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Implicit Ambivalence
A Meta-Cognitive Approach

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Introduction

Attitudes refer to people's general evaluations of issues, objects, and other people, including oneself. Do you like chocolate cake? Are you a fan of mystery novels? Are you a good or a bad person? For some people, attitudes are best described as univalent. That is, the attitude object is associated primarily with either positive or negative attributes. Other attitudes, in contrast, are best described as ambivalent. These attitudes are associated with both positive and negative attributes. When people are asked to report their attitudes on a traditional bipolar scale (e.g., –5 to +5), it is possible for people to claim the same overall evaluation even though one person is more ambivalent than another (Kaplan, 1972). For example, one person might rate his or her overall attitude toward a particular car as +2 because of a perceived awareness of a few moderately positive aspects of the car. Another person might rate the same car as +2 because he or she is aware of four very positive attributes of the car, but also two very negative attributes. Because the latter person recognizes both positive and negative aspects of the car, he or she is likely to describe his or her attitude as being at least somewhat ambivalent, mixed, or conflicted with respect to the car compared with the person whose attitude is one-sided (Thompson, Zanna & Griffin, 1995; Priester & Petty, 1996).

In this chapter, we argue that sometimes people can be ambivalent without recognizing it explicitly. We refer to this situation as one of *implicit ambivalence*. Implicit ambivalence occurs when people have conflicting evaluative reactions to some attitude object, but they do not label this conflict as ambivalence because they either are unaware of

the evaluative conflict (e.g., being aware of their positive but not their negative reactions), or are aware of having both positive and negative reactions, but deny one reaction as representing their true response. Despite not labeling their reaction as ambivalent, we argue that implicit ambivalence is consequential. After first briefly reviewing some work on explicit ambivalence, we turn to understanding implicit ambivalence. We address issues such as how and why implicit ambivalence occurs, and what its consequences are.*

Explicit Ambivalence

Antecedents

At surprisingly regular intervals, researchers have argued for and presented data supporting the idea that attitudes can be based on separate positive and negative components (e.g., Cacioppo & Berntson, 1994; Chein, 1951; Edwards, 1946; Green & Goldfried, 1965; Kaplan, 1972; Katz, Wackenhut, & Hass, 1986; Klopfer & Madden, 1980; Priester & Petty, 1996; Scott, 1969; Thompson, Zanna, & Griffin, 1995). Although these components could be at the level of very specific attributes, traits, or emotions, there is growing support for the idea that some attitude objects are best characterized as linked to separable positive and negative reactions, perhaps linked to autonomous approach and avoidance systems (e.g., Cacioppo, Gardner, & Berntson, 1997).

The idea that attitude objects can be linked in memory to both positivity and negativity is critical for our approach to ambivalence, and thus it is worthwhile to review the available data. Perhaps the best evidence for this notion comes from two studies reported by de Liver, van der Pligt, and Wigboldus (2007). The goal of this research was to show that for ambivalent attitude objects, both positivity and negativity come to mind quickly. In one study, de Liver and colleagues first had participants generate the names of objects for which their attitudes were positive, negative, or ambivalent. Then, participants completed a single category Implicit Association Test (IAT; Karpinski & Steinman, 2006; Wigboldus, Holland, & van Knippenberg, 2004). In this task there were

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* In addition to explicit versus implicit ambivalence, it would be possible to have implicit and explicit versions of other attitude strength concepts such as implicit versus explicit importance (see Petty & Krosnick, 1995, for a review of attitude strength indicators).

multiple trials. On certain (positive) trials they were instructed to press one computer key whenever the target attitude object (e.g., *chocolate*) or a positive word (e.g., *happiness*) appeared on their computer screen, and a different key whenever a negative word (e.g., *disgust*) appeared. On other (negative) trials, one computer key was associated with the target attitude object and negative words, whereas the other key was associated with positive words. As would be expected, when the target attitude objects were positive objects, people were faster to categorize them when they were associated with the positive rather than the negative key. When the target words were negative, the opposite was the case. Of most interest, when the target words were ambivalent, there was no difference in speed to the positive and negative trials. Notably, people were just as fast in responding to positive trials as when the target words were positive, and just as fast to negative trials as when the target words were negative. These data are consistent with the possibility that the target words spontaneously activated both positivity and negativity rather quickly.

In the second study, ambivalent attitudes were compared to neutral attitudes, positive attitudes, and negative attitudes. Whereas ambivalent attitudes should have strong positive and negative associations, as demonstrated in de Liver et al.'s first study (2007), neutral attitudes should have weak associations to positivity and negativity. All participants completed an evaluative priming measure (Fazio, Jackson, Dunton, & Williams, 1995) in which the typical priming procedure was reversed. That is, rather than evaluating positive or negative words after being primed by the target attitude object, in this procedure, positive (e.g., *perfect*), negative (e.g., *disgusting*), or neutral/baseline (e.g., *bbbbb*) primes were used and participants had to rate the subsequently presented target attitude object (e.g., chocolate) as positive or negative. As expected, for the positive and negative attitude objects, response time ratings were facilitated when the prime matched the valence of the object. That is, when primed with a positive word, they were faster to categorize a positive target object as good rather than bad compared to when the prime was a neutral word. And, when primed with a negative word, they were faster to categorize a negative word as bad rather than good compared to when the prime was a neutral word. For neutral attitude objects, no facilitation relative to baseline primes occurred. Of most interest, for ambivalent attitude objects, categorization was facilitated relative to the baseline trials for both positive and negative primes, suggesting once again that ambivalent attitude objects spontaneously elicited both positivity and negativity.

As mentioned earlier, when people have both positive and negative reactions to an attitude object, they typically recognize that their attitudes are ambivalent or mixed. Various formulas have been proposed to map the magnitude of positive versus negative reactions onto the subjective recognition of ambivalence (see Priester & Petty, 1996, for a review). Although it is possible to have exactly equivalent positivity and negativity, Priester and Petty noted that one valence is usually dominant, making the other conflicting. All ambivalence formulas recognize that the greater the number or magnitude of the conflicting reactions, the greater the report of ambivalence. Furthermore, Newby-Clark, McGregor, and Zanna (2002) found that having positive and negative reactions to an attitude object produces higher ratings of subjective ambivalence primarily when the positive and negative evaluations came to mind quickly and equally so. This held for both measured and manipulated accessibility of the positive and negative evaluations of an important attitude object (e.g., *abortion*).*

In sum, the available evidence suggests that although most attitude objects are probably associated with one dominant evaluative reaction (e.g., see Fazio, 1995; Chapter 2, this volume), some attitude objects—ambivalent ones—can be associated with very quick positive and negative reactions rather than one dominant evaluation. This is depicted in panel 2 of Figure 5.1 and can be compared with the univalent attitude structure depicted in panel 1. Furthermore, people who acknowledge both positive and negative aspects of an attitude object report being more mixed or ambivalent when asked, with greater ambivalence being reported as the magnitude and accessibility of the conflicting reactions increase.†

Consequences

Besides reporting being more mixed or two-sided, what are some of the consequences of holding attitudes with an ambivalent rather than a univalent structure? One consequence is that when reporting their

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* In addition to the accessibility of the positive and negative associations (Newby-Clark et al., 2002), the confidence one has in these associations can also contribute to the experience of ambivalence. Thus, maximum ambivalence occurs when people feel confidence in both the positive and negative aspects of the object. Explicit ambivalence is reduced if the extent of confidence in the positive and negative attributes is highly discrepant (Briñol, Petty, DeMarree, & Priester, 2008).

† Other factors can increase reports of subjective ambivalence, such as the extent to which one's attitude disagrees with significant others (Priester & Petty, 2001), but this is not the focus of the current chapter.
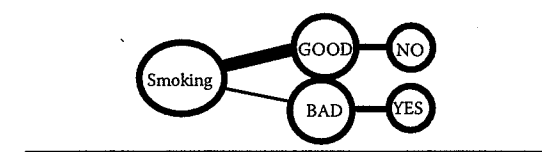
1. Univalence

2. Explicit Ambivalence
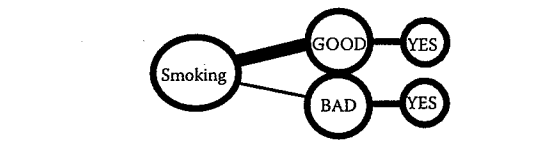
3. Implicit Ambivalence (a)

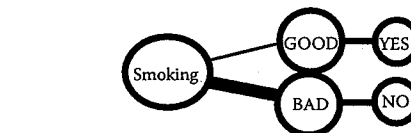
4. Implicit Ambivalence (b)

FIGURE 5.1 Depiction of Univalence, Explicit Ambivalence, and Implicit Ambivalence from the perspective of the Meta-Cognitive Model (figure adapted from Petty, Briñol, & DeMarree, 2007).

attitudes on traditional bipolar scales, people tend to be slower to report attitudes that are ambivalent rather than univalent (Bargh, Chaiken, Govender, & Pratto, 1992; see also Costello, Rice, & Schoenfeld, 1974; Gilmore, 1982; Komorita & Bass, 1967; Tourangeau, Rasinski, Bradburn, & D'Andrade, 1989). This would be expected if ambivalent attitude objects spontaneously activate both positive and negative evaluative reactions (de Liver et al., 2007) that must be integrated in order to report an overall attitude.

