In R. E. Petty, R. H. Fazio, & P. Briñol (Eds.), Attitudes: Insights from the new implicit measures. New York: Psychology Press.

4

Attitudes and Cognitive Consistency*

The Role of Associative and Propositional Processes

Bertram Gawronski
Fritz Strack
Galen V. Bodenhausen

Introduction

Since the early 1950s, cognitive consistency has been a topic of continuing interest in social psychology. Notwithstanding some fundamental differences between different theories of cognitive consistency (Abelson, Aronson, McGuire, Newcomb, Rosenberg, & Tannenbaum, 1968), most of them share the assumption that cognitive inconsistency causes aversive feelings that, in turn, are assumed to have a powerful influence on judgments, decisions, and behavior. Research on cognitive dissonance (Festinger, 1957), for example, has repeatedly shown that people change their attitudes or their behavior in order to reduce the uncomfortable feeling caused by inconsistent cognitions (for an overview, see Harmon-Jones & Mills, 1999).

Until recently, research investigating the impact of cognitive consistency on attitudes primarily employed explicit attitude measures. In these studies, participants were simply asked to report their attitude toward a given object. With the recent development of implicit attitude

* Preparation of this chapter was supported by grants from Canada Research Chairs Program (CRC), the Social Sciences and Humanities Research Council of Canada (SSHRC), the Academic Development Fund of the University of Western Ontario (ADF), and the TransCoop Program of the Alexander von Humboldt Foundation.

measures (Fazio & Olson, 2003), however, researchers have become increasingly interested in the dynamics of cognitive consistency at the automatic level. This application of implicit attitude measures to investigate consistency phenomena was expected to improve our understanding of both implicit measures (e.g., Greenwald, Banaji, Rudman, Farnham, Nosek, & Mellott, 2002) and cognitive consistency in general (e.g., Gawronski & Strack, 2004).

The main goal of the present chapter is to provide an integrative review of research on cognitive consistency employing implicit attitude measures. This review is guided by a theoretical framework proposing that implicit and explicit attitude measures tap two distinct evaluative tendencies that have their roots in qualitatively different, though interrelated, processes: associative and propositional processes (Gawronski & Bodenhausen, 2006; Strack & Deutsch, 2004). Specifically, we argue that a distinction between associative and propositional processes offers a deeper understanding of several phenomena commonly explained in terms of consistency theories, thereby providing a new perspective on how cognitive consistency influences basic attitudinal processes. In addition, we argue that an application of consistency principles to research comparing explicit and implicit attitude measures can provide deeper insights into the distinct nature of their underlying processes. For this purpose, we first outline our theoretical framework in terms of associative and propositional processes, and how cognitive consistency is related to the two kinds of mental processes. Drawing on these assumptions, we then employ the proposed distinction as an integrative framework to review research that used implicit attitude measures to study cognitive consistency.

Associative and Propositional Processes

The theoretical framework employed in our review is based on the Reflective-Impulsive Model (RIM; Strack & Deutsch, 2004) and its recent derivative, the Associative-Propositional Evaluation (APE) Model (Gawronski & Bodenhausen, 2006). A central notion in these models is the distinction between two qualitatively different kinds of mental processes (see also Kahneman, 2003; Lieberman, Gaunt, Gilbert, & Trope, 2002; Sloman, 1996; Smith & DeCoster, 2000). Specifically, we argue that implicitly and explicitly assessed attitudes should be understood in terms of their underlying processes. Whereas implicit attitude measures—such as affective priming tasks (Fazio, Jackson, Dunton, & Williams, 1995) or the Implicit Association Test (Greenwald, McGhee, & Schwartz, 1998)—are assumed to tap evaluations that have their roots in associative processes, explicit attitude measures are assumed to tap evaluations that have their roots in propositional processes. This conceptualization resembles Eagly and Chaiken's (1993) definition of attitude as a psychological tendency to evaluate a given entity with some degree of favor or disfavor. However, the present model goes beyond this definition by arguing that such evaluative tendencies can be rooted in two different kinds of mental processes.

Nature of Associative and Propositional Processes

The first source of evaluative tendencies is represented by associative processes, which build the basis for evaluations reflected in implicit attitude measures. Such associative evaluations are best characterized as the automatic affective reactions resulting from the particular associations that are activated automatically upon encountering a relevant stimulus (Fazio, 1995). As such, associative evaluations require neither a high amount of cognitive capacity nor the intention to evaluate a specific object. The most important feature of associative evaluations, however, is that they are independent of the assignment of truth values (Strack & Deutsch, 2004). That is, associative evaluations can get activated irrespective of whether a person considers these evaluations as accurate or inaccurate. For example, the activation level of negative associations regarding African Americans may be high even though an individual may regard these associations as being incorrect or undesirable (Devine, 1989).

