processing of persuasive messages, advertisements, marketing campaigns, and other treatments involving effortful processing of verbal information (e.g., Horcajo, Briñol, & Petty, 2010; Mann & Ferguson, 2015, 2017; Smith & de Houwer, 2014; Wyer, 2010, 2016; for reviews, see Gawronski & Bodenhausen, 2006; Gawronski & Sritharan, 2010; Maio, Haddock, Watt, & Hewstone, 2009; Petty & Briñol, 2010). Thus, the most accurate conclusion is that, like explicit measures, implicit measures can be affected by both automatic and deliberative processes.

A final point worth mentioning is that research has shown that changes on implicit measures of attitudes are sometimes related to change on explicit measures, but sometimes they are independent of each other (e.g., Gregg, Seibt, & Banaji, 2006; Petty et al., 2006). In general, deliberative measures are more likely to correspond with automatic measures when participants complete the automatic measures after being told to "trust their intuition" (Jordan, Whitfield, & Ziegler-Hill, 2007) or "go with their gut" before responding (Ranganath, Smith, & Nosek, 2008). Such instructions apparently free participants to report evaluative stirrings of which they are aware but may not report spontaneously due to uncertainty regarding their origins or appropriateness (Loersch, McCaslin, & Petty, 2011).

Part III: The Impact of Key Variables in Persuasion

In addition to specifying the general mechanisms of persuasion, the ELM postulates that any communication variable (i.e., whether part of the source, message, or recipient) can influence attitudes via one or more of the key processes just outlined. Because the number of documented persuasion variables is vast, our review of variables is meant to be illustrative of how understanding the basic mechanisms of persuasion can be useful for analyzing any possible variable of interest, even if it has never been studied previously.

Source Factors

From the earliest days of persuasion research, scholars have divided the variables central to persuasion into aspects of the *source* of the persuasive proposal, the *message* that the source provides, and the *recipient* of the communication (cf. Hovland, Janis, & Kelley, 1953). Source factors refer to aspects of the person or group that is delivering the message. Commonly studied source factors include credibility (e.g., having extensive knowledge, expertise, and/or honesty), attractiveness (e.g., physical attractiveness of a source, perceived similarity, and general likability), whether the advocacy comes from a person in a numerical majority or minority, and whether the source has power—real or perceived—over the message recipient. Other source factors frequently studied in persuasion include race and gender and even whether or not the self is a source (Briñol, McCaslin, & Petty, 2012; Maio & Thomas, 2007).

When the likelihood of thinking about the advocacy is low (e.g., low personal relevance topic, high distraction), source factors influence attitudes by serving as simple peripheral cues, affecting implicit (Forehand & Perkins, 2005; McConnell, Rydell, Strain, & Mackie, 2008) as well as explicit attitudes

(Chaiken, 1980; Petty, Cacioppo, & Goldman, 1981) in the same direction as their valence. That is, any positive features of the source (e.g., higher credibility) tend to produce more persuasion. Some research suggests that this simple cue effect of sources is especially likely when people do not already have an attitude on the issue (Kumkale, Albarracín, & Seignourel, 2010).

When the likelihood of thinking is very high (e.g., high personal relevance, low distraction), source factors function in other roles. For example, as previously discussed, if a source factor is relevant to the merits of a proposal, 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). Also, under high thinking conditions sources can bias information processing. Chaiken and Maheswaran (1994) found that when recipients under high thinking conditions received a message of ambiguous quality, expert sources led to more favorable thoughts about the message and thus more favorable attitudes than low expertise sources. This did not occur when the arguments were clearly strong or weak. Under high elaboration conditions, source factors can also influence persuasion by affecting the confidence people have in the validity of their thoughts. 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 can affect how much thinking people do (e.g., 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 came 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). As also noted earlier, incongruent message sources (e.g., attractive but not credible) tend to enhance information processing (Ziegler et al., 2002; for a review of source factors, see Briñol & Petty, 2009b).

Message Factors

Message factors involve any aspect of the persuasive communication itself. For example, does the message present strong or weak arguments (Petty, Wells, & Brock, 1976) or does it emphasize primarily affect or cognition (Haddock et al., 2008)? Other message features that have been studied include its perceived complexity (See, Petty, & Evans, 2009), abstractness (Fujita, Eyal, Chaiken, Trope, & Liberman, 2008), use of imagery (Petrova & Cialdini, 2008), whether it relies on anecdotes and stories versus facts (Green & Brock, 2004), presents one or both sides of the issue (Rucker, Petty, & Briñol, 2008), (mis)matches the recipients' characteristics in some way (Petty & Wegener, 1998), argues in favor of or against the recipient's own view (Clark & Wegener, 2013), and many others.

