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CHAPTER 12

The Elaboration Likelihood and Metacognitive Models of Attitudes

Implications for Prejudice, the Self, and Beyond

Richard E. Petty and Pablo Briñol

In this chapter we describe two models that are useful for understanding how attitudes are structured and how they change or resist change over time. We begin with a discussion of the elaboration likelihood model (ELM), a dual-route (but multiprocess) approach to persuasion, then describe the metacognitive model (MCM), which posits two fundamental processes involved in the underlying structure of attitudes. After briefly describing each approach, we discuss their interrelationship and conclude with applications of these approaches to understanding prejudice and self-evaluations.

THE ELM

The ELM (Petty & Cacioppo, 1981, 1986) is one of the earliest social psychological theories that distinguished thoughtful from nonthoughtful determinants of judgment (Chaiken & Trope, 1999; see Petty & Briñol, 2012, for a recent review). The ELM proposes that attitudes, as well as nonevaluative judgments, can be modified by processes that involve relatively high or low amounts of issue, or object-relevant, thinking, but the processes producing the judgment and the consequences that occur differ depending on the amount of thought involved. The ELM holds that there are numerous specific processes of attitude change that operate along the elaboration continuum (e.g., classical conditioning and use of decision heuristics require relatively little thought and operate at the low end of the continuum, but expectancy–value and cognitive response processes require higher degrees of thought and operate along the upper end of the continuum). The assortment of specific processes that occur along the low end of the continuum are collectively referred to as *peripheral route* mechanisms of persuasion, whereas the assortment of processes operating along the high end of the continuum are collectively referred to as *central route* mechanisms of persuasion.

Whether attitude change occurs as the result of relatively high or low amounts of thought matters for determining not only what judgment is formed but also how consequential that judgment is. Specifically, the more a judgment is based on thinking, the more it tends to persist over time, resist attempts at change, and have consequences for other judgments and behavior (see Petty, Haugtvedt, & Smith, 1995). Thus, even if two different processes result in the same judgment or the same extent of influence, the strength of these judgments can differ. For example, when variables such as emo-

tion or a highly credible source produce persuasion through low thinking processes (e.g., serving as input to a simple heuristic), the attitudes formed are less persistent, resistant to change, and predictive of behavior than when the same amount of change is produced by these variables via high thinking processes (e.g., biasing the thoughts generated; see Petty & Krosnick, 1995, for a review of attitude strength research).

There are at least two important caveats to the ELM attitude strength predictions. First, the predictions are about deliberative attitudes—those that individuals report on explicit self-reports. Second, even on explicit measures of attitudes, not all of the strength consequences need to covary. For example, an attitude classically conditioned to be positive over many trials (low elaboration process) might be as stable over time as one that was made more positive because people carefully processed strong arguments about the advocacy (high elaboration process). However, the classically conditioned attitude would be weaker in the sense that it is less likely to resist an explicit attempt at counterpersuasion than an attitude based on reasoned argument. This is because when attitudes are conditioned, people have less ability to defend those attitudes from attack compared to when they have a substantive basis (Petty & Cacioppo, 1986). However, as we see shortly in addressing the MCM, on a measure of automatic attitude activation (implicit measure), the conditioned attitude can still be quite resistant to change (Petty, Tormala, Briñol, & Jarvis, 2006).

In addition to establishing the importance of the elaboration continuum for attitude change and strength, the ELM articulates the key mechanisms by which variables (e.g., source credibility, emotion) produce changes in attitudes along this continuum (see Figure 12.1). According to the ELM, when either motivation or ability to think is low, variables tend to serve as simple cues to influence. As cues, variables produce an outcome that is consistent with their valence (i.e., variables evaluated positively lead to more persuasion). When motivation and ability to think are high, variables serve in other roles, such as biasing thoughts or serving as arguments (pieces of evidence). When thinking is not constrained to be high or low by other factors, then variables determine how much thinking is done. There is much research supporting the notion that these different mechanisms operate under the conditions expected by the ELM (e.g., see Petty & Wegener, 1998, 1999). That is, any given feature of the persuasive setting (whether part of the source, message, recipient, or context), can serve as a simple cue, an issue-relevant argument, bias the thoughts that come to mind, or affect the motivation or ability to think about the message.

More recently, the ELM has incorporated another psychological process called *self-validation* (Petty, Briñol, & Tormala, 2002). Unlike previous mechanisms of attitude change that focus on primary or first-order cognition (i.e., amount and direction of thoughts), this new process emphasizes secondary or metacognition (Briñol & DeMarree, 2012; Jost, Kruglanski, & Nelson, 1998; Petty, Briñol, Tormala, & Wegener, 2007). The key notion of self-validation is that generating thoughts is not sufficient for them to have an impact on judgment. Rather, one must also have sufficient confidence in one's thoughts (*cognitive validation*) or feel good about them (*affective validation*). Thoughts that are not perceived as valid or that are disliked are mentally discarded. Thus, one of the core self-validation notions is that a host of familiar variables (happiness, source credibility, power, self-affirmation, etc.) that have already proven useful in other roles can also affect judgments by influencing whether or not people rely on their own thoughts (see Briñol & Petty, 2009a, for a review).