Second, highly ambivalent attitudes (i.e., where positivity and negativity are equivalent) tend to be less extreme than univalent attitudes, as would be expected if positivity and negativity are combined in some manner when an overall attitude is reported. For this reason, Kaplan (1972) noted that with traditional bipolar attitude measures, it was often difficult to distinguish ambivalent attitudes from neutral ones. However, with unipolar measures (i.e., separate ratings of good

and bad) and with the new implicit techniques assessing automatic positive and negative associations, ambivalence can be uncovered more easily.

One of the most studied consequences of ambivalent attitudes concerns their impact on information processing. In particular, there is suggestive evidence that ambivalent individuals engage in greater information processing aimed at resolving their ambivalence. For example, in one study (Jonas, Diehl, & Bromer, 1997), ambivalent individuals generated more thoughts in a thought-listing task on an ambivalent topic, and in another they took longer to integrate attributes into an overall impression than did unambivalent individuals, as if ambivalent people were deliberating about the attributes more (Van Harreveld, Van der Plight, De Vries, Wenneker, & Verhue, 2004).

Of most relevance to the research that we report in this chapter, ambivalent individuals have been shown to pay more attention to the information to which they are exposed, so long as that information might help to resolve the ambivalence. For example, in one study, Maio, Bell, and Esses (1996) measured participants' explicit ambivalence regarding the issue of immigration to Canada (i.e., the extent to which they endorsed both positive and negative aspects of the issue), and then exposed them to a message favoring immigration from Hong Kong to Canada that contained either strong or weak arguments. The degree to which participants processed the message information was assessed by examining the extent to which the quality of the arguments affected postmessage attitudes toward immigration (Petty, Wells, & Brock, 1976). When people are thinking carefully about information, they should be affected by the quality of the arguments a message contains (see Petty & Cacioppo, 1986). As hypothesized, Maio et al. found that individuals who had explicitly ambivalent attitudes toward immigration were more influenced by argument quality than were individuals low in ambivalence, suggesting that they engaged in enhanced scrutiny of the information.

The enhanced scrutiny is presumably aimed at resolving the ambivalence. Indeed, Clark, Wegener, and Fabrigar (2008) found that individuals who reported high levels of subjective ambivalence regarding an attitude object were especially likely to think about proattitudinal rather than counterattitudinal messages. That is, they were more interested in processing a message that was consistent with their dominant evaluative reaction rather than a conflicting one because the former message might more easily resolve the ambivalence.

The Experience of Ambivalence

Although it seems clear that people engage in greater processing when ambivalent, why do they do so? The obvious answer is to resolve the ambivalence, but why do people wish to resolve ambivalence? We already noted that when people endorse both positive and negative aspects of an attitude object, they report being ambivalent, mixed, and even conflicted. But is ambivalence sufficiently distressing and uncomfortable that people would be motivated to resolve it? In fact, some research has suggested that ambivalence is distressing and that processing is enhanced only when the ambivalence is seen as something bad rather than as something good (Bell & Esses, 2002).

The idea that holding inconsistent cognitions is uncomfortable and can thus produce enhanced information processing is most widely associated with Festinger's (1957) theory of cognitive dissonance. To the extent that people subscribe to beliefs that imply opposite things, dissonance theory holds that people will experience tension that they can resolve by changing one of the dissonant elements or generating new cognitions to resolve the inconsistency. Although there are many studies consistent with the dissonance framework (e.g., see Harmon-Jones & Mills, 1999, for a review), there are also numerous theoretical approaches suggesting that mere inconsistency alone need not produce tension. In some frameworks, for example, before inconsistency can lead to dissonance, the inconsistency must imply negative consequences (e.g., Cooper & Fazio, 1984) or must threaten self-integrity (Steele, 1988). Thus, according to various contemporary approaches to dissonance, holding evaluatively inconsistent beliefs about a non-self-relevant topic might not induce discomfort.

On the other hand, a few studies have suggested that attitudinal ambivalence is uncomfortable. In one study (Hass, Katz, Rizzo, Bailey, & Moore, 1992), for instance, it was found that with respect to racial attitudes, individuals who were ambivalent reported more negative feelings than nonambivalent respondents. In a more direct test of the idea that ambivalence is uncomfortable, Nordgren, van Harreveld, and van der Pligt (2006) found that similar to dissonance research (e.g., Cooper, Zanna, & Taves, 1978), people misattributed their ambivalence to a pill characterized as tension producing. In this study, participants first ingested a sugar pill that they were led to believe would cause them to feel relaxed or tense. Then, they were exposed to a message designed to induce ambivalence. The message was presented as a newspaper article that provided 11 positive and 11 negative consequences of geneti-

cally modified food. Following this, message recipients reported on the extent to which the issue of genetically modified food made them feel tense and anxious. As expected if ambivalence is associated with tension, participants told that the pill would make them feel calm reported significantly *more* tension than those told the pill would make them feel tense. Or viewed differently, when the pill was associated with tension, the discomfort presumably due to attitudinal ambivalence could be misattributed to the pill, thereby reducing tension with respect to the attitude issue.*

Implicit Ambivalence

Antecedents

We have seen that explicit ambivalence results from situations in which people consciously recognize both positive and negative aspects of some attitude object. Recognition of both positive and negative aspects of an object can produce discomfort, which motivates people to resolve the discrepancy, for example, by seeking out information that would help them to see the object as primarily positive or negative. To the extent that people are successful at this, the ambivalence is resolved at the explicit level and subjective feelings of being mixed or conflicted would be reduced or eliminated.

However, a person who has eliminated ambivalence at the explicit level might still be ambivalent at the implicit level. We have argued that implicit ambivalence occurs when people have both positive and negative associations to an attitude object, but one of these is not endorsed (Petty, Tormala, Briñol, & Jarvis, 2006). This situation is depicted in panels 3 and 4 of Figure 5.1. Why does this situation produce implicit, but not explicit, ambivalence? First, there is no explicit ambivalence because the person has rejected and does not endorse either the positive or the negative aspect of the attitude object. Explicit ambivalence requires people to recognize that some object has both positive and

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* It is worth noting that the available research suggests that not all people are equally bothered by ambivalence. For example, some individuals have a greater need for consistency than others (Cialdini, Trost, & Newsome, 1995), and some cultures stress consistent selves whereas others favor more balanced (two-sided) selves (Kitayama & Markus, 1999). Furthermore, there are cultural differences such that inconsistency can be bothersome primarily because of intrapersonal or interpersonal factors (Kitayama, Snibbe, Markus, & Tomoko, 2004).

negative features. If one of the valences is not recognized or is denied, there is no reason to report any explicit ambivalence (see also Wilson, Lindsay, & Schooler, 2000).

There are several ways in which the attitude structures depicted in panels 3 and 4 of Figure 5.1 might come about. For example, we have already noted that people might have believed at one time that there were both good and bad features of an attitude object, but now they only agree with one side (i.e., they have resolved their ambivalence). In this situation people would not report any explicit ambivalence because it has presumably been resolved. Yet, at the structural level, the attitude object would still be linked to both positive and negative associations, one of which is no longer endorsed.

Alternatively, people might recognize that they used to endorse only one side of an issue, but now they have completely changed their minds and endorse the opposite side. That is, people sometimes recognize that their old attitude is different from their new one (cf. Ross & Conway, 1986). But would there be any explicit ambivalence resulting from the discrepancy between old and new attitudes? In some cases of attitude change, people might well experience some explicit conflict or tension between their old and new views. For example, people can be aware that their attitude toward smoking has changed from positive to negative, but when they find themselves automatically reaching for a pack of cigarettes, they might realize that their behavior contradicts their anti-smoking position and suggests an underlying ambivalence regarding cigarettes. This consciously recognized contradiction can cause explicit feelings of conflict. Such a situation is analogous to the conceptualization offered by Devine, Monteith, and colleagues with respect to racial prejudice. In a series of studies (e.g., Devine, Monteith, Zuwerink, & Elliot, 1991; Monteith, 1993; Monteith, Devine, & Zuwerink, 1993), they have argued that egalitarian individuals can recognize that they sometimes have spontaneous negative feelings toward Blacks or engage in prejudicial behavior. When this conflict is brought into consciousness, there is enhanced cognitive activity designed to prevent the prejudice (see also Petty, Fleming, & White, 1999).