The second source of evaluative tendencies resides in propositional processes, which build the basis for evaluations reflected in explicit attitude measures. Evaluations resulting from propositional processes can be characterized as evaluative judgments that have their roots in syllogistic inferences from any kind of propositional information that is considered relevant for a given judgment. In the Reflective-Impulsive Model (Strack & Deutsch, 2004), such transformations are assumed to occur in a reflective system that is superordinate to an associative store. Specifically, the reflective system is assumed to transform inputs from the associative store into propositional format (e.g., a negative affective reaction toward X is translated into the proposition "I dislike X."). The resulting propositions are then subjected to syllogistic inferences to assess their validity (Gawronski & Bodenhausen, 2006). Thus, the most

important feature that distinguishes propositional from associative processes is their dependency on truth values. Whereas the activation of associations can occur regardless of whether a person considers these associations to be true or false, propositional reasoning is generally concerned with the validation of evaluations and beliefs. Moreover, whether or not a given proposition will be explicitly endorsed depends on its subjective validity, as determined by processes of propositional reasoning.

Interplay Between Associative and Propositional Processes

An important aspect of the distinction between associative and propositional processes is their mutual interplay. As for the impact of associative on propositional processes, we argue that people usually base their evaluative judgments of an attitude object on their automatic affective reactions to this object (Gawronski & Bodenhausen, 2006). That is, the default mode of propositional reasoning is an affirmation of the propositional implication of an automatic affective reaction (see Gilbert, 1991). However, evaluative judgments can also be independent of automatic affective reactions when the propositional implications of these reactions are rejected as a valid basis for an evaluative judgment (Strack, 1992). Drawing on a central assumption of the APE Model (Gawronski & Bodenhausen, 2006), we argue that the primary determinant of perceived validity of a proposition—and thus of the propositional implication of an automatic affective reaction—is the consistency of this proposition with other propositions that are considered to be relevant for the respective judgment (Kruglanski, 1989; for a discussion of alternative determinants of perceived validity, see Briñol & Petty, 2004). In the case of evaluative judgments, such propositions may include nonevaluative propositions referring to general beliefs about the world or propositional evaluations of other attitude objects.[1] If the propositional implication of an automatic affective reaction is consistent with other relevant propositions, it may be considered valid and thus may serve as the basis for an evaluative judgment. If, however, the propositional implication of an automatic affective reaction is inconsistent with other relevant propositions, it may be considered invalid and thus may be rejected as a basis for an evaluative judgment. For example, the propositional implication of a negative affective reaction to a minority member (e.g., "I don't like this African-American person.") may be inconsistent with general beliefs about the world (e.g., "African Americans are a disadvantaged minority group.") and the propositional evaluation of another attitude object (e.g., "Negative evaluations of disadvantaged minority members are wrong."). In this case, the resulting inconsistency between the three propositions may lead to a rejection of the negative affective reaction as a valid basis for an evaluative judgment. However, the negative affective reaction may still serve as a basis for an evaluative judgment if one of the other inconsistent propositions is rejected (Gawronski, Peters, Brochu, & Strack, 2008).

The operating principles of the RIM (Strack & Deutsch, 2004) imply that propositional processes should influence associative evaluations under certain conditions. Specifically, propositional processes should influence associative evaluations when propositional reasoning leads to an affirmation of a given evaluation. However, propositional processes should leave associative evaluations unaffected when propositional reasoning leads to a negation of a given evaluation. The crucial assumption underlying this claim is that the validation process of affirming or negating a proposition implies an assignment of truth values, and thus cannot be performed associatively (Deutsch, Gawronski, & Strack, 2006). However, affirming or negating a given proposition may still activate the associative components of that proposition. Thus, affirming a propositional evaluation should directly activate its underlying associative evaluation (e.g., affirming the proposition "Old people are good drivers." activates *old people* and *good drivers*). However, negating a propositional evaluation should activate the underlying non-negated associative evaluation (e.g., negating the proposition "Old people are bad drivers." activates *old people* and *bad drivers*). Hence, negating a given proposition often leads to ironic or rebound effects on the associative level (e.g., Deutsch et al.; Gawronski, Deutsch, Mbirkou, Seibt, & Strack, 2008; Forehand & Perkins, 2005; for a review, see Wegner, 1994).[2]