In summary, the ELM is a comprehensive theory of attitude formation and change (and other social judgments) that specifies the processes by which the numerous source, message, recipient, and context factors known to influence attitudes operate (see Briñol & Petty, 2012, for a review of the ELM in historical context). According to the ELM, the specific processes by which these variables operate under different elaboration conditions are seen as distinct mechanisms of influence, though the processes requiring higher thinking share the feature of producing attitudes that are more durable and impactful than the processes requiring lower thinking (for discussions regarding *lumping* vs. *splitting* of psychological processes, see Petty & Briñol, 2006a; Petty, Wheeler, & Bizer, 1999).

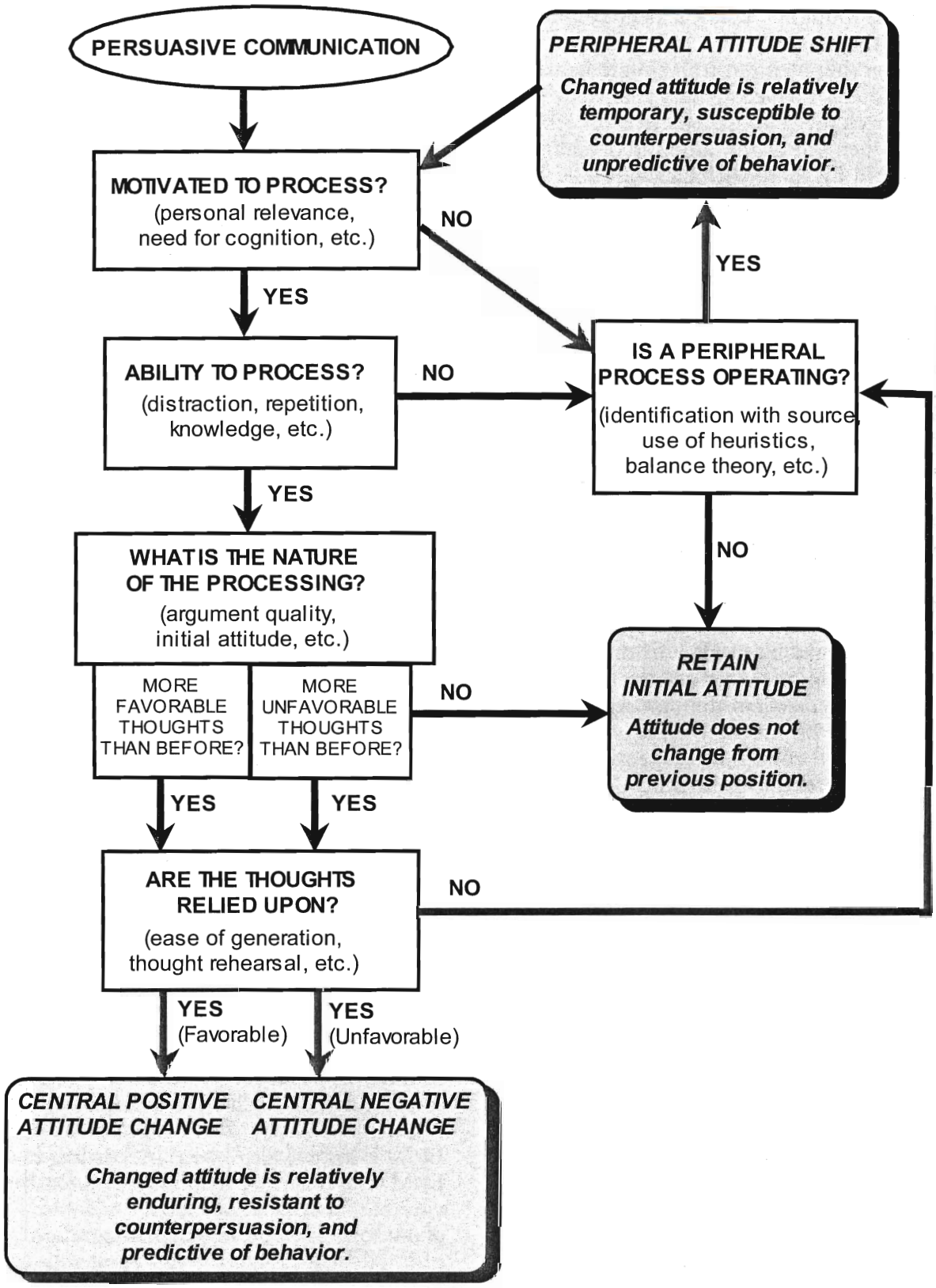

FIGURE 12.1. Schematic depiction of the ELM.