However, we argue that sometimes when attitudes change, people do not recognize any ambivalence despite the fact that they are aware that their old and new attitudes conflict. For example, consider a student who had one pleasant date with another student only to discover subsequently that the person is a pedophile. The initial positive attitude turns to a negative one, but it seems unlikely that the person would report any ambivalence regarding the new negative attitude. Rather, the

person might be quite confident in it. Or imagine that a corporate executive formed a very negative impression of a job candidate based on a job application only to find out that the application form was put in the wrong folder and, thus, the information was not appropriately attributed to that person. The correct application has very positive information. Here, a negative impression turns into a positive one, but there is no logical reason to be conflicted about the new impression. In this case also, there is no reason to report any explicit ambivalence.

To take a final example of how the attitude structures in panels 3 and 4 might come about, consider a person who recognizes that the media are full of negative depictions of various minority groups and even accept the idea that negative associations come to mind because of this. However, if the person only endorses positive aspects of these groups, and denies the validity of the negative information that comes to mind ("It's only a stereotype."), there is no reason to claim being ambivalent.

In each of these examples, people have both positive and negative associations to an attitude object, but one of these is rejected or negated. We argue that in such situations, people can experience implicit ambivalence, an ambivalence of which they are not aware, or at least they do not label it as such.* As should be apparent, our depiction of implicit ambivalence makes a number of assumptions about attitude structure that we have incorporated into a Meta-Cognitive Model (MCM) of attitudes (Petty, 2006; Petty & Briñol, 2006; see Petty, Briñol, & DeMarree, 2007, for an extended discussion). Before turning to the assessment and consequences of implicit ambivalence, we briefly review the MCM.

Meta-Cognitive Model of Attitudes

The MCM is a model of attitude structure that makes a number of assumptions about attitudes. First, in accord with what is probably the dominant view of attitudes as stored representations (e.g., Fazio, 1995; Fiske & Pavelchak, 1986) rather than as momentary constructions (e.g., Schwarz & Bohner, 2001; Wilson & Hodges, 1992), the MCM holds that attitude objects can be linked in memory to global evaluative associations, and these associations can vary in their accessibility (see Fazio,

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* For expository purposes, we have described negation/acceptance tags as if they are all or none. More generally, people can hold their evaluations with varying degrees of confidence or certainty (see Gross, Holtz, & Miller, 1995; Petty, Briñol, & DeMarree, 2007). This means that if a person has strong positive and negative associations but one is only doubted rather than rejected completely, there can still be some degree of explicit ambivalence (see also footnote 2).

2007, for a review). There are many determinants of such accessibility, including the number of evaluative experiences a person has had with the attitude object and the recency of those experiences. Individual differences can also affect the accessibility of evaluations. For example, individuals high in their need to evaluate (Jarvis & Petty, 1996) tend to have stronger object-evaluation associations due to their chronic evaluative responding (Hermans, de Houwer, & Eelen, 2001).

Second, and more importantly, in concert with the idea that the positivity and negativity underlying attitudes can stem from separate systems (e.g., Cacioppo et al., 1997), the MCM holds that attitude objects can sometimes be linked in memory to evaluative associations of opposite valence. We have already reviewed evidence supporting this assumption (e.g., de Liver et al., 2007). Whether a positive or negative evaluation comes to mind first will depend on all of the various factors that can affect memory, including the context in which these associations developed. For example, if people have experienced positive reactions to African Americans in a sports context, but negative reactions in an urban setting, measures of association that include these contextual features should show different evaluations (Barden, Maddux, Petty, & Brewer, 2004; Wittenbrink, Judd, & Park, 2001). It is important to note, however, that not all attitude objects are expected to have an ambivalent structure. Rather, for many objects, one evaluation should be dominant and represent the integration of knowledge about the object (see top panel of Figure 5.1).

Third, the feature of the MCM that gives the model its name is the assumption that people can tag their evaluative associations as true or false, or held with varying degrees of confidence. In this way, the model builds on existing research on meta-cognition (Jost, Kruglanski, & Nelson, 1998; see Petty, Briñol, Tormala, & Wegener, 2007). The meta-cognitive associations in the MCM can be represented in various ways such as yes/no, confidence/doubt, true/false, accept/reject, and so forth.* Furthermore, these meta-cognitions can vary in the strength

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* Affective validation is also possible wherein people's attitudes make them happy or sad, comforted or anxious. Though we focus on validity tags in this presentation, we also acknowledge that other tags might exist, and these tags could also exert an impact on attitudinal processes. For example, a person might tag a negative racial evaluation as "inappropriate to express" even though he or she might personally endorse the association. Validity tags are more likely to be stored, we think, because validity tends to be constant across contexts whereas other meta-cognitive features (e.g., appropriateness, diagnosticity, relevance) can vary from situation to situation (cf. Feldman & Lynch, 1988; Snyder, 1982).

of their association to the linked evaluation, and the strength of this association will determine the likelihood that the perceived validity of an evaluation will be retrieved along with the evaluation itself. Most notably, perhaps, the MCM goes beyond the idea that attitude validation is solely an on-line process (cf. Gawronski & Bodenhausen, 2006; Chapter 4, this volume) and contends that perceived validities, like the evaluations themselves, can be stored for later retrieval.

Although there is no definitive research on the storage of validity tags, some evidence consistent with this idea comes from research on the stability of belief certainty over time. For example, in one study, a manipulation of expressed agreement with one's judgment by another person (i.e., social consensus) produced the same increase in judgmental confidence whether that confidence was measured immediately or 48 hours later (Wells, Olson, & Charman, 2003). In other research, attitude certainty measured at one point in time was shown to predict certainty-related outcomes (i.e., resistance of attitudes to change) at a later time, even when certainty was not made salient at the second occasion (e.g., Bassili, 1996, Study 2). These results are consistent with the idea that confidence or validity information can reside in memory. Indeed, just as it is adaptive to have stored general evaluations that come to mind to help guide behavior (e.g., Fazio, 1995), it is useful to store whether the evaluations that come to mind are valid or not.*

Finally, the MCM concurs with research on cognitive negation that suggests that untagged evaluations are presumed to be true unless evidence against them is or has been generated. This proposal is analogous to Gilbert's suggestion (following the philosopher Spinoza over Descartes) that information initially held as true needs to be tagged as false to be disbelieved (Gilbert, 1991; Gilbert, Krull, & Malone, 1990; Gilbert, Tafarodi, & Malone, 1993). Only if the false tag is retrieved will a person who disbelieves an assertion recognize it as false. Otherwise, the

person can misremember and act upon the assertion as if it were true. The accumulated research suggests that successful negation is quite difficult (e.g., Deutsch, Gawronski, & Strack, 2006). Indeed, overriding one's negated attitudes will require motivation and ability, at least in the early stages (Betsch, Haberstroh, Molter, & Glöckner, 2004).

People could attempt to invalidate or deny their evaluative associations for many reasons. For example, people might reject an evaluative association because they realize that it stems from the culture (e.g., media exposure) and not from personal beliefs (e.g., Devine, 1989). Or the association can represent the opinions of others that have been encoded (e.g., Han, Olson, & Fazio, 2006). In addition, the association can represent a previously accepted personal view that has more recently been discredited (e.g., Gregg, Seibt, & Banaji, 2006; Petty et al., 2006).* When the association and negation are presented at the same point in time (e.g., "John is not smart."), people can sometimes reverse the association (i.e., "not smart" becomes "stupid"; see Mayo, Schul, & Burnstein, 2004), but when the negation follows the association in time (e.g., "John is smart...WRONG!"), this is less likely.

Finally, prior research suggests that even when a person can consciously report that something is untrue when engaged in deliberative thinking (i.e., the negation is not lost from memory or has not decayed), the negation tag still might not be retrieved spontaneously. In one study, for example, Tybout, Calder, and Sternthal (1981) exposed people to a rumor about McDonald's hamburgers being made with worms. Even though participants reported that they believed the rumor to be false, this information had a negative impact on subsequent judgments of McDonald's compared to individuals who were not exposed to the rumor. Importantly, the effect of the false rumor was only apparent when people did not first think about McDonald's prior to responding. When they were asked a series of questions about McDonald's first (e.g., "Does McDonald's have indoor seating?"), the false rumor had no impact even though the questions were not specifically relevant to the rumor. This is consistent with the idea that with thought, information tagged as false will not be as impactful as when people respond spontaneously.

Note that if a negation tag is not retrieved spontaneously, then the person has both positive and negative associations to the attitude object and neither is negated, producing a state of ambivalence. Because

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* The MCM does not specify exactly how evaluations and validities are stored in memory. That is, memory for evaluations and their validities can be conceptualized as part of a traditional semantic association network (e.g., Fiske & Pavelchak, 1986) or as linked patterns of activation in a connectionist model (e.g., Eiser, Fazio, Stafford, & Prescott, 2003). Either framework can accommodate the postulated linkages (stored associations) in the MCM (e.g., see van Overwalle & Siebler, 2005, for a connectionist model wherein attitude objects are linked to both positivity and negativity). More generally, just as factors that affect memory will influence whether and which evaluations are retrieved when exposed to the attitude object, so too will these same factors (e.g., rehearsal, context) determine if a validity tag is retrieved (e.g., Maddux, Barden, Brewer, & Petty, 2005).