As was the case with source factors, message variables can also affect attitudes via different processes in different situations. Consider the number of arguments that a message contains. This variable serves as a simple cue when people are unmotivated or unable to think about the information (Petty & Cacioppo, 1984a). People can simply count the arguments in a message and agree with it more as more information is presented, regardless of the cogency of that information. When processing is high, however, the informational items in a message are not simply counted, but instead processed for their quality. Thus, under low thinking conditions, adding weak reasons in support of a position enhances persuasion, but when the items in a message are processed carefully, adding weak reasons reduces persuasion (Alba & Marmorstein, 1987; Friedrich, Fetherstonhaugh, Casey, & Gallagher, 1996; Petty & Cacioppo, 1984a). Additionally, the number of arguments has the potential to validate thoughts. Imagine if a person had already processed a message and generated either largely favorable or unfavorable thoughts. If the recipient subsequently

learns that there are many more arguments similar to the one's already processed, this would likely validate one's thoughts to the initial message producing a more polarized attitude.

Recipient Factors

Recipient factors refer to any aspect of the person. This includes chronic states such as one's level of intelligence (e.g., Rhodes & Wood, 1992) and one's personality such as indicated by scores on self-monitoring (e.g., Snyder & DeBono, 1985) or need for cognition (Cacioppo, Petty, & Morris, 1983) scales (for a detailed review of chronic individual differences in persuasion, see Briñol & Petty, 2018). Recipient factors also refer to more transitory states such as whether the recipient is feeling powerful or powerless at the moment (Briñol, Petty, Valle, Rucker, & Becerra, 2007) and whether the recipient is experiencing ease or difficulty in processing the message (Tormala et al., 2002).

One extensively studied recipient factor in persuasion concerns the incidental emotions the recipient is experiencing at the time of persuasion. Research has shown that emotions can serve in all of the roles for variables that we have summarized (see Petty & Briñol, 2015; Petty et al., 2003). That is, when thinking is constrained to be low, emotions tend to serve as simple associative cues and produce evaluations consistent with their valence via either conditioning or as input to a heuristic (e.g., "I feel good so I must like it"; Petty et al., 1993). When thinking is high, emotions can be evaluated as evidence. For example, 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). In addition, under high thinking, emotions can bias the ongoing thoughts such as when positive consequences seem more likely when people are in a happy than sad state (e.g., DeSteno et al., 2000). If an emotion is induced after thinking about the message, then emotions can affect confidence in thoughts. For example, people feel more confident in their thoughts and rely on them more if made to feel happy rather than sad following message processing (Briñol, Petty, & Barden, 2007).

Finally, when the likelihood of thinking is not constrained to be high or low, emotions can affect the extent of thinking. For example, people might think about messages more when in a sad than happy state because sadness signals a problem to be solved (Schwarz, Bless, & Bohner, 1991) or when the message conveys a sense of uncertainty (Tiedens & Linton, 2001) or invokes a motive to maintain one's happiness (Wegener & Petty, 1994). Other transitory recipient factors that similarly have been shown to serve in these multiple roles include feelings of power (Briñol, Petty, Durso, & Rucker, 2017) and one's bodily movements (Briñol, Petty, & Wagner, 2012).

Matching Variables

Although we have focused on source, message, and recipient factors taken in isolation, these variables are often considered jointly such as when the source of a message matches the recipient (e.g., a male source speaking to a male audience) or the message matches the recipient in some way (e.g., a message focusing on image presented to a high self-monitor). Such matches can affect persuasion by invoking the same core processes that we have already articulated for the variables in isolation. For example, when matching the gender of the source to the recipient or matching an image message to a high self-monitor enhances persuasion, it could be for one of the following reasons: The match serves as a simple acceptance cue (DeBono, 1987), it biases thinking in a positive way (Lavine & Snyder, 1996), it increases elaboration of the strong arguments (Petty & Wegener, 1998b), or it validates the positive thoughts people had to the message (Evans & Clark, 2012). Importantly, consideration of the multiple roles for matching also suggests that

matching can reduce persuasion such as when a match increases elaboration of weak arguments (Petty & Wegener, 1998b; Wheeler, Petty, & Bizer, 2005).

Part IV: Consequences of Attitude Change

Consequences of Different Persuasion Processes for Explicit Measures

We have already seen that knowing about the process by which a variable impacts attitudes can aid in prediction of whether that variable will enhance or undermine persuasion. We now focus on a second important benefit of understanding the underlying process of persuasion—whether or not the attitude change produced will be consequential. Sometimes a high and a low thought process can result in the same attitude. However, according to the ELM (Petty & Cacioppo, 1986), attitudes formed or changed through high thinking processes should be more persistent over time, resistant to change, and predictive of behavior than attitudes formed or 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 and their attitudes should become more accessible (Bizer & Krosnick, 2001). Furthermore, people should become more confident in their views (Barden & Petty, 2008). Each of these factors would increase the likelihood that attitudes would be consequential (for a review, see Petty et al., 1995).