The differential role of affirmation and negation can be illustrated with a study by Kawakami, Dovidio, Moll, Hermsen, and Russin (2000) on the reduction of automatic stereotyping. These researchers found that long-term training in the negation of social stereotypes resulted in lower levels of automatic stereotype activation. At a superficial level, this finding seems to be in contrast to the present assumptions implying that negation training should leave automatic stereotype activation unaffected. It is important to note, however, that Kawakami et al.'s negation training included two components: (a) a negation of stereotypes and (b) an affirmation of counterstereotypes. In one of their studies, for example, participants were presented with pictures of Black and White individuals and traits that were related either to the stereotype of Blacks or to the stereotype of Whites. Participants' task was to respond with a *No* key each time they saw a stereotype-congruent person-trait

combination (e.g., a Black face with a stereotypically Black trait word) and to respond with a *Yes* key each time they saw stereotype-incongruent person-trait combination (e.g., a Black face with a stereotypically White trait word). Hence, it is not clear whether the resulting reduction in automatic stereotyping of Black people was due to the negation of the stereotype or to the affirmation of counterstereotype. Drawing on the considerations outlined above, we argue that Kawakami et al.'s findings are exclusively driven by the affirmation of the counterstereotype, rather than by the negation of the stereotype. This claim was recently confirmed by Gawronski, Deutsch et al. (2008), who found that only training in the affirmation of counterstereotypical information, but not training in the negation of stereotypical information, led to a reduction in automatic stereotype activation. In fact, negation of the stereotype even led to a significant increase in automatic stereotyping. This difference between affirmation versus negation is also consistent with research in other areas showing that deliberate attempts to suppress affective reactions (negation) usually leave these reactions unaffected, whereas attempts to attribute a different meaning to the response eliciting stimulus (affirmation) is indeed capable of modifying affective reactions (e.g., Butler, Egloff, Wilhelm, Smith, Erickson, & Gross, 2003; Gross, 1998).

Cognitive Elaboration

Cognitive elaboration has long been assumed to be of crucial importance in research on attitudes (Greenwald, 1968; Petty, Ostrom, & Brock, 1981). As with other models addressing the distinction between implicit and explicit attitude measures (e.g., Fazio & Olson, 2003; Wilson, Lindsey, & Schooler, 2000), our model implies a crucial role of cognitive elaboration for the relation between explicit and implicit attitude measures. Fazio's (1990) MODE model, for example, suggests that cognitive elaboration is a crucial determinant of the influence of automatic attitudes on behavior (see Chapter 2, this volume). Specifically, the MODE model posits that behavior is more likely to be influenced by automatic attitudes when either the motivation or the opportunity to deliberate is low. However, behavior should be less likely to be influenced by automatic attitudes when both the motivation and the opportunity to deliberate are high. Given that responses on a self-report measure simply reflect a particular kind of behavior (Fazio & Olson), the relation between explicit and implicit attitude measures is likely to be lower when either the motivation or the opportunity to deliberate

is low. In contrast, correlations between the two kinds of measures are likely to be higher when both the motivation and the opportunity to deliberate are high (e.g., Florack, Scarabis, & Bless, 2001; Hofmann, Gawronski, Gschwendner, Le, & Schmitt, 2005; Koole, Dijksterhuis, & van Knippenberg, 2001).

We similarly posit that increased elaboration often reduces the correlation between explicit and implicit measures of attitudes. However, our model goes beyond the MODE model with regard to its assumptions about the underlying processes. According to the APE Model (Gawronski & Bodenhausen, 2006), cognitive elaboration primarily affects the complexity of propositional thinking by influencing how many judgment-relevant propositions are considered in addition to one's automatic affective reaction. More extensive elaboration generally implies considering a greater number of propositions about the attitude object. To the extent that any of these additional propositions is inconsistent with the automatic evaluative response, the extra elaboration will be likely to reduce the correlation between automatic affective reactions and evaluative judgments (Shiv & Nowlis, 2004).

It is important to note, however, that increased cognitive elaboration does not inevitably reduce the relation between explicit and implicit attitude measures. Drawing on earlier research on directional effects of cognitive elaboration (e.g., Judd & Lusk, 1984; Petty, Briñol, & Tormala, 2002), we argue that enhanced elaboration should reduce the relation between explicit and implicit attitude measures only if additionally considered propositions question the validity of one's automatic affective reaction as a basis for an evaluative judgment (Gawronski & Bodenhausen, 2006). However, if additionally considered propositions do not question the validity of one's automatic affective reaction, the relation between explicit and implicit attitude measures should be unaffected by cognitive elaboration. Moreover, if additionally considered propositions confirm the subjective validity of one's automatic affective reaction, the relation between explicit and implicit attitude measures should actually increase (rather than decrease) as a function of cognitive elaboration. For example, if increased cognitive elaboration identifies an additional proposition (e.g., "This African-American person behaved in a hostile manner.") that resolves the inconsistency between a propositionally transformed affective reaction (e.g., "I don't like this African-American person."), other nonevaluative propositions (e.g., "African Americans are a disadvantaged minority group."), and propositional evaluations of other attitude objects (e.g., "It is wrong to evaluate members of disadvantaged minority groups negatively."), the

relation between explicit and implicit attitude measures should actually increase rather than decrease as a function of cognitive elaboration. In other words, whether the relation between explicit and implicit attitude measures increases or decreases as a function of cognitive elaboration does not depend on the amount of cognitive elaboration per se. Rather, it is a function of a consistency assessment regarding the momentarily considered set of propositions.