ILLUSTRATION: THE ELM APPLIED TO EMOTION

As an illustration of the utility of the multiple roles or processes along the elaboration continuum notion of the ELM, consider how a person's incidental emotions can impact evaluative judgments (Petty, Fabrigar, & Wegener, 2003). First and most simply, when thinking is constrained to be low (e.g., due to many distractions), an experienced emotion tends to serve as a simple associative cue or input to an affect heuristic and produce an evaluation consistent with its valence (e.g., Petty, Schumann, Richman, & Strathman, 1993). Thus, if one is feeling positive (e.g., happy) when evaluating a message, the message will be evaluated more favorably and induce more persuasion than if one is feeling negative (e.g., sad, angry). When thinking is high, however, one's emotions serve in other roles. First, emotions can be evaluated as evidence. Thus, whereas feeling fear would induce negative evaluations of virtually any object when used as a simple cue under low thinking conditions, when evaluated as evidence under high thinking conditions, feeling fear in response to a new automobile would cause it to be evaluated negatively, but feeling fear in response to a new horror film would cause it to be evaluated positively, since that is the desired emotion in that situation (see also, Martin, 2000; Pierro, Mannetti, Kruglanski, & Sleeth-Keppler, 2004).

In addition, when thinking is high, emotions can bias the ongoing thoughts. For example, positive consequences are more likely to come to mind and be seen as more likely to occur when people are in a happy rather than sad state (e.g., DeSteno, Petty, Wegener, & Rucker, 2000; Petty et al., 2003). And, as noted earlier, there is one more process by which recipient variables such as emotions can operate when thinking is high—affecting the use of one's thoughts. For example, Briñol, Petty, and Barden (2007) showed that if people are generating favorable thoughts about themselves or a new proposal, then they will be more persuaded if they are feeling happy following thought generation, because happiness instills confidence in the positive thoughts people just generated and/or makes them feel good about their thoughts, leading them to use their thoughts more than when they are feeling sad. However, if people are generating unfavorable thoughts (e.g., because message arguments are weak), then these same feelings of happiness lead to *less* persuasion, because people are more likely to rely on their negative thoughts and use these in forming their judgments.

Finally, when the likelihood of thinking is not constrained to be high or low by other variables, then emotions can affect the extent of thinking. For example, people might think about messages more when in a sad than in a happy state because sadness either signals a problem to be solved (Schwarz, Bless, & Bohner, 1991) or conveys a sense of uncertainty that might be addressed with additional thought (Tiedens, & Linton, 2001; see also Wegener, Petty, & Smith, 1995; Ziegler, 2013). If people process a message more when in a sad than in a happy state, then this means that they would be more persuaded by cogent arguments when sad than when happy but less persuaded by specious arguments.

Various theories of emotion and social judgment have incorporated one or more of the processes highlighted by the ELM (e.g., see Forgas, 2001; Schwarz et al., 1991). Notably, the ELM organizes these processes together into one overarching framework, and holds that these same processes can be used to understand not only the impact of incidental emotions but also a plethora of other, very different variables. For example, depending on the message recipient's extent of thinking, factors such as source credibility, attractiveness, and majority–minority status have been found to influence persuasion by the very same mechanisms by which emotions influence attitudes—serving as simple cues, biasing the thoughts of message recipients, serving as pieces of evidence relevant to the central merits of the issue, affecting thought use, and determining the amount of information processing that occurs (see Briñol & Petty, 2009b, for a review of multiple roles for source factors).

THE MCM OF ATTITUDE STRUCTURE

As just articulated, the ELM deals with the multiple processes by which variables can influence attitudes along the elaboration continuum and points to different consequences

of these processes. Another model that is useful for understanding attitudes focuses on their underlying structure. According to our MCM (Petty, 2006; Petty & Briñol, 2006b; Petty, Briñol, & DeMarree, 2007), attitudes consist of evaluative associations (positive and negative) along with validity tags that can be represented in various ways, such as confidence–doubt. The MCM also explains how different attitude structures and attitude change techniques can lead to different results on implicit (automatic) and explicit (deliberative self-report) measures of attitudes. Briefly described, the MCM holds that automatic evaluative associations only determine explicit attitude measures to the extent that people endorse these associations. However, evaluative associations—whether endorsed or not—can affect implicit attitude measures (also see Gawronski & Bodenhausen, 2006). That is, the perceived validity tags tend not to influence implicit measures, at least not until these tags become so well learned that they are automatically activated (Maddux, Barden, Brewer, & Petty, 2005).

On the one hand, the MCM agrees with the commonly held view that for many attitude objects, one evaluation (relatively positive or negative) is dominant and represents the integration of knowledge about the object (see Fazio, 1995, for a review). For example, the top panel of Figure 12.2 shows a person with an explicitly positive attitude toward smoking. In such situations, this evaluation would come to mind upon encountering the attitude object, though the speed at which this occurs can vary (e.g., see Bargh, Chaiken, Raymond, & Hymes, 1996; Fazio et al., 1986).