Attitude Persistence and Resistance

When attitude changes are based on extensive issue-relevant thinking, they tend to *persist* (endure) over time. 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., Cárđaba, Briñol, Horcajo, & Petty, 2013; Haugtvedt & Petty, 1992; Wegener, Clark, & Petty, 2006).

Resistance refers to the extent to which an attitude is capable of surviving an attack from contrary information. Although 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 susceptible to influence when attacked because people have no practice in defending them. In his work on *inoculation theory*, McGuire demonstrated that two kinds of bolstering can be effective in facilitating resistance. One relies on providing individuals with a supportive defense of their attitudes (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). The separation of persistence and resistance also suggests that some low effort persuasion strategies such as classical conditioning might be effective in producing relatively persistent attitudes, but these attitudes would have difficulty surviving a substantive attack since they do not have a well elaborated informational basis.

Prediction of Behavior

Once an attitude has changed, behavior change requires that the new attitude rather than the old attitude or previous habits guide action (Petty, Gleicher, & Jarvis, 1993). 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 of which they are certain (e.g., Barden & Petty, 2008; Brown, 1974).

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) mentioned earlier highlights *social norms* (what others think you should do) as an important determinant of behavior in addition to one's own attitudes toward the behavior (which are determined by the perceived desirability and likelihood of consequences of the behavior). Building on this framework, the *theory of planned behavior* (Ajzen, 1991) points to a person's sense of self-efficacy or competence to perform the behavior in addition to one's personal attitudes and social norms (see Ajzen & Fishbein, 2005). Finally, prior behavioral *habits* also play an important role in current behavior as people tend to do what they have done in the past, and it is sometimes difficult for a new attitude to overcome this (Itzhakov, Uziel, & Wood, 2018; for a review, see Wood, 2017). Thus, it is 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 are formed by the central route.

Certainty as a Source of Attitude Strength

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 refers to a sense of validity concerning one's attitudes (Gross, Holtz, & Miller, 1995) and magnifies attitude effects (Petty et al., 2007). For example, when attitudes are consistent and largely univalent, increasing certainty in them enhances attitude stability and resistance to change, but if an attitude is mixed (ambivalent), increasing certainty is associated with less stability and resistance (Clarkson, Tormala, & Rucker, 2008; Luttrell, Petty, & Briñol, 2016). Coherent attitudes held with certainty also tend to be more predictive of behavior (Fazio & Zanna, 1978; for a review of attitude certainty, see Rucker, Tormala, Petty, & Briñol, 2014). Gross et al. (1995) suggest that it is useful to distinguish "true confidence" in one's attitude from "compensatory confidence." The former is based on the extent of one's knowledge or social support whereas the latter actually reflects an absence of confidence (for a discussion of compensatory attitude confidence, see Briñol, DeMarree, & Petty, 2009).

Initial conceptualizations of attitude certainty tended to assume that certainty sprang solely from structural features of attitudes such as how much knowledge or experience one has about the issue (e.g., Fazio & Zanna, 1981). However, people sometimes infer greater certainty in the absence of any structural differences (Petty, Tormala, & Rucker, 2004). Notably, people can even come to infer greater certainty in their attitudes if they merely believe that they have done much thinking about the attitude object even if they have not (Barden & Petty, 2008). And, 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).

Morality as a Source of Attitude Strength

Studies have suggested that having a moral basis to one's attitude is a strength indicator akin to having more knowledge, accessibility, or certainty. For example, Skitka, Morgan, and Sargis (2005) have shown

that moral conviction is associated with strength outcomes such as resistance to influence and attitude-behavior correspondence. Most of the literature has been oriented to answering why would having a moral basis for one's attitude be associated with making an attitude stronger? One possibility is that morally based attitudes are stronger because they are different in some fundamental way from nonmorally based attitudes (e.g., greater basis in affect). Some have suggested that morally based attitudes develop from stable, internal influences (Rozin, 1999) including being partially inherited (Brandt & Wetherell, 2011; Tesser, 1993). Additionally, moral attitudes could be more heavily based on ideology, rendering them more impactful (Skitka, Morgan, & Wisneski, 2015).