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* When the negated evaluation is a prior attitude, we have referred to our approach as the PAST (Prior Attitudes are Still There) model (Petty & Jarvis, 1998; Petty et al., 2006). That is, the PAST model is a specialized case of the more general MCM.

this ambivalence is at the level of evaluative associations rather than endorsement, however, people would not recognize it. Yet could this implicit ambivalence be consequential? We conducted a series of studies to examine this question. We first describe some studies in which we attempted to identify individuals who were already likely experiencing implicit ambivalence with respect to some object of judgment. Then, in a second series of studies we aimed to experimentally create implicit ambivalence in the lab and examine its consequences.

Diagnosing Implicit Ambivalence With Discrepancies Between Implicit and Explicit Measures

According to the MCM, if a person's attitude structure is represented by one of the bottom two panels of Figure 5.1, then it is likely that automatic and deliberative attitude measures would show different evaluations. The reasons for this are quite straightforward. First, consider the attitude structure in panel 3 of Figure 5.1. According to this depiction, the individual has strong positive associations to smoking, but these are rejected. Perhaps the person used to enjoy smoking (i.e., smoking is associated with many likable events in the person's past) but the person now wants to quit. At the conscious level, the person rejects that there are any positive features of smoking and wishes to suppress any smoking urges. Furthermore, the person is completely convinced that smoking is bad, but this evaluation is not as strongly linked to the attitude object. What would automatic versus deliberative attitude measures with respect to smoking show for this person?

The MCM assumes that contemporary measures of automatic evaluation tap (though not perfectly) into evaluative associations without respect to validity tags. The impact of validity tags and validity processes more generally are revealed primarily on deliberative measures. There are several reasons for this. First, because a validity tag is a stored form of meta-cognition (i.e., a secondary cognition), it is not directly linked to the attitude object, but is instead linked to the evaluative association (the primary cognition), which is in turn linked to the attitude object. Because of this, validity tags will take more time to retrieve than evaluations, and the impact of these associations is less likely to be evident on automatic attitude measures. In addition, there are many circumstances where validity tags will not be as strongly linked to the evaluation as the evaluation is to the attitude object (e.g., because less thought was devoted to forming the validity association than the evaluation itself). However, as the strength of the link between an evaluation

and the associated validity tag increases, the likelihood that it will be retrieved increases.

Thus, for the attitude structure in panel 3, an automatic attitude measure would likely reveal a relatively positive attitude because the attitude object is more strongly associated with good than bad. However, an explicit measure would more likely reveal a negative attitude because the validity tags are considered and the good associations are rejected. Thus, this person would have an implicit-explicit discrepancy, but would not likely report any experience of ambivalence because in the person's mind, smoking is only bad—the good aspects are rejected (unlike panel 2, in which both positive and negative aspects of smoking are endorsed). However, at the level of automatic associations, there is ambivalence. Panel 4 in Figure 5.1 presents the opposite scenario. Here the automatic attitude is likely to be negative, whereas the deliberative attitude will be relatively positive. Can situations of explicit-implicit discrepancy produce a state of implicit ambivalence in the absence of explicit ambivalence?

According to the MCM, implicit ambivalence is possible when there is a discrepancy in the valence of an attitude uncovered by a deliberative (explicit) versus automatic (implicit) measure. According to the MCM, the existence of an implicit-explicit discrepancy is consistent with an underlying attitude structure such as that depicted in panels 3 and 4 of Figure 5.1. In situations where people truly reject one of the evaluations with which an attitude object is associated in memory, implicit ambivalence should exist. The prediction of implicit ambivalence from the MCM stands in marked contrast to theories that assume that implicit and explicit measures tap into "dual attitudes" (see Wilson et al., 2000) that are stored in separate brain regions (see DeCoster, Banner, Smith, & Semin, 2006), stem from qualitatively different processes (see Rydell & McConnell, 2006; Rydell, McConnell, Mackie, & Strain, 2006), and operate in distinct situations (see Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997; Chapter 6, this volume).

In the dual attitudes framework, the different evaluations tapped by implicit and explicit measures should not be jointly activated and are more like "two ships passing in the night" (Cohen & Reed, 2006, p. 9). The MCM suggests a more integrated relationship between the so-called dual attitudes in that both evaluations are linked to the same attitude object, but one evaluation is tagged as false or wrong. Because both evaluations are linked to the same attitude object, however, either or both can be activated at any point in time, depending on the strength of the linkage to the attitude object and the retrievability of the false tag

(see Petty, Briñol, & DeMarree, 2007, for further comparison with the dual attitudes idea).*

If the more integrated MCM approach is correct, and implicit ambivalence exists, how can it be detected? Recall that people will not likely consciously label any discrepancy as ambivalence on an explicit self-report. Nevertheless, we suggest that such ambivalence can be detected in at least three ways. First, people with implicit-explicit discrepancies should show evidence of both positivity and negativity being linked to the attitude object on measures of automatic association, just as is the case with explicit ambivalence (de Liver et al., 2007). This is because automatic measures are not typically sensitive to the negations (Deutsch et al., 2006).

Second, people with such discrepancies, though they will not report explicit ambivalence, might show signs of tension or discomfort associated with the attitude object. In fact, in nonattitudinal domains, there is already some evidence that implicit-explicit discrepancies are associated with some negative outcomes. In one study, for instance, Zlenski and Larsen (2003) found that having incongruent explicit (i.e., self ratings) and implicit (measured by the Thematic Apperception Test, TAT; Proshansky, 1943) motive profiles was associated with reduced emotional well-being (see Briñol, Petty, & Wheeler, 2006, for a review).

Third, and perhaps most importantly, people with implicit-explicit discrepancies should behave as if they are ambivalent. As noted earlier, one behavioral concomitant of explicit ambivalence is that people engage in greater processing of information that might be helpful in resolving the ambivalence (e.g., Maio et al., 1996; Clark et al., in press). In our own research we examined whether people with implicit-explicit attitude discrepancies engaged in greater processing of information relevant to resolving ambivalence with respect to the target attitude object.

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* Not all instances of implicit-explicit discrepancy should produce implicit ambivalence. That is, we recognize that these discrepancies can arise in more than one way. For example, a person might continue to like smoking but only feign an unfavorable attitude on an explicit measure for purposes of impression management (e.g., see Olson, Fazio, & Hermann, 2007, for supportive empirical evidence). In this case there would be no ambivalence because no conflict is present at the level of evaluative associations (i.e., there is only a good automatic association). Or, a person might have an initial automatic reaction to some attitude object ("That chocolate cake is yummy!") only to be followed by an opposite reaction upon reflection ("That cake will kill my diet.") that overrides the initial response. If the person sees both automatic and deliberative reactions as valid, this implicit-explicit discrepancy will cause explicit ambivalence, and the person should report being conflicted over whether or not to eat the cake.

Next, we review research on implicit-explicit attitude discrepancies with respect to two attitude objects: African Americans and the self.

Implicit-Explicit Discrepancies in the Domain of Racial Attitudes

Over the past decade, much research has accumulated suggesting that many White Americans report explicitly positive attitudes toward various minority groups such as African Americans, but score more negatively on measures of automatic evaluation (e.g., Greenwald, McGhee, & Schwartz, 1998). Although there could be many reasons for this (such as impression management), we suspect that in at least some cases, this situation represents implicit ambivalence. That is, people truly reject any negative stereotypes or evaluations that come to mind and endorse their positive reactions.* Is there any evidence that such discrepancies are associated with tension or enhanced information processing?

First, with respect to discomfort, although there is no definitive evidence that implicit-explicit discrepancies on racial attitudes produce tension, there is some suggestive evidence. In one relevant study, Olson and Fazio (2007) examined the discrepancies between a person's automatically activated attitude toward Blacks and their explicit attitude toward a particular Black individual. When these implicit and explicit evaluations were discrepant, regardless of the direction of discrepancy, people showed more discomfort-related nonverbal behavior (e.g., self-touching) when making a videotape about the Black target's qualities. However, because the explicit and implicit attitudes were assessed at different levels of specificity (i.e., attitudes toward Blacks in general on the implicit measure versus a specific Black individual on the explicit), the discomfort could have stemmed from a discrepancy between one's global and specific attitudes (e.g., see Woike & Baumgardner, 1993) rather than implicit-explicit discrepancies per se.

Do implicit-explicit discrepancies lead to enhanced information processing? There are now a number of studies suggesting that Whites will sometimes engage in greater processing of a persuasive message from a Black than a White source. In the first research on this topic, White and Harkins (1994) presented White participants with a persuasive message from a White or a Black source on the topic of senior comprehensive exams. The message contained either strong or weak arguments.