On the other hand, according to the MCM, people can develop an attitude structure in which attitude objects are linked to both positivity and negativity separately (see also Cacioppo, Gardner, & Berntson, 1997), and tag these evaluations with varying degrees of confidence. These validating (or invalidating) metacognitions can vary in the strength of their association to the linked evaluation, and the strength of these links determines the likelihood that the perceived validity of the evaluation will be retrieved along with the evaluation itself. Most notably, perhaps, the MCM goes beyond the idea that attitude validation is solely an online

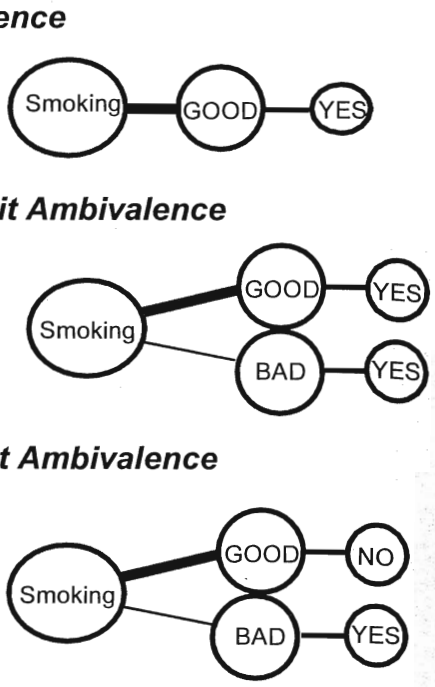

FIGURE 12.2. The MCM of attitude structure depiction of univalence (Panel 1), explicit ambivalence (Panel 2), and implicit ambivalence (Panel 3). Based on Petty (2006) and Petty and Briñol (2009).

process (e.g., Gawronski & Bodenhausen, 2006) and contends that perceived validities, like the evaluations themselves, can be stored for later retrieval. That is, the MCM assumes that just as it is adaptive to store evaluations to guide decision making and action (Fazio, 1995), so too is it adaptive to know whether any activated evaluation is a reliable guide without having to determine this on the spot. To the extent that the retrieval of validity tags becomes automatic, it even becomes possible for people to correct quickly for undesired evaluations that might come to mind. Furthermore, just as evaluative associations can be context-specific (Gawronski, Rydell, Vervliet, & De Houwer, 2010), so too can people learn to associate invalidity tags with evaluations more in some contexts than in others (e.g., see Maddux et al., 2005). Although the storage of validity tags might not be applied to every single context (e.g., it might not be likely for very new attitudes; Boucher & Rydell, 2012), some preliminary evidence is consistent with the possibility of storage

of validity tags. For example, certainty has been found to predict certainty-related outcomes even when the certainty is measured at a separate occasion from the predicted outcome (e.g., Bassili, 1996; Wells, Olson, & Charman, 2003).

Importantly, the MCM argues that although people might not rely upon evaluative links that are associated with doubt (i.e., that are invalidated) when deliberatively responding to explicit measures, those automatic associations can still influence more automatic measures, and can therefore produce what we have called *implicit ambivalence*—a form of evaluative conflict that results from explicit–implicit attitude discrepancies (see Petty & Briñol, 2009, for a review). In fact, an important contribution of the MCM is the distinction between explicit and implicit forms of ambivalence. Sometimes a person holds both positive and negative evaluations to be valid, and this person's attitude is best described as being *explicitly ambivalent,* because both positive and negative associations come to mind and are endorsed (e.g., de Liver, van der Pligt, & Wigboldus, 2007; see Panel 2 of Figure 12.2). At other times, however, people might have two opposite accessible evaluations come to mind, but one is seen as valid whereas the other is rejected (see Panel 3 of Figure 12.2). A denied evaluation can be a past attitude (e.g., "I used to like smoking, but now it is disgusting"; Petty et al., 2006) or an association that was never endorsed but nonetheless automatically comes to mind for other reasons (e.g., from continuous stereotypical depictions in the media; Olson & Fazio, 2009). In such cases, the MCM refers to the attitude structure as one of implicit ambivalence. Even though people do not endorse opposite evaluations of the same attitude object (i.e., they are not explicitly ambivalent) they can nevertheless feel uncomfortable about such attitude objects without knowing the specific source of the conflict (see Rydell, McConnell, & Mackie, 2008; Petty, Briñol, & Johnson, 2012). This discomfort is consequential in that it leads people to process more carefully information associated with the object of their ambivalence (Petty et al., 2006; Briñol, Petty, & Wheeler, 2006).

LINKS BETWEEN THE ELM AND THE MCM

Although the MCM and the ELM were developed independently, they are linked in several ways. First, the ELM is related to the MCM through the concept of *elaboration* and the subsequent notion of *attitude strength.* As noted earlier, the degree of thinking (elaboration) is important in the ELM at least for two reasons. First, the extent of elaboration (how motivated and able people are to think about an issue) determines the role that variables will play in affecting attitudes (serve as a simple associative or inferential cue, bias processing, etc.). Second, greater amounts of elaboration are postulated to produce attitudes that are stronger (more durable and impactful). Thus, the ELM postulates changes in attitude structure that are fleshed out by the MCM.