Cognitive Consistency

As already outlined above, cognitive consistency plays a crucial role in the propositional process of validating evaluations and beliefs. In fact, we argue that cognitive consistency is exclusively a concern of propositional reasoning (Gawronski & Bodenhausen, 2006; Gawronski & Strack, 2004). More precisely, consistency results from a propositional process of consistency assessment that is based on the assignment of truth values and the application of syllogistic rules and logical principles.[3] From a general perspective, two propositions are consistent with each other when both are regarded as true, and one does not imply the opposite of the other. In contrast, two propositions are inconsistent when both are regarded as true, and one follows from the opposite of the other (Festinger, 1957). Importantly, because (in)consistency between two propositions cannot even be defined without an assignment of truth values, inconsistency has to be resolved by means of propositional reasoning, that is, either by changing the truth value of one proposition or by finding an additional proposition that resolves the inconsistency (Gawronski & Bodenhausen, 2006). For example, if exposure to a minority member automatically activates negative associations, people may either reject the propositional implication of these associations because of its inconsistency with other accepted propositions (Gawronski, Peters et al., 2008), or they may find an additional proposition that resolves the inconsistency (e.g., "This African-American person was unfriendly."). Whereas the former process refers to what we described as negation of the propositional implications of an automatic affective reaction (Deutsch et al., 2006), the latter process has been described as *rationalization* (Festinger) or *justification* (Crandall & Eshleman, 2003).

Notwithstanding the propositional nature of cognitive consistency, it is important to note that associative processes can produce outcomes

that have traditionally been described in terms of consistency principles. More precisely, spreading activation processes in associative networks often result in activation patterns that seem consistent from a logical perspective. For instance, if a Black person has a strong association between his or her representation of the self and the category *Black*, and an additional strong association between the category *Black* and *negative*, mere activation of the self should automatically activate "negative" by means of spreading activation. This spreading activation mechanism can certainly be described in propositional terms (i.e., "I am Black," "Black is bad," therefore, "I am bad."). However, this propositional description ignores that the underlying activation process is independent of whether the person considers these propositions as true or false. In other words, spreading activation processes can result in activation patterns that could be described as consistent from a propositional perspective. However, this does not necessarily imply that the process that gives raise to these activation patterns is itself propositional.

We argue that the distinction between associative processes of spreading activation and propositional processes of consistency assessment is crucial when it comes to understanding the convergence and divergence between explicit and implicit attitude measures. Whereas phenomena that have their roots in associative processes of spreading activation should be more likely to emerge on implicit rather than explicit attitude measures, phenomena that have their roots in propositional processes of consistency assessment should be more likely to emerge on explicit rather than implicit attitude measures. To be sure, the fact that a given phenomenon is due to associative processes does not imply that it cannot emerge on explicit attitude measures. In fact, spreading activation should lead to the same outcome on explicit attitude measures, unless associative evaluations are rejected as a valid basis for an evaluative judgment. Conversely, the fact that a given phenomenon is due to propositional processes does not imply that it cannot emerge on implicit attitude measures. Rather, propositional processes should lead to the same outcome on implicit attitude measures when they imply an affirmation of a given evaluation, but not when they imply a negation. Importantly, even when a given process leads to corresponding effects on explicit and implicit attitude measures, spreading activation and consistency assessment should be characterized by different patterns of mediation (Gawronski & Bodenhausen, 2006). That is, if a given phenomenon has its roots in associative processes of spreading activation, this phenomenon should be characterized by a direct effect on implicit attitude measures and an indirect effect on explicit attitude measures

that is mediated by the effect on implicit attitude measures. In contrast, if a given phenomenon has its roots in propositional processes of consistency assessment, this phenomenon should be characterized by a direct effect on explicit attitude measures and an indirect effect on implicit attitude measures that is mediated by the effect on explicit attitude measures.

Empirical Evidence

So far, research on cognitive consistency employing implicit attitude measures focused on four different phenomena: balanced identities (Greenwald et al., 2002; Nosek, Banaji, & Greenwald, 2002; Rudman, Greenwald, & McGhee, 2001), cognitive dissonance arising from induced compliance (Gawronski & Strack, 2004), the spreading-of-alternatives effect (Gawronski, Bodenhausen, & Becker, 2007), and cognitive balance in attitude formation (Gawronski, Walther, & Blank, 2005). Drawing on the considerations outlined above, we argue that a sufficient understanding of these phenomena requires a focus on their underlying associative and propositional mechanisms: spreading activation and consistency assessment.