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* This is to be distinguished from cases where individuals are truly ambivalent about minority group members (i.e., endorse both positive and negative aspects of the minority group; see Katz & Hass, 1988).

Across several replications, they consistently found that the impact of argument quality on attitudes was greater when the source was Black rather than White. But why?

In series of follow-up studies, Petty et al., (1999) suggested that this enhanced scrutiny might stem from a "watchdog motivation." That is, Whites might be processing messages from Blacks more than Whites in order to guard against possible prejudice toward Black sources. Petty et al. reasoned that if this were true, it should only be Whites who were low in prejudice who would show the enhanced scrutiny effect. To examine this, prejudice was assessed with several explicit measures (Katz & Hass, 1988; McConahay, Hardee, & Batts, 1981), and reactions to persuasive messages from Black and White sources were assessed. In several studies it was found that only Whites who were low in explicit prejudice processed messages more for Black than White sources. This enhanced scrutiny of Black sources by low-prejudiced individuals was replicated when the message was about a Black versus a White target individual rather than from a Black versus a White source (Fleming, Petty, & White, 2005).

In a more recent series of studies, we aimed to test a variation of the watchdog hypothesis based on the idea of implicit ambivalence. That is, Petty et al. (1999) suggested that people could be motivated to watch out for either their own prejudice or the possible prejudice of others. If people are motivated to watch out for their own prejudice, then it should be White individuals who are low in prejudice on an explicit measure, but high in prejudice on an implicit measure, who are most likely to show the watchdog effect (i.e., processing messages from Black sources or targets more carefully). If people are aware of their automatic negativity, then their watchdog motivation would be rather explicit (e.g., "I need to guard against these negative reactions that I don't want or don't believe."; see Devine et al., 1991; Monteith, 1993). However, even if these individuals are not aware of their automatic negativity, or deny it stems from racial associations, they might still process race-relevant messages due to the implicit ambivalence. Furthermore, our conceptualization of implicit ambivalence suggests that perhaps it will not only be people who are low in explicit prejudice and high in implicit prejudice who will process race-relevant messages more, but also individuals who are high in explicit prejudice and low in implicit prejudice. The reason is that these individuals would also experience some implicit ambivalence because their deliberative attitudes do not match their automatic evaluations.

To examine these issues, in an initial study (Briñol, Petty, & See, 2008), we assessed Ohio State University students' attitudes toward

African Americans using both automatic and deliberative measures. The automatic measure was an Implicit Association Test in which stereotypically Black names (e.g., *Tyrone, LaToya*) and White names (e.g., *Andrew, Katie*) were paired with good (e.g., *freedom, love*) and bad (e.g., *poison, disease*) terms (see Greenwald et al., 1998, for the scoring procedure and rationale). The explicit measure consisted of a series of anti-Black (e.g., "On the whole, Black people do not stress education or training.") and pro-Black (e.g., "It is surprising that Black people do as well as they do considering all of the obstacles they face.") statements to which participants were to rate their extent of agreement (see Katz & Hass, 1988 for the scoring procedure and rationale).

The explicit and implicit measures of attitudes were unrelated to each other. An index of explicit-implicit discrepancy was formed as the absolute value of the difference between the standardized explicit and implicit measures of racial attitudes. The discrepancy index considers where people fall within the distribution of participants in the study on the implicit versus explicit measures. A zero on the index indicates that the person's place in the distribution is exactly the same on the implicit and explicit measures (e.g., high in the distribution on both, low in the distribution on both, middling on both, and so forth). Discrepancies can be in either direction. That is, people can be higher in the sample distribution on the explicit measure than the implicit measure (a positive discrepancy) or they can be lower in the distribution on the explicit measure than the implicit measure (a negative discrepancy). As our key index of implicit-explicit discrepancy, we calculated the absolute value of the difference between the two standardized measures (see also Kehr, 2004). We also coded for the direction of discrepancy (i.e., implicit score more prejudiced than explicit or vice versa) to see if this mattered.

After completing the implicit and explicit measures of racial attitudes, all of the students were exposed to a message advocating a new program to hire African-American faculty at their university that was supported with either strong or weak arguments. As in past research, the strong arguments were designed to elicit favorable thoughts if people thought about them, whereas the weak arguments were designed to elicit mostly unfavorable thoughts (see Petty & Cacioppo, 1986). The strong arguments, among other things, mentioned that the new program would allow class sizes to be reduced and would allow a greater percentage of classes to be taught by faculty rather than graduate students. In contrast, the message with weak arguments stated that the new proposal was desirable because it would allow current professors

to have more free time and that several parents wrote letters in support of the proposal.

Following exposure to the strong or weak message, students rated their attitudes toward the proposal on seven semantic differential scales (e.g., good-bad). Consistent with the idea that people with automatic-deliberative discrepancies would act as if they were ambivalent, discrepancy interacted with argument quality to predict attitudes toward the program. That is, as the discrepancy between attitudes assessed with implicit and explicit measures increased, attitudes were more affected by argument quality. Notably, the direction of the discrepancy did not further qualify the results. These results indicate that among those who were low in their explicit prejudice, it was primarily those who were high in implicit prejudice who engaged in greater scrutiny of a message about a program favoring Blacks. However, among those who were high in explicit prejudice, it was those who were low in implicit prejudice who engaged in the greatest scrutiny. The latter finding should be treated with caution, however, because on an absolute basis, there were far more people with discrepancies in one direction than the other. That is, more people were discrepant by having low explicit prejudice and high implicit prejudice than the reverse.

Implicit-Explicit Discrepancies in the Domain of Self-Esteem

Although our research on implicit-explicit discrepancies in the domain of racial attitudes is suggestive, discrepancies were unbalanced in that one kind of discrepancy was more common on an absolute basis than the other. Furthermore, racial attitudes are a domain where impression management might be operating. In particular, individuals who score low in explicit prejudice and high in implicit prejudice might be engaging in impression management, and they might process a race-relevant message for this reason rather than to resolve an evaluative discrepancy. Thus, it was desirable to replicate these results in another domain.

One area in which implicit-explicit discrepancies have been studied in some detail concerns the self. Thus, in another study we assessed self-esteem with both explicit and implicit measures. Implicit self-esteem typically has been defined as an evaluation of the self that occurs automatically and unintentionally, and can differ from one's more controlled and deliberative self-assessments (e.g., Farnham, Greenwald, & Banaji, 1999; Hetts & Pelham, 2001; Koole, Dijksterhuis, & van Knippenberg, 2001).

As was the case with racial attitudes, we hypothesized that discrepancies between implicit and explicit measures of self-esteem would be associated with implicit ambivalence. Prior work has suggested that such discrepancies are associated with numerous consequences (see Chapter 9, this volume, for a review). Of most relevance for the current conceptualization, discrepancies between explicit and implicit self-esteem scores have been associated with implicit but not explicit self-doubt. Specifically, in one study (Briñol, Petty, & Wheeler, 2003), we measured self-esteem with both an implicit and an explicit measure. The automatic measure was an Implicit Association Test in which self (e.g., I, me) and other (e.g., they, them) words were paired with good (e.g., freedom, love) or bad (e.g., poison, disease) terms (see Greenwald & Farnham, 2000). The explicit measure was the commonly used Rosenberg (1965) self-esteem inventory, on which participants rate their extent of agreement with both proself (e.g., "On the whole, I am satisfied with myself.") and antiself (e.g., "At times, I think I am no good at all.") statements. As in some other studies using these measures (e.g., Bosson, Swann, & Pennebaker, 2000; Hetts, Sakuma, & Pelham, 1999; Karpinski, 2004; Kitayama & Uchida, 2003), the explicit and implicit measures showed a small negative correlation. As we did in the racial attitudes study, an index of explicit-implicit discrepancy was formed by taking the absolute value of the difference between the standardized explicit and implicit measures. The analyses also included a variable for the direction of the discrepancy.

In addition to assessing self-esteem with implicit and explicit measures, we also assessed self-doubt with both explicit and implicit measures. The explicit measure asked participants to rate their extent of self-doubt or confidence. The implicit measure was another IAT in which self and other words were paired with confidence or doubt terms. The key finding from this study was that as implicit-explicit discrepancy in self-esteem grew larger, participants had higher implicit self-doubt. In contrast, the measure of explicit self-doubt was unrelated to the discrepancy. This study therefore suggests that although individuals were not aware of any self-doubt associated with their implicit-explicit discrepancies, people with such discrepancies were faster to associate doubt words (or slower to associate confidence words) with the self than people without such discrepancies. The direction of the discrepancy made no difference.