According to the ELM, increased elaboration enhances attitude strength in at least two ways. First, elaboration strengthens the object–evaluation association (i.e., makes some evaluations more accessible than others). Thus, a small number of evaluative thoughts to a proposal likely produce a weak evaluative association, whereas a large number of evaluatively congruent thoughts produces a stronger evaluative association (cf. Bizer & Krosnick, 2001). The stronger the evaluative association (i.e., the more easily the attitude comes to mind), the more likely the evaluation is to persist over time and have an impact on judgment and behavior (see Fazio, 1995, for a review).

More uniquely, the MCM highlights another consequence of elaboration in the structure of attitudes. That is, the accessibility of an evaluation is separate from its perceived validity. For example, a large number of subliminal classical conditioning trials could produce a new evaluation that was highly accessible, but would do little for the perceived validity of the evaluation. However, extensive processing of issue-relevant arguments could produce an evaluation that was just as accessible as one produced with many conditioning trials, but the former attitude would likely be seen as higher in validity than the latter. Indeed, research shows that enhanced elaboration

is associated with attitude certainty (Barden & Petty, 2008), and increased attitude certainty increases the strength consequences of attitudes (Gross, Holtz, & Miller, 1995; Petty, Briñol, Tormala, et al., 2007).

Related to the previous point, another link between the ELM and the MCM comes from the concept of *metacognitive validation*. Similar to the work on self-validation mentioned earlier, which suggests that thoughts (positive or negative) determine judgments more as trust in them increases (Petty et al., 2002), the MCM assumes that evaluative associations have a greater impact on deliberative judgments when validity tags indicate confidence. Thus, the MCM is similar to the self-validation process of the ELM in highlighting the importance of considering the validity associated with mental constructs, but it differs in the particular constructs of interest. Whereas the ELM research examines online assessment of certainty in one's salient thoughts (e.g., in response to persuasive proposals), the MCM research examines certainty in automatic associations that are stored in memory and assumes that these validity judgments can be stored and retrieved at a later point in time. Similar to research on self-validation, which shows that metacognitive confidence increases the use of primary cognition, the MCM holds that the more confidence people have in the validity of their automatic evaluations, the more these associations will be reflected in deliberative (explicit) measures of attitudes.

IMPLICATIONS FOR THE STUDY OF PREJUDICE

Now that we have described the ELM and the MCM, we explain how the basic principles of these models can be applied to the formation, change, and structure of particular attitudes. As a first example, consider the accumulated work on prejudice, which has suggested that attitudes toward minority groups can be influenced by a variety of low-deliberation processes, such as mere exposure (Pettigrew & Tropp, 2006) and classical conditioning (Dovidio, Gaertner, & Kawakami, 2003). Indeed, many contemporary theories of prejudice presumably focused on these subtle processes of influence because modern prejudice itself was thought to be subtle and covert (e.g., Dovidio, 2001). However, low-effort processes are not the only means of attitude change. As noted earlier, attitude formation and change can also be produced by highly deliberative processes. For example, Pettigrew (1998) proposed that "learning about others" is a critical step in how intergroup contact improves intergroup relations (Allport, 1954). In accord with this notion, there are numerous examples of how prejudice can be reduced by attendance at diversity seminars, and by learning new information about other social groups (Fisher, 1968; Rudman, Ashmore, & Gary, 2001).

As noted earlier, the ELM predicts that the process by which prejudice is created or transformed is consequential for the *strength* of the resulting attitudes. One relevant set of studies providing evidence for the importance of the amount of thinking in the domain of prejudice was conducted by Cárdaba, Briñol, Horcajo, and Petty (2013). These authors presented to participants either a persuasive message that contained compelling arguments in favor of a minority group or a control message on an irrelevant topic, and varied the amount of thinking by manipulating the targets' ability or motivation to think about the message. The results showed that even when the obtained reduction in prejudice was equivalent under low and high thinking conditions, there were important benefits of high-elaboration prejudice reduction. That is, although both high and low thinking processes were associated with a reduction in the extremity of prejudiced attitudes, the reductions in prejudice produced by high thinking processes were more persistent and resistant to subsequent attacks than equivalent changes produced by less thoughtful mechanisms (also see Wegener, Clark, & Petty, 2006).

Furthermore, by processing persuasive messages in favor of increasing tolerance toward minority groups, not only are deliberative measures of attitudes modified but so too are automatic responses assessed with implicit measures (Briñol, Petty, & McCaslin, 2009; Maio, Haddock, Watt, & Hewstone, 2009). As was the case for explicit measures, the greater the elaboration, the more consequential the subsequent changes that are observed for implicit mea-

sures. In one set of studies, for example, high-elaboration implicit attitude change for one attitude object was more likely to spread automatically and produce change in a semantically related attitude object (see Horcajo, Briñol, & Petty, 2010).