Balanced Identities

The first set of studies that applied the notion of cognitive consistency to implicit attitude measures was conducted under the framework of Greenwald et al.'s (2002) unified theory of attitudes, stereotypes, self-esteem, and self-concept (e.g., Greenwald et al., 2002; Nosek et al., 2002; Rudman et al., 2001). Consistent with the basic notion of Heider's (1958) balance theory, these studies showed that people's automatic evaluation of their ingroup, their automatic self-concept as a member of this group, and their automatic self-evaluation are generally related in a manner such that one construct is predicted by the interaction of the other two. In one study, for example, Greenwald et al. (2002) assessed female participants' automatic evaluation of the category woman, automatic evaluations of the self, and automatic associations between the self and the category *women* with three different IATs (Greenwald et al., 1998). Results showed that women's automatic self-evaluations were significantly related to the interaction of their automatic self-associations as female and their automatic evaluation of women. That is, the more

women associated the category women with a positive (negative) evaluation, and the stronger they associated themselves with the category women, the more positive (negative) was their automatic self-evaluation. Interestingly, such patterns of balanced identities were generally obtained for implicit measures, whereas identities often showed imbalanced patterns on explicit measures.

Drawing on the distinction between associative and propositional processes, these findings can be explained in terms of spreading activation in associative memory. Specifically, the activation of a particular concept (e.g., self) can be sufficient to activate concepts that are chronically associated with this concept (e.g., ingroup category). As such, the valence of one concept may transfer associatively to the other. Importantly, this associative transfer of evaluations may be driven by processes of spreading activation without requiring any kind of higher-order propositional process. Hence, even though the relation between three concepts (e.g., self-ingroup association, ingroup evaluation, self-evaluation) could be translated into propositional format (e.g., "I am female," "Female is good," therefore, "I am good."), the process that gives raise to balanced identities seems to be independent of propositional reasoning. Moreover, balanced identities on explicit measures may result when people base their judgments on the propositional implications of their activated associations, thus directly reflecting the activation pattern obtained on the associative level. However, because the three propositions resulting from these associations may reflect only a limited portion of the many propositions that are considered for the corresponding judgments, the three components may sometimes be imbalanced on the propositional level even though they are balanced on the associative level (e.g., Greenwald et al., 2002). Importantly, such imbalanced identities on the propositional level may not represent a genuine logical inconsistency if the full set of momentarily considered propositions is taken into account. Rather, an imbalanced set of three propositions may still be consistent if there is an additional proposition that resolves the inconsistency between the three (Wellens & Thistlewaite, 1971; Wiest, 1965; for a review, see Insko, 1984). These assumptions imply that explicit and implicit measures may show dissociations, such that implicit measures are more likely to reflect balanced identities resulting from associative processes of spreading activation, whereas explicit measures reflect balanced identities only when processes of propositional reasoning do not lead to a rejection of the propositional implications of these associations.

Induced Compliance

Similar considerations were applied to cognitive dissonance arising from induced compliance by Gawronski and Strack (2004). Drawing on the distinction between associative and propositional processes, Gawronski and Strack claimed that both the cause of dissonance experiences and the process of dissonance reduction require a propositional representation of their elements. With regard to the causes of cognitive dissonance, Gawronski and Strack argued that cognitive inconsistency arises when two propositions are regarded as true, and one follows from the opposite of the other (Festinger, 1957). With regard to the process of dissonance reduction, Gawronski and Strack argued that cognitive inconsistency is resolved either by rejecting one of the inconsistent propositions as false or by finding an additional proposition that resolves the inconsistency (Kruglanski, 1989).

These assumptions have important implications for attitude change resulting from cognitive dissonance. If dissonance-related attitude changes are due to a rejection of a given evaluation because of its inconsistency with other propositions, cognitive dissonance can be expected to influence only explicitly assessed but not implicitly assessed attitudes. Moreover, given that evaluative judgments are typically based on associative evaluations unless the latter are rejected as a valid basis for an evaluative judgment, explicit and implicit attitude measures should be highly correlated when people can reduce their dissonance by an additional proposition that resolves the present inconsistency. However, explicit and implicit attitude measures should be uncorrelated when cognitive dissonance is reduced by a rejection of associative evaluations as a valid basis for an evaluative judgment.

To test these assumptions, Gawronski and Strack (2004) employed Festinger and Carlsmith's (1959) induced compliance paradigm. Participants wrote a counterattitudinal essay under conditions of either high or low situational pressure, and then completed an explicit and an implicit measure of attitudes toward the topic in question. Participants in a control condition completed the two measures without writing an essay. Replicating previous research on cognitive dissonance, explicitly assessed attitudes toward the initially counterattitudinal position were more favorable when situational pressure was low than when it was high. Most importantly, however, implicitly assessed attitudes were generally unaffected by dissonance manipulations. Moreover, explicit attitude measures were significantly related to implicit attitude measures under control conditions and when counterattitudinal behavior was elicited

under high situational pressure, but not when situational pressure was low. These results were replicated in two studies using counterattitudinal essays in favor of a prohibition of alcoholic beverages (Experiment 1) and an increase of scholarships for Black students at the expense of funding for White students (Experiment 2). Taken together, these results are consistent with the assumption that cognitive dissonance following induced compliance is a propositional phenomenon, leading to dissonance-related attitude changes only for evaluative judgments but not for associative evaluations. Moreover, evaluative judgments seem to be based on associative evaluations unless the latter are rejected as a valid basis for these judgments, such as when cognitive dissonance is reduced by a deliberate rejection of associative evaluations.