In a second study on self-esteem (Briñol et al., 2006, Experiment 4), we examined whether implicit-explicit self-esteem discrepancies would predict processing of a self-relevant persuasive message. The message in

this study advocated increased consumption of vegetables and contained either strong or weak arguments. The strong message included arguments claiming that vegetables were more nutritious than vitamin supplements and that eating vegetables would increase energy and grades. In contrast, the weak arguments advocated eating vegetables because they were becoming more popular for special occasions such as weddings and looked very attractive on the plates when served. In addition to argument quality, we also varied the ostensible discrepancy-relatedness of the message information by framing the message on vegetables as either related or unrelated to the self. In the unrelated condition, the message was described simply as a message about vegetables that was based on a recent newspaper article. In the self-relevant condition, the message was described as relevant to the participant's self-concept and the way that they get along in the world. In all cases, participants received a message advocating greater vegetable consumption.

If implicit-explicit self-esteem discrepancies enhance information processing when the message is relevant to the discrepancy, then argument quality should have a larger impact on attitudes for participants with large than small discrepancies, but only when the message is framed as related to the discrepancy (i.e., when the message is framed as relevant to the self-concept). The expected three-way Discrepancy × Argument quality × Message frame interaction on attitudes was exactly what we observed (see Figure 5.2). As can be seen in the top panel of Figure 5.2, when the message was framed as relevant to the discrepancy (i.e., the self), increased discrepancy in explicit versus implicit self-esteem was associated with greater argument quality effects, a sign of enhanced information processing. Also, as can be seen in the bottom panel of Figure 5.2, when the message was framed as irrelevant to the discrepancy, message scrutiny was low overall and not related to the extent of discrepancy.

Creating Implicit Ambivalence by Changing Attitudes

In the prior section we reviewed studies showing that when people had large discrepancies between their implicit and explicit racial and self attitudes, they engaged in greater processing of information relevant to the attitude issue compared to when discrepancies were small. In addition to examining discrepancies in racial and self attitudes, we have
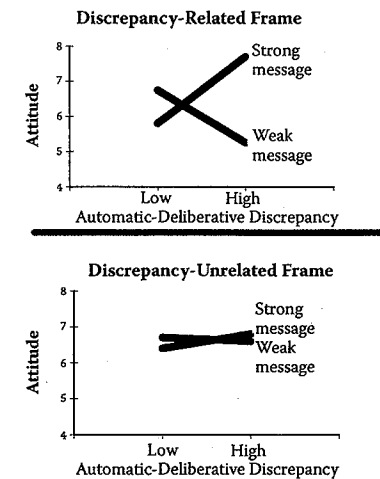
FIGURE 5.2 Interaction of Frame, Implicit-Explicit Self-Esteem Discrepancy, and Argument Quality on Attitudes (data from Briñol, Petty, & Wheeler, 2006, Experiment 4).

also investigated discrepancies in other individual differences assessed with both explicit and implicit measures. For example, in one study (Briñol et al., 2006, Experiment 1) we showed that discrepancies in explicit and implicit shyness (Asendorpf, Banse, & Mücke, 2002) were associated with enhanced processing of a persuasive message on the topic of shyness. Similarly, discrepancies in explicit and implicit need to evaluate (Jarvis & Petty, 1996) were associated with increased processing of a message framed as opinion relevant (Briñol et al., 2006, Experiment 2). Because shyness and need to evaluate are plausibly less subject to impression management concerns than are racial and self attitudes, this suggests that it is the discrepancies that are responsible for the enhanced information processing rather than a concern about being caught in one's deception, or conflict stemming from social desirability concerns.*

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* If implicit-explicit discrepancies do not stem from impression management concerns, from where do they come? One source would be reactions to the self from others. For example, a person might have a self-conception of being very sociable (resulting from a comparison to one's own immediate family members), but be seen as quite introverted by friends (who are making comparisons to their other acquaintances). If other people keep saying you are shy, but this makes little sense to you, an implicit association between the self and shy could develop, leading to an implicit-explicit discrepancy.

Alternatively, a remaining concern with our studies is that because they all used the IAT to assess automatic attitudes, perhaps the results were obtained because the IAT is tapping into consciously held normative beliefs rather than personal beliefs (e.g., see Olson & Fazio, 2004; Karpinski & Hilton, 2001), and the ambivalence we are tapping is interpersonal in nature: between recognized social norms and personal views. Prior research has shown that even if one's own attitudes are internally consistent, conscious ambivalence can be experienced if one's attitudes conflict with the perceived views of significant others (see Priester & Petty, 2001). However, we do not think this explanation is plausible for the data we reviewed for two reasons. First, prior research on interpersonal ambivalence suggests that people can report this type of conflict as easily as intrapersonal ambivalence. Yet participants in our studies did not report such conflict. Thus, we do not think that the ambivalence consequences we observed stem from a conscious perception of being different from social norms or others' expectations for us. Second, the fact that the results we observed for discrepancy were not moderated by direction of discrepancy is telling. That is, if social norms were operating, they should largely be in one direction, and thus the ambivalence results should occur when personal attitudes are in conflict with the direction of the social norm. Yet discrepancies in both directions produced equivalent levels of ambivalent responding.

Nevertheless, one possible criticism of all of the studies that we have reviewed on implicit ambivalence so far is that they rely on correlational designs. Thus, from these studies all we can say confidently is that the discrepancies we measured were associated with increased information processing of a discrepancy-relevant message. Even more compelling evidence for the implicit ambivalence idea would come from research that manipulated rather than measured implicit ambivalence.

Recall from our prior discussion of the Meta-Cognitive Model of attitudes that situations in which a person's attitude changes from one valence to another can set up the conditions for implicit ambivalence. As depicted in panels 3 and 4 of Figure 5.1, if a person used to have one attitude (positive or negative), but rejects this attitude in favor of an attitude of the opposite valence, ambivalence exists at the level of evaluative association. This implicit ambivalence should be most evident when people do not have the motivation or ability to retrieve the invalidity information associated with the rejected evaluation. When people are conscious of the fact that their attitudes have genuinely changed from what they were originally, and thus one evaluation is rejected (as

when responding to a deliberative measure), they should report no feelings of ambivalence.*

In a series of studies we examined whether changing a person's attitude from one valence to another would produce implicit ambivalence. In this research we first created attitudes of one valence, and then changed them to be of another valence. Following change, we examined whether people acted in an ambivalent manner even though they were not expected to report any explicit ambivalence.

In the initial study in this line of work (Petty et al., 2006, Experiment 1), we first wanted to examine whether changing attitudes from one valence to another would leave both evaluations associated with the attitude object on a measure of automatic association. On an explicit measure, only the endorsed evaluation should be reported. Most prior models of attitude change (e.g., Anderson, 1971) assume that when attitudes change, the old attitude either disappears or is incorporated into the new one. Thus, the old attitude has no separate representation. Dual attitudes models (e.g., Wilson et al., 2000) allow for separate representation of old and new attitudes, but these are assumed to be stored separately in different areas of the brain (e.g., see DeCoster et al., 2006), to operate in different situations (Dovidio et al., 1997), and not to interact with each other. However, if the more integrated MCM depiction of old and new attitudes is correct, then both old and new attitudes should be capable of joint activation when the invalidity of the old attitude is not considered, such as when responding under time pressure.

To examine this idea, we first created positive or negative attitudes toward a previously unfamiliar target person and then changed these attitudes to a different valence or not. To create the initial attitudes, we used a classical conditioning procedure in which a picture of the target individual (labeled *Eddie* or *Phil*) was paired with either very positive (e.g., puppies) or very negative (e.g., autopsy) photographs. This conditioning manipulation was effective in modifying both automatic (evaluative priming; Fazio, et al., 1995) and deliberative (semantic differential; Osgood, Suci, & Tannenbaum, 1957) evaluations of the person.

Following the creation of an initial attitude, we aimed to change the valence of the attitude or not. In order to do this, participants next

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* In the domain of attitude change, the conflict need not be between an invalidated old opinion and a validated new one. Rather, people might change their attitudes only to learn that the new attitude is based on faulty information and that the old attitude is correct (as in the sleeper effect paradigm; see Kumkale & Albarracin, 2004; Priester, Wegener, Petty, & Fabrigar, 1999). This too will set up a situation of implicit ambivalence (see Petty, Briñol, & DeMarree, 2007, for further discussion).

received information about the opinions of the target person on several important issues (e.g., abortion, capital punishment, religion) that would make the person appear either very likable (i.e., had similar attitudes to the participant) or dislikable (i.e., had dissimilar attitudes to the participant; see Byrne, 1961). In some conditions, this information reinforced the initial impression (i.e., no attitude change), and in other conditions, this information contradicted the initial impression (i.e., attitude change).

Our results indicated that in the reinforcement (no attitude change) conditions, both the deliberative and automatic measures of attitudes showed the same pattern of results. That is, participants were more positive toward the similar person who was conditioned positively than to the dissimilar person who was conditioned negatively. However, in the incongruent (attitude change) conditions, the automatic and deliberative measures diverged such that attitudes were more sensitive to the contradictory similarity information about the target on the deliberative than on the automatic measure. In this research, the deliberative measure reflected the fact that the old attitude was rejected, whereas the automatic measure reflected fast association of the target person to both the old and the new evaluations. This state of affairs represents what might be called the normal attitude-change situation, in which people reject their previous attitude and accept a new one. The explicit measure tracks this change quite well, but the implicit measure lags behind because of its relative insensitivity to the negation (see also Gregg et al., 2006).