The studies described so far illustrate the importance of considering the concept of extent of *elaboration* in order to account for the consequences of both explicit and implicit attitude change. As noted, *validation* is the other concept that is critical for both the ELM and the MCM. Specifically, the ELM postulates that variables such as stereotypes can influence judgments by affecting not only the amount and direction of processing (primary cognition) but also the use of thoughts (secondary cognition) via changes in the perceived validity of those thoughts. The accumulated research suggests that the *timing* of the variable (i.e., whether it comes before or after thought generation) is one critical moderator of whether any given variable works by affecting primary or secondary cognitive processes (Briñol & Petty, 2009).

In most of the research on stereotyping and prejudice, group category membership (e.g., the race of the target) is presented *before* acquisition of individuating information. When such information precedes information processing, research has shown that stereotypes can influence attitudes and perceptions in the various ways articulated earlier, which include serving as a judgmental heuristic (for a review, see Bodenhausen, Macrae, & Sherman, 1999) or by biasing one's thoughts about a target person or his or her message (e.g., Wegener et al., 2006). Importantly, it seems plausible that learning of someone's group membership "after the fact" might allow stereotypes to influence perceptions in a completely different way—by affecting confidence in one's already generated thoughts. In two experiments testing this possibility, Clark, Wegener, Briñol, and Petty (2009) gave participants information about a target person, followed by a description designed to activate stereotypes. When processing capacity was high, greater thought confidence was generated when the group stereotype information was consistent rather than inconsistent with thoughts about the initial information that was processed. Thus, if judging a poorly performing student and generating unfavorable thoughts about that student, confidence in those thoughts was higher when it was subsequently revealed that the poorly performing student was of low rather than high socioeconomic status (SES). The opposite was true when judging a student who performed well. As a result, when SES stereotypes matched the performance, raters were more likely to recommend remedial classes for the low-performing student and gifted classes for the high-performing student. When processing capacity was low, however, stereotypes served their familiar heuristic role in judgment, and thought confidence played no role in judgment-related recommendations.

The Clark et al. (2009) study demonstrated the important role that stereotypes can play in the validation of accessible thoughts and the subsequent impact of those thoughts on deliberative judgments. As noted, the concept of validation is also important with respect to the potential impact of automatic associations on explicit and implicit measures of attitudes. That is, although people might not use automatically activated evaluations when deliberatively responding to explicit measures if those evaluations are associated with explicit doubt, those automatic associations can still influence more automatic measures of prejudice. And, as noted earlier, when discrepancies exist between explicit and implicit measures of attitudes, implicit ambivalence results. This ambivalence (as indexed by discrepancies between explicit and implicit racial attitudes) can motivate people to process race-relevant information and might account for earlier studies showing that low-prejudice white individuals are especially likely to scrutinize information from (Petty, Fleming, & White, 1999) or about (Fleming, Petty, & White, 2005 black individuals. The notion of implicit ambivalence suggests that not *all* low-prejudice individuals scrutinize information from or about blacks, but mostly those who also tend to be high in automatic prejudice (i.e., possess an implicit–explicit discrepancy).

In a series of studies examining the implicit ambivalence notion in the racial domain, Johnson, Petty, Briñol, and See (2013) found that as the discrepancy in students' implicit and explicit attitudes increased (i.e., more negative automatic attitudes than explicit attitudes or more posi-

tive automatic attitudes than explicit ones), they engaged in more processing of a message on a topic relevant to black individuals (e.g., advocating a program to hire more black faculty members at their university), or on a racially irrelevant topic if the source of the message was black rather than white. Because the direction of the discrepancy did not further qualify the results, this means that among participants who were low in explicit prejudice, primarily those who were high in implicit prejudice engaged in greater scrutiny of the race-relevant message, but among participants who were high in explicit prejudice, those who were low in implicit prejudice engaged in the greatest scrutiny. Overall, then, the results are compatible with the predictions derived from the implicit ambivalence notion of the MCM (see Petty et al., 2012, for a review on ambivalence in racial attitudes).

IMPLICATIONS FOR THE STUDY OF THE SELF

As a second illustration of the utility of the ELM and the MCM, consider the numerous parallels that exist between the literatures on attitudes and the self. To start, DeMarree, Petty, and Briñol (2007a, 2007b) argue that attitudes can be conceptualized as part of the self and the self can be viewed as an attitude object much like any other. Thus, the concepts of elaboration–strength and validation can be applied to the study of the self.

Based on the attitudes literature, one can make the straightforward prediction that evaluations of the self that are the result of more deliberative thinking are more likely to be impactful and durable than self-evaluations based on less thought. Some indirect evidence for this possibility comes from work on ambivalence and perceived knowledge. For example, the self-evaluation of individuals who have consistent (vs. inconsistent) self-related thoughts tends to be less malleable (Riketta & Ziegler, 2007), and more predictive of subsequent search information (Woike & Baumgardner, 1993). Also, self-perceptions for which participants' are perceived to have high (vs. low) knowledge have been found to be more predictive of behavior. In addition, when self-evaluations are highly accessible (as would be the case when they are based on high thought), these evaluations are more resistant to change and have a greater impact on information processing (DeMarree, Petty, & Strunk, 2010). Although these examples focus on the consistency, accessibility, and perceived amount of knowledge of self-relevant thoughts or attitudes, the results can be seen as conceptually consistent with the idea that increased thinking leads to enhanced judgmental strength of self-attitudes.