Another finding that is consistent with Gawronski and Strack's (2004) assumptions was presented by Wilson et al. (2000). Also employing the induced compliance paradigm (Festinger & Carlsmith, 1959), Wilson et al. asked participants to write a counterattitudinal essay in favor of a tuition increase at participants' home university. Essays were written under either high or low perceived situational pressure. Orthogonal to this manipulation, half of the participants had to make their evaluative judgments under time pressure, whereas the remaining half had unlimited time to make their evaluative judgments. Results indicated that dissonance-related changes in evaluative judgments emerged only when participants had unlimited time to make their judgment. In this case, participants showed more positive attitudes toward a tuition increase when perceived situational pressure was low than when it was high. However, when participants were under time pressure, evaluative judgments did not differ as a function of perceived situational pressure. In this case, participants were strongly in opposition toward a tuition increase regardless of whether perceived situational pressure was high or low.

Wilson et al. (2000) interpreted these findings in terms of their dual attitudes model. Specifically, Wilson et al. argued that old attitudes are quite robust and thus are often not replaced by newly acquired attitudes. Hence, people often hold dual attitudes toward the same attitude object. Moreover, old attitudes are assumed to be activated automatically, whereas newly acquired attitudes are assumed to require a high amount of cognitive effort to be retrieved from memory. Thus, judgments and behavior should be influenced by new attitudes only when people have the motivation and cognitive capacity to retrieve their new attitudes from memory. However, if people lack either the motivation or the cognitive

capacity to retrieve their new attitudes from memory, the old attitude may still have a significant impact on judgments and behavior.

It is important to note, however, that automatically activated evaluations have been shown to be quite malleable and sometimes are easier to change than deliberate evaluations (e.g., Karpinski & Hilton, 2001; Olson & Fazio, 2006; for reviews, see Blair, 2002; Gawronski & Bodenhausen, 2006). Thus, the assumption that implicit attitude measures reflect old representations that have not been replaced by newly acquired attitudes (e.g., Dovidio, Kawakami, & Beach, 2001; Greenwald & Banaji, 1995; Rudman, 2004; Wilson et al., 2000) seems questionable. As outlined above, we argue that explicitly and implicitly assessed attitudes should be understood in terms of their underlying processes (i.e., associative and propositional processes) rather than in terms of their robustness or relative age. Moreover, whether implicit or explicit attitude measures will be affected by a given factor may depend on which of the two processes is affected in the first place (Gawronski & Bodenhausen, 2006). For example, environmentally created associations (e.g., Karpinski & Hilton, 2001) or evaluative conditioning (e.g., Olson & Fazio, 2006) may directly influence the particular associations that are activated and thus may be more likely to change implicitly rather than explicitly assessed attitudes. Cognitive dissonance, in contrast, may lead to a rejection of a given evaluation because of its inconsistency with other propositions and thus may influence only explicitly but not implicitly assessed attitudes (e.g., Gawronski & Strack, 2004). Moreover, the relative complexity of propositional inferences may decrease as a function of time pressure (Hofmann et al., 2005; Koole et al., 2001), thereby increasing the likelihood that evaluative judgments will be based on associative evaluations. As such, Wilson et al.'s findings may point to the propositional nature of dissonance-related reasoning processes and the cognitive capacity required for these processes, rather than to the general robustness of old attitudes.

Spreading of Alternatives

When people have to make a decision between two equally attractive alternatives, they often evaluate the chosen alternative more positively than the rejected alternative after they have made their decision (Brehm, 1956). A common explanation for this spreading-of-alternatives effect is that people experience an uncomfortable feeling of postdecisional dissonance when they recognize that the rejected alternative might have been better than the chosen alternative (Brehm & Cohen, 1962). Hence,

to reduce this uncomfortable feeling, people often emphasize (Brehm, 1956) or deliberately search for (Frey, 1986) positive characteristics of the chosen alternative and negative characteristics of the rejected alternative. This kind of selective information search, in turn, leads to more favorable evaluations of the chosen alternative and to less favorable evaluations of the rejected alternative.