Thus, when attitudes were not changed in valence from the conditioning to the similarity induction, automatic attitudes corresponded with deliberative ones. However, when attitudes were changed in valence from the conditioning to the similarity procedure, the automatic attitude assessment reflected old as well as new attitudes. To unpack the findings on the evaluative priming (implicit) measure, we conducted an analysis to determine whether participants in the attitude-change condition were relatively fast to respond to both positive and negative stimuli (indicating ambivalence), or relatively slow to respond to both positive and negative stimuli (which could indicate an absence of attitudes or neutrality). As depicted in the top panel of Figure 5.3, individuals in the no-change conditions were relatively fast to respond to positive stimuli when primed with similar (likable) targets and to negative stimuli when primed with dissimilar (dislikable) targets, suggesting strong associations to positivity and negativity in the appropriate conditions. Furthermore, individuals in the no-change conditions
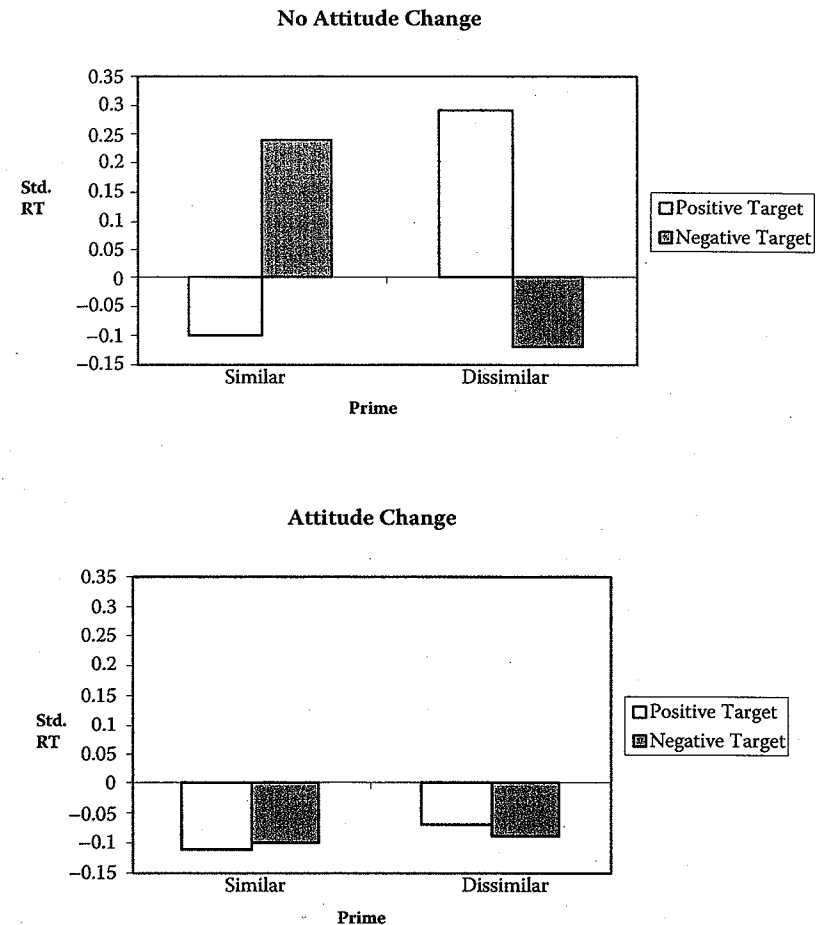
FIGURE 5.3 Standardized response times in Study 1 as a function of whether initial attitudes did not change (top panel) or changed (bottom panel) from the conditioning to the similarity induction. Lower values indicate faster response times, or stronger associations (data from Petty, Tormala, Briñol, & Jarvis, 2006).

were relatively slow to respond to negative stimuli when primed with similar (likable) targets and to positive stimuli when primed with dissimilar (dislikable) targets. This suggests the absence or weakness of these links.

As depicted in the bottom panel of Figure 5.3, however, participants in the conditions where attitudes were changed in valence were relatively fast to respond to both positive and negative stimuli regardless

of similarity of the target. In fact, participants in the attitude-change conditions (which did not differ from each other) were just as fast as the two fast no-change groups, and significantly faster than the two slow no-change groups. Overall, then, the data suggested that participants who experienced attitude change responded relatively quickly to both positive and negative stimuli, consistent with the notion of implicit ambivalence. Conceptually, this is the same pattern as observed when people consciously endorse both positive and negative aspects of the attitude object (see de Liver et al., 2007).

Having demonstrated that people who have rejected one evaluation but accepted another respond in an ambivalent like manner on an implicit evaluation task, our next step was to see if people who have changed their attitudes behave in a more ambivalent-like manner than people who have exactly the same explicit attitude currently, but always felt this way. To examine this, we conducted a study (Petty et al., 2006, Experiment 3) using the procedure just described in which we first classically conditioned participants to like or dislike a target individual. Then, the participants received information about the target individual's attitudes on several important topics. The attitudinal information was designed to get the person to either like or dislike the target by having the target agree or disagree with the participant. As just reviewed, in some conditions, this information was in the same direction as the conditioning manipulation so that no attitude change would occur, and in other conditions the information was opposite in valence to the conditioning. In the latter situation, we showed in the earlier study that individuals rejected their initial evaluations based on conditioning and adopted new evaluations based on the similarity information.

However, rather than measuring automatic and deliberative attitudes following attitude change as described earlier, in this study participants were told that the target person was a candidate for a job at their university. To evaluate the candidate, they were provided with either a strong or a weak resumé to examine. The strong resumé was very impressive. For example, the candidate was said to have won several national honors and awards, edited two books, and had exceptional teaching ratings. In contrast, the weak resumé noted that the candidate had yet to receive his Ph.D., had written two book chapters, and had only average teaching ratings. Of most interest was how much scrutiny the candidate's resumé received in making evaluations of him. The key result, depicted in the top panel of Figure 5.4, was that attitudes toward the target as a job candidate were more influenced by resumé quality in the condition where attitudes were changed than when attitudes toward the candidate
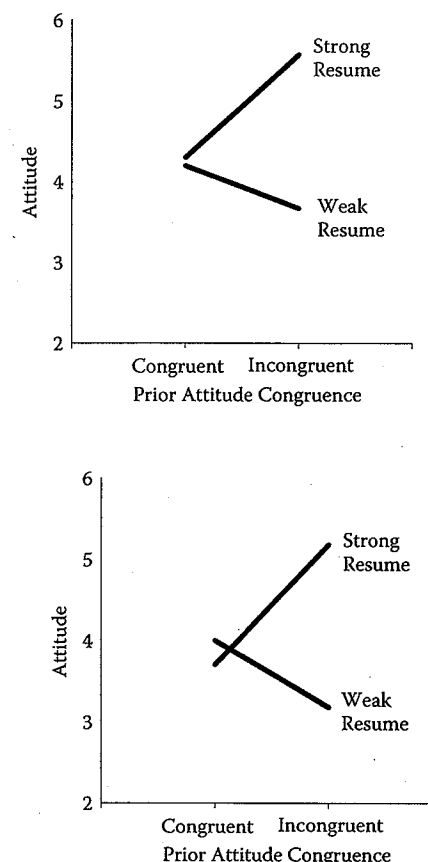
FIGURE 5.4 Top panel: Interaction on attitudes between Congruency (Attitude Change or Not) and Argument Quality (Petty et al., 2006, Study 3). Bottom panel: Interaction on attitudes between Congruency (Attitude Change or Not) and Argument Quality (Petty, Study 4).

had not been changed. That is, when attitudes were changed, people engaged in greater information processing as if they were attempting to resolve some underlying ambivalence regarding the candidate.

In a conceptual replication of this study (Petty et al., 2006, Experiment 4), we wanted to change attitudes in a very different way. In the study just described, attitudes were created initially with a procedure based on affective associations, whereas the change manipulation involved providing cognitive information. Thus, it could be argued that ambivalence depended in part on some type of affective-cognitive inconsistency. To

demonstrate that implicit ambivalence need not involve affective-cognitive conflict (possibly stemming from separate affective and cognitive systems or evaluations stored in separate emotional versus cognitive areas of the brain), we used a different procedure. In this study, attitudes toward the target individuals, Eddie or Phil, were first created using the attitude similarity induction described previously. Then, half of the participants were told that due to a computer mistake, the information about Eddie and Phil had been switched. For the individuals in this attitude-change condition, then, if Eddie had been liked because he was similar and Phil disliked because he was dissimilar, these evaluations would need to be reversed. In the no-attitude-change condition, the computer did not make any mistakes, and the original evaluations thus held.