In a more direct test of this notion, Gascó, Briñol, and Horcajo (2010) changed participants' self-attitudes through either a persuasive procedure involving high elaboration (self-persuasion) or a less engaging procedure involving a reduced amount of thinking (passive exposure). Participants in the high thinking condition were requested to actively generate reasons why they liked their bodies. Previous research has shown that self-evaluations can be increased after thinking about one's strengths (e.g., Tice, 1992), and this particular procedure based on self-persuasion has been used successfully in previous studies of attitude change (e.g., Briñol, McCaslin, & Petty, 2012; Briñol, Gascó, Petty, & Horcajo, 2013). In contrast, participants in the low thinking condition were merely exposed to positive self-affirmations about their bodies, selected from a pretested intervention program in the treatment of attitudes toward the body and found to increase the favorability of body attitudes. As expected, participants in both the high and low thought groups showed more favorable attitudes toward their bodies than those in the control group. In addition, although the treatments were equally effective in changing attitudes, the strength associated with those attitudes was significantly different depending on the amount of thinking involved in the process of change. Specifically, attitudes were stronger in the high rather than low thinking treatment. Participants in the high thinking conditions perceived their attitudes to be more valid and more resistant to change than did those in the low thinking conditions.

The other critical concept besides elaboration in both the ELM and the MCM is validation. People can validate any accessible mental contents, including self-related cognitions (see Briñol, DeMarree, & Petty, 2010, for a review on validation of self-

relevant cognitions). First, similar to the literature on attitude strength, showing that attitude certainty is associated with more impactful attitudes (see Petty et al., 1995), self-beliefs that are held with greater confidence are also more predictive of behavior (Setterlund & Niedenthal, 1993), more stable (Pelham, 1991; Pelham & Swann, 1994) and resistant to change (Swann & Ely, 1984; Swann, Pelham, & Chidester, 1988) than those held with doubt (see DeMarree et al., 2007a, 2007b, for reviews).

Second, in addition to being applied to attitudes, self-esteem, and other self-views, the concept of validation through certainty has also been found to moderate the impact of self-relevant thoughts on subsequent self-related attitudes or judgments. In one illustration, Briñol and Petty (2003, Experiment 4) examined whether confidence in self-relevant thoughts could be impacted in a manner similar to the way thoughts about other objects and issues are impacted. In this research, participants were required to think about and write down their best or worst qualities (thought-direction manipulation) using their dominant or nondominant hand. Then, participants rated their confidence in their thoughts and reported their self-esteem. Because writing with the nondominant hand occurs very infrequently and is difficult, and whatever is written with the nondominant may appear "shaky," the authors found, as expected, that using the nondominant hand decreased people's confidence in the thoughts they had just listed. As a consequence of the differential thought confidence, the effect of the direction of thoughts (positive–negative) on current self-esteem was significantly greater when participants wrote their thoughts with the dominant rather than the nondominant hand. Similar findings were obtained in follow-up research in which Briñol, Petty, and Wagner (2009) asked participants to write down their best or worst qualities while sitting with their backs erect, pushing their chests out (i.e., confident posture) or slouched forward with their backs curved (i.e., doubtful posture). Importantly, in these studies thought confidence mediated the influence of self-relevant thoughts on self-evaluation.

Finally, as was the case in the domain of racial attitudes, it seems reasonable that explicit–implicit self-evaluation discrepancies might be associated with implicit ambivalence and therefore be consequential. In one study testing the notion that explicit–implicit self-discrepancies could lead to enhanced information processing of self-relevant information (Briñol et al., 2006, Experiment 4), undergraduates' self-evaluations were assessed with both automatic (Implicit Association Test [IAT]; Greenwald & Farnham, 2000) and deliberative (Rosenberg, 1965) self-esteem measures. Then the absolute value of the difference between the two standardized measures was calculated as the index of discrepancy. Next, participants were exposed to either a strong or weak message about eating vegetables that was framed as self-relevant or not.

As predicted, the results of this study revealed that when the message was framed as self-relevant, the extent of explicit–implicit discrepancy interacted with argument quality to affect attitudes. The greater the discrepancy, the more participants differentiated strong from weak arguments, indicating greater information processing. However, when the same strong and weak messages were framed as irrelevant to the self (i.e., the message was said to be about the properties of vegetables rather than one's health), discrepancy did not interact with argument quality to predict attitudes. This suggests that explicit–implicit discrepancies do not lead to motivation to process all information—only those that are relevant to the object for which the discrepancy exists. Furthermore, as was the case with racial attitude discrepancies, the direction of the discrepancy (i.e., was implicit self-esteem greater or less than explicit self-esteem?), did not further moderate the results.