Even though Gawronski and Strack (2004) tested their assumptions only for cognitive dissonance arising from induced compliance (Festinger & Carlsmith, 1959), their ideas can also be applied to postdecisional dissonance (Brehm, 1956). Specifically, one could argue that postdecisional dissonance arises when people recognize that the propositional implication of their decision (e.g., "I preferred alternative A over alternative B.") is inconsistent with the propositional implication of the attributes ascribed to the two alternatives (e.g., "Alternative B is better than alternative A."). Moreover, the proposed process of postdecisional dissonance reduction can also be regarded as propositional, because it involves a propositional attribution of positive and negative characteristics implying an evaluation that is consistent with the decision (i.e., "Alternative A is better than alternative B."). Depending on whether this process implies an affirmation (e.g., "Alternative A has a unique positive feature." or "Alternative B has a unique negative feature.") or a negation (e.g., "It is not true that alternative A has a unique negative feature." or "It is not true that alternative B has a unique positive feature."), the propositional process of dissonance reduction may or may not lead to corresponding changes in associative evaluations. Importantly, if postdecisional dissonance actually affects associative evaluations in a process of affirmation, this influence should be indirect rather than direct, such that changes in implicitly assessed attitudes should be mediated by changes in explicitly assessed attitudes. Even though these assumptions are speculative at this point, future research may provide evidence for the proposed direct, indirect, and nonexisting effects of postdecisional dissonance on explicit and implicit attitudes.

Drawing on the general notion of balanced identities (e.g., Greenwald et al., 2002; Nosek et al., 2002; Rudman et al., 2001), we argue that, in addition to the proposed propositional process of dissonance reduction, associative processes of spreading activation can lead to postdecisional changes in associative evaluations. The process that is responsible for such changes is associative self-anchoring. Associative self-anchoring can be understood as the formation of an association between an object and the self, leading to a subsequent transfer of already existing self-associations to the object (see Cadinu & Roth-

bart, 1996; Otten, 2003). Applied to the spreading-of-alternatives effect, choosing an object may create an association between the chosen object and the self, thus leading to a transfer of associative self-evaluations to the chosen object. Importantly, given that most people's self-evaluation is highly positive (Bosson, Swann, & Pennebaker, 2000; Greenwald & Farnham, 2000; Koole et al., 2001), this process of associative self-anchoring should lead to postdecisional changes in implicitly assessed attitudes without requiring the higher-order propositional processes implied by our analysis of dissonance reduction.

Evidence for these assumptions was provided in a series of studies by Gawronski et al. (2007). In a first study, participants were asked to decide which of two equally attractive pictures they would like to receive as a special gratification for their participation in the experiment. Immediately before and right after the decision, automatic evaluations of the two pictures were assessed with an affective priming task (Fazio et al., 1995). Consistent with the assumption that associative evaluations may be affected by participants' decision, implicitly assessed attitudes toward the chosen picture became more positive as a function of the decision, whereas implicitly assessed attitudes toward the rejected picture became more negative as a function of the decision. In order to test whether these effects are indeed related to the formation of self-object associations, participants in a second study were again asked to decide which of two equally attractive pictures they would like to receive as a special gratification for their participation in the experiment. In contrast to the implicit attitude measure in the first study, however, participants completed an implicit measure of self-picture associations. Consistent with the associative self-anchoring hypothesis, participants showed stronger associations between the chosen picture and the self after the decision. In contrast, associations between the rejected picture and the self became weaker after participants made their decision. A third study was designed to test the assumption that automatic self-evaluations associatively transfer to the chosen object. This study replicated the effects on automatic evaluations obtained in the first study. However, in contrast to the first study, this study additionally included a measure of automatic self-evaluations that was administered at the beginning of the experiment. Consistent with the assumption that postdecisional changes of implicitly assessed attitudes can be due to an associative transfer of implicit self-evaluations, participants who showed positive self-evaluations evaluated chosen pictures more positively after the decision. However, participants who exhibited negative self-evaluations evaluated chosen pictures more negatively after the decision. Finally, a fourth study was designed to rule out postdecisional dissonance as an alternative explanation for the obtained effects. In this study, self-object associations resulting from ownership were created by a random procedure rather than by participants' choice decision (see Beggan, 1992). Thus, if the obtained results are due to processes of associative self-anchoring, randomly determined ownership should be sufficient to change associative evaluations of owned objects and such evaluations should again depend on automatic self-evaluations. If, however, the obtained results are due to postdecisional dissonance, randomly determined ownership should leave associative evaluations of owned objects unaffected. Results provided clear evidence for the associative self-anchoring account, implying a change in associative evaluations of owned objects even when ownership was determined by a random procedure.