In contrast to the proposition that there must be some necessary substantive difference between morally and non-morally based attitudes, Luttrell, Petty, Briñol, and Wagner (2016) have suggested that the mere perception that attitudes have a moral basis is sufficient to render them more consequential. By manipulating perceived moral bases independent of actual bases, Luttrell et al. demonstrated that a perceived moral basis can serve as an attitude strength heuristic independent of actual differences in the basis of one's attitude. That is, leading people to believe their attitudes were based in morality rather than practicality through false feedback made the attitudes more resistant to change. This outcome contributes to an emerging body of work highlighting the importance of perceived attitude qualities irrespective of their objectively measured counterparts in producing durable and impactful attitudes (cf. Smith, Fabrigar, MacDougall, & Wiesensthal, 2008).

Consequences of Different Persuasion Processes for Implicit Measures

When considering the consequences of attitude change, it is important to note that just as high thinking can strengthen attitudes at the explicit level by increasing attitude confidence, high thinking can also enhance strength at the automatic level by making attitudes more accessible. Thoughtful attitude change processes are likely to result in attitude representations that are well integrated and connected to other relevant material in memory (e.g., McGuire, 1981; Tesser, 1978), enhancing access to the attitudes (Bizer & Krosnick, 2001).

Additionally, high thought attitudes should also be more likely to spill over and influence the attitude-relevant material to which they are linked in memory (e.g., Crano & Chen, 1998). For example, in one study (Horcajo et al., 2010), students were randomly assigned to receive a persuasive message containing strong arguments in favor of using green as the institutional color for their university. Control group participants received an irrelevant message (also containing the word "green," but not advocating it). Participants' need for cognition (Cacioppo & Petty, 1982; Petty et al., 2009) was measured to assess the participants' motivation to process the information carefully. Instead of assessing the impact of this persuasive induction directly on automatic evaluations of the color green, the impact of the treatment was assessed on an automatic measure that was for an attitude object only indirectly related to the color—the beer brand, *Heineken* (whose packaging prominently features the color green). The results showed that an implicit measure of attitudes toward Heineken (using the Implicit Association Test; Greenwald et al., 1998) was affected by the message advocating green but only for participants high in need for cognition.

It is plausible that the generation of thoughts allowed high need for cognition participants to rehearse their evaluative links to green repeatedly, leading to changes in evaluation of this color that spread to related constructs such as Heineken. In contrast, the automatic evaluations of participants low in need for cognition did not reveal any impact of the manipulation on evaluations of Heineken. This finding suggests that participants engaging in little elaboration did not think about the merits of the arguments in the message (i.e., did not generate thoughts that allowed them to rehearse their attitudes) and thus did not show indirect automatic changes. These findings indicate that automatic changes that result from deliberative

thinking can be consequential in terms of spreading activation, at least when thinking is high (for another example, see Ye & Gawronski, 2016).

Attitude Research 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 many of the classic topics of persuasion (e.g., source credibility, recipient emotion) and explain how any one variable can produce opposite outcomes and how the same outcome can be produced by different processes. Our review emphasized that understanding the underlying mechanisms of persuasion is important because different processes are associated with different consequences. In particular, greater thinking underlying persuasion tends to result in stronger, more consequential attitudes.

Attitude research remains a dynamic area of inquiry today. In addition to continued exploration of many of the classic topics we have covered here, there also is considerable work exploring various novel domains. One promising new area of inquiry that we have already mentioned briefly concerns the moral foundations of attitudes (e.g., Skitka et al., 2005; see also Chapter 13), with special attention focused on the different foundations of beliefs for individuals with liberal versus conservative ideologies (e.g., Feinberg & Willer, 2013; Haidt, 2012). A second exploding new area involves understanding how attitudes and persuasion are represented in the brain (Cacioppo, Cacioppo, & Petty, 2018; Falk & Scholz, 2018; Huskey, Mangus, Turner, & Weber, 2017; see also Chapter 13). There is now some intriguing initial evidence that activation in particular brain regions can foreshadow and predict long-term persuasive influence (e.g., Falk, Berkman, Mann, Harrison, & Lieberman, 2010; Vezich, Katzman, Ames, Falk, & Lieberman, 2017). Brain studies are also beginning to examine attitude strength constructs such as ambivalence and certainty (Luttrell, Briñol, Petty, Cunningham, & Diaz, 2013; Luttrell, Stillman, Hasinski, & Cunningham, 2016). Finally, the application of persuasion work is thriving in many applied areas (Albarracín & Johnson, 2019). These include marketing (e.g., Teeny et al., 2017), health communication (Jones & Albarracín, 2016; Sheeran et al., 2016), and educational interventions to help underrepresented individuals succeed and stay in school (e.g., Walton, Logel, Peach, Spencer, & Zanna, 2015). Thus, attitude research has long been and continues to be one of social psychology's most successful exports to the broader social science community.

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