After attitudes were formed and then changed or not, participants were told that the target individual was a job candidate at their university and they were presented with either the strong or weak resumé from the prior study. Following this, they rated how good a candidate they thought the target person would be for the open faculty position. As was the case in the prior study, participants whose attitudes toward the candidate were recently changed (i.e., reversed) were more influenced by the quality of the resumé than participants whose attitudes did not change (see bottom panel of Figure 5.3). That is, people who had recently associated both positive and negative information with the target person (even though one of these was now negated) acted as if they were ambivalent.

In the studies just described, the topic of the message that participants processed more when experiencing implicit ambivalence was always of high potential personal relevance (i.e., selecting a candidate for a job at their university). The same is true of the studies described earlier on implicit-explicit discrepancies (e.g., evaluating a new program for their university to hire more African-American professors). What if the implicit ambivalence involved a target of no personal consequence? We hypothesized that if the message had few personal implications, people would not be as motivated to resolve the ambivalence.

To examine this, Maimaran, Wheeler, Briñol, and Petty (2008) first had participants develop positive attitudes toward one foster care program and negative attitudes toward another ("Rhode Island" versus "State Mountain"). The positive attitude was based on positive information provided (e.g., workers in the program report high levels of satisfaction), whereas the negative attitude was based on negative information (e.g., the program was involved in an accounting scandal). Immediately following the initial information about the programs, participants were exposed to the attitude-change manipulation or not. As in the prior

study, participants in the attitude-change condition were led to believe that the information they had just received about the two foster care programs had been accidentally transposed, and thus needed to be reversed in order to be accurate. Participants in the no-change condition did not receive this information. At this point of the experiment, participants who had to change their attitudes to be correct had the same degree of liking or disliking for the programs as participants who were not told of the computer error.

To test the information processing implications of having a changed attitude, participants were randomly assigned to receive strong or weak arguments in favor of the target foster care program. The gist of an example strong argument in favor of the advocated program was that brothers and sisters are an additional source of love and support for the social development of the child. In contrast, the gist of an example weak argument in favor of the program was that the program recognizes that children need other children to fight with, and brothers and sisters provide an ideal opportunity for this to occur (see Petty, Schumann, Richman, & Strathman, 1993). Of most importance, in this study the personal relevance of the information was also varied (Petty & Cacioppo, 1979). Participants in the high-relevance condition were told that the proposed foster care program was being considered for implementation in their own city in the next few weeks, and that students at their university would be able to get credits by taking part in this program (e.g., tutoring the foster children). Participants in the low-relevance conditions did not receive any information about when or where the program would be implemented, nor about their possibilities to participate. However, the titles of the programs made the likelihood of participation seem remote. Following exposure to the information, all participants rated their attitudes regarding the program on several semantic differential scales.

The key result of this study was an interaction between the attitude-change manipulation, argument quality, and personal relevance on attitudes toward the foster care program. Specifically, the interaction resulted from the fact that when personal relevance was low, whether people had changed their attitudes or not had little impact on information processing. However, when personal relevance was high, the results of the prior two studies were apparent. People whose attitudes had changed, and presumably experienced implicit ambivalence, showed a greater impact of argument quality on their evaluations of the foster care program than those whose attitudes had not been changed.

Our three studies on attitude change have clearly shown that people whose attitudes have changed are more likely to engage in careful pro-

cessing of information about the attitude object, at least if that object has some personal relevance. Notably, in each of the paradigms we also checked to see if people reported feeling any explicit ambivalence when their attitudes had changed, but they did not. Thus, by the standard criteria used in attitude-change studies, the changed attitudes seemed identical in valence and strength to the attitudes that were not changed. Nevertheless, we found that people whose attitudes had changed still acted as if they were ambivalent. According to the MCM, this is because when attitudes change from one valence to another, both evaluations are still associated with the attitude object. People do not report any ambivalence on an explicit measure because one of the evaluations is rejected. However, the implicit ambivalence is presumably uncomfortable and leads to enhanced information processing.

To provide more direct evidence regarding implicit ambivalence, in another study in this line of work (Petty et al., 2006, Study 2) we attempted to assess implicit ambivalence with an implicit measure. In this study we used the paradigm in which attitudes toward a target individual were first created using the similarity procedure, and then changed or not by telling the participants about a computer error. Following this, participants received an explicit measure asking about any doubts or conflicts they had regarding the target person as well as an implicit measure of doubt. The implicit measure was an IAT in which the categories were the target person's name versus other names and confidence versus doubt words (e.g., *certain, sure, confident* versus *hesitant, conflicted, ambiguous*). Consistent with the idea that explicit attitude change can produce implicit ambivalence (due to conflict between old rejected evaluations and newly accepted ones), participants whose attitudes were changed did not report any more explicit doubt about the target individual, but they did show more doubt associated with the target name on an IAT compared to when attitudes were not changed.

Conclusion

In this chapter we have reviewed research on a phenomenon we have called implicit ambivalence (Petty et al., 2006). We refer to this ambivalence as implicit for two reasons. First, people do not have to deliberate on the discrepancy for ambivalence to be manifest. Indeed, deliberation would lead people to think that there is no discrepancy because one evaluation is rejected. In that sense, the ambivalence is relatively

automatic and manifests itself primarily when people do not think carefully about their attitude prior to responding.

Second, people do not seem to be aware of the ambivalence, or at least do not appear to label it as such. We are not arguing that people are necessarily unaware of the discrepant automatic evaluation itself. That is, people could be very aware that a reaction opposite to the wanted one comes to mind when they think about the attitude object. However, this reaction is not attributed to one's current personal opinion. Rather, people might assume that it stems from a past attitude or from cultural associations (e.g., the media) that they reject. Or, in some instances, they might be aware of the reaction and be completely confused as to its origin. Epstein (2003) provided an example of a young man who consciously believes that he loves his partner, but always finds himself making excuses to avoid marriage. Because an opposite reaction to the consciously desired one keeps occurring and the person cannot explain it, feelings of discomfort are likely to develop, and the person in Epstein's example eventually decides to seek therapy. Seeking therapy is one way to obtain additional information and thereby resolve the implicit conflict.

The idea of implicit ambivalence stems from our Meta-Cognitive Model of attitudes. In brief, the MCM offers an integrated attitude representation in which attitude objects can be linked to both positive and negative evaluations. Viewing the attitude representation as an integrated unit rather than as separate representations activated in different situations (as advanced by some dual attitudes models) allows for joint activation of positivity and negativity in any given situation where the attitude object is encountered (assuming people have both positive and negative associations). As depicted in Figure 5.1, the possession of both positive and negative associations can lead to explicit ambivalence when both evaluations are endorsed, or to implicit ambivalence when one evaluation is accepted and the other is rejected (see Figure 5.1). Both kinds of ambivalence are uncomfortable and can have similar consequences (e.g., enhanced information processing).

In the research reviewed, we first showed that the extent of discrepancy between one's automatic evaluations and one's more deliberative ones could index the extent of implicit ambivalence. In particular, we demonstrated that implicit-explicit discrepancies regarding racial and self attitudes predicted the extent of processing of information regarding racial and self-relevant messages. We also showed that implicit-explicit discrepancies were associated with implicit but not explicit self-doubt. In a second series of studies, we showed that changing attitudes from one valence to another produced three consequences. First,

changing attitudes from one valence to another on an explicit measure led the attitude object to be associated with both positive and negative evaluations on an automatic measure. Second, changed attitudes were associated with greater information processing than were unchanged attitudes of the same valence. Third, even though people did not report any more explicit ambivalence regarding their changed attitudes, the attitude object itself was associated with more implicit doubt.[*]

Because people seem motivated to process information when they have an explicit-implicit conflict, in an attempt to resolve the ambivalence, it could be argued that the attitude structures we depict in the bottom two panels of Figure 5.2 might be rather unstable and temporary. That is, as people process more information and solidify the dominant evaluation, making it highly accessible, the attitude structure might for all practical purposes become one in which there is just one dominant evaluative association. On the other hand, if people are continually exposed to information in the media and elsewhere involving the rejected association, the bivalent evaluative structure might be persistent. That is, even if people continually counterargue the opposite side and deny its validity, the negated evaluative association itself could strengthen. For example, whenever people attempt to negate a statement (e.g., Gawronski, Deutsch, Mbirkou, Seibt, & Strack, 2008), deny their attitude (e.g., Maio & Olson, 1995), or suppress a thought (e.g., Wegner, 1989), they appear to make the original statement, attitude, and thought more accessible. Thus, implicit ambivalence and the attitude structure depicted by the MCM might be more common than realized.

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[*] Notably, just as all individuals might not be equally troubled by explicit ambivalence (see Cialdini et al., 1995; Kitayama & Markus, 1999), so too might there be personality and cultural differences in the experience and impact of implicit ambivalence.

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