In summary, the previous two sections of this chapter have provided brief illustrations of two of the areas of application of the ELM and the MCM: prejudice and the self. Although we chose these specific domains because of their traditional importance within social psychology, the two theoretical models that are the subject of this chapter have proven useful in many other domains relevant to social psychology (ranging from numerical anchoring effects [Blankenship, Wegener, Petty, Detweiler-Bedell, & Macy, 2008] to health communication [Briñol & Petty, 2006]) and also have provided a valu-

able framework to other related disciplines (e.g., marketing and advertising; educational communication; and legal, organizational, and environmental psychology, to name just a few; see Haugtvedt & Kasmer, 2008; Petty, Barden, & Wheeler, 2009; Rucker & Petty, 2006; Rucker, Petty, & Priester, 2007).

LINKS TO AUTOMATIC VERSUS CONTROLLED PROCESSING

As highlighted in this chapter, two of the key concepts of the ELM and the MCM are *elaboration* (e.g., the elaboration continuum anchored by the central and peripheral routes to persuasion) and *validation*. These two concepts can be related to the classic distinction between automatic and controlled information processing (Schneider & Shiffrin, 1977). Beginning with elaboration, the ELM distinguishes between judgment processes that require relatively high versus low degrees of effortful thinking. Thus, one might wonder how this thinking continuum maps onto the features of automatic versus controlled information processing identified by Bargh (1994). In general, we view the information-processing features he identified (i.e., awareness, intention, efficiency, and control) as largely orthogonal to the ELM mechanisms that occur along the elaboration continuum (cf. Petty, Cacioppo, Strathman, & Priester, 1994). For example, although people tend to be more aware of high than of low thinking processes and often engage in them deliberately (i.e., intentionally), and low thinking processes typically unfold with greater efficiency and may be less likely to be controlled, this is not invariably the case. One can intentionally choose to use, and to be aware of using, a heuristic when not thinking very much but not be aware of being influenced by that same heuristic under high thinking conditions (Petty, 1994, 2001). Similarly, one's thoughts can be biased by one's mood under high thinking conditions without awareness or intention. Indeed, if people became aware of the biasing impact of mood, they would likely intend to correct for it (Wegener & Petty, 1997). And, just as people can attempt to correct for (control) biasing factors of which they have become aware under high thinking conditions, they likewise control for biases that are perceived to operate under low thinking conditions (Petty, Wegener, & White, 1998).[1]

Within the MCM, extensive elaboration can enhance the accessibility of object–evaluation links, as well as the perceived validity of those evaluations. The enhanced accessibility of evaluations due to elaboration means that such attitudes are more likely to come to mind spontaneously (i.e., unintentionally, efficiently) and inevitably (i.e., uncontrollably), though people may be aware of these gut reactions (Loersch, McCaslin, & Petty, 2011). However, attitudes also can be made highly accessible via nonelaboration-based processes, such as exposing one to many trials of subliminal evaluative conditioning or merely rehearsing one's attitude (see Fazio & Olson, 2003). Thus, there is no necessary connection between elaboration and automatically activated evaluations in the MCM.

With respect to validation processes, we have explained how this metacognitive process can influence (1) the use of thoughts in forming attitudes (in the ELM), (2) which evaluations are expressed on both implicit and explicit measures (in the MCM), and (3) which attitudes guide behavior. As was the case with elaboration, we view validation processes as able to occur in a relatively automatic or controlled fashion. For example, people can become more confident in a thought or an evaluation because they are feeling happy, but be unaware of this influence and therefore unlikely to control it. On the other hand, people can intentionally decide to rely on a thought or evaluation because it stems from a highly credible source and choose not to control this outcome (though they could if they wished). And, accessing validity tags to evaluations can become automatic if highly practiced.

CONCLUSION

The ELM is a theory about the core processes responsible for attitude change and the strength of the attitudes that result from those processes. One of the key attributes of the ELM is that it provided the field with a useful framework from which to understand the moderation (e.g., by amount of thinking) and mediation (by automatic, deliberative, or

metacognitive processes) of social judgment. The MCM, a theory about the structure of attitudes, holds that objects can be linked to both positive and negative evaluations, each of which is associated with some degree of perceived validity. The theory can account for discrepancies in automatic versus deliberative attitudes, as well as postulate unique states, such as implicit ambivalence.

In summary, in this chapter we have noted that the two concepts of elaboration and validation serve as links between the ELM and the MCM. Increased elaboration enhances the durability and impact of attitudes by increasing not only the strength (accessibility) of object–evaluation associations but also the perceived validity of those evaluations. Given the integrative potential of these ideas, the two conceptual models reviewed here have shed light on a variety of phenomena that are relevant not only to attitude change but also numerous other judgments, ranging from the study of prejudice to the study of the self.

NOTE

1. Furthermore, we do not see the fundamental mechanisms by which variables have their impact on judgment as invariably linked to any particular mental system (affective/cognitive, impulsive/reflective, approach/avoidance, perceptual/knowledge). For example, low and high thinking processes can operate both within the cognitive and the affective system (see Petty & Briñol, 2006a, for further discussion). Thus, the different core processes of influence that we outlined can operate within and across systems.

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