These findings have important implications for the interpretation of previous research on postdecisional attitude change. Lieberman, Ochsner, Gilbert, and Schacter (2001), for example, found that even amnesic participants exhibit postdecisional changes in explicitly assessed attitudes. In their study, participants showed postdecisional attitude changes even though they had no memory for their decision. Drawing on this finding, Lieberman et al. concluded that cognitive dissonance reduction does not require explicit memory for decisions (Brehm, 1956) or counterattitudinal behavior (Festinger & Carlsmith, 1959). This conclusion, however, is obviously in contrast with Gawronski and Strack's (2004) claim that both the causes of dissonance experiences and the process of dissonance reduction require a propositional representation of their elements. Gawronski et al.'s (2007) findings on associative self-anchoring help to resolve this inconsistency by suggesting that postdecisional attitude changes may occur even in the absence of cognitive dissonance. That is, postdecisional attitude changes exhibited by amnesic participants may be due to associative self-anchoring rather than cognitive dissonance, such that choice decisions influenced associative evaluations by a transfer of associative self-evaluations that were later used as a basis for evaluative judgments about the object. As this spreading activation process does not require explicit memory for the original decision, associative self-anchoring can explain why even amnesic participants exhibit postdecisional attitude change.

An important question related to Gawronski et al.'s (2007) results in the free choice paradigm is how they relate to Gawronski and Strack's (2004) findings in the induced compliance paradigm. Traditionally, judgmental phenomena in the induced compliance paradigm (Festinger

& Carlsmith, 1959) and the free choice paradigm (Brehm, 1956) have been assumed to derive from psychological mechanisms that are fundamentally similar, if not identical. This perspective stands in contrast to the results discussed in the present chapter, showing changes in implicit attitude measures as a result of free choice decisions (Gawronski et al., 2007), but not as a result of induced compliance (Gawronski & Strack, 2004). Drawing on the theoretical assumptions outlined above, we argue that the processes that lead to attitude change in the two paradigms are indeed identical (i.e., dissonance reduction, associative self-anchoring). However, attitude change at the implicit level may be moderated by contingent factors that either facilitate or inhibit the relative impact of these processes.

First, associative self-anchoring may be differentially effective in changing attitudes in the two paradigms. In the free choice paradigm, associative self-anchoring may create an association between the chosen object and the self, thus leading to an associative transfer of self-evaluations to the chosen object. This process should lead to a direct effect on implicit attitude measures, which may or may not lead to a corresponding indirect effect on explicit attitude measures. In the induced compliance paradigm, however, the relevant object (e.g., the boring task participants had to complete in Festinger and Carlsmith's 1959 study) may not become sufficiently "personal" for the formation of a new association between the attitude object and the self. Even though participants in this paradigm also make a "choice decision" to engage in counterattitudinal behavior, the choice decision refers to a behavior that stands in direct contrast to the original attitude. Hence, the decision to engage in counterattitudinal behavior may be insufficient to create a strong association between the attitude object and the self. For this reason, an associative transfer of self-evaluations seems unlikely in the induced compliance paradigm. This assumption implies that associative self-anchoring effects in the free choice paradigm should occur only when participants have to make a choice decision between two objects that are relatively attractive (e.g., a trip to Spain vs. a trip to Italy). However, associative self-anchoring effects should be substantially reduced when participants have to make a choice decision between two objects that are highly unattractive (e.g., going to jail for a year vs. paying a fine of $100,000).

Second, whereas cognitive dissonance arising from free choice decisions may result in either an affirmation or a negation focus, cognitive dissonance arising from induced compliance may be more likely to imply a negation rather than an affirmation focus. Specifically, participants in the free choice paradigm may either affirm (e.g., "Alternative A has a unique positive feature.") or negate (e.g., "It is not true that alternative A has a unique negative feature.") a particular evaluation to reduce postdecisional dissonance. Thus, depending on whether participants adopt an affirmation or a negation focus, the reduction of postdecisional dissonance may or may not lead to indirect changes in associative evaluations. This outcome, however, may again be different in the induced compliance paradigm. As counterattitudinal behavior—by definition—contradicts an already existing attitude, participants in the induced compliance paradigm may be more likely to negate this attitude rather than to affirm a new one. Thus, if participants in the free choice paradigm adopt an affirmation rather than a negation focus, postdecisional dissonance may lead to corresponding changes in explicit and implicit attitude measures, with changes on the implicit level being mediated by changes on the explicit level. In contrast, participants in the induced compliance paradigm may generally adopt a negation focus, thus leading to changes on explicit, but not implicit, attitude measures. Again, this interpretation implies that postdecisional dissonance should influence both explicitly and implicitly assessed attitudes, when participants have to make a choice decision between two objects that are relatively attractive (e.g., a trip to Spain vs. a trip to Italy). However, postdecisional dissonance should influence only explicitly, but not implicitly, assessed attitudes, when participants have to make a choice decision between two objects that are highly unattractive (e.g., going to jail for a year vs. paying a fine of $100,000).

Cognitive Balance

Another line of research employing implicit attitude measures to study principles of cognitive consistency is research on cognitive balance. According to Heider's (1958) original formulation of balance theory, people tend to like individuals who are liked by their friends, but they tend to dislike individuals who are disliked by their friends. People also tend to dislike individuals who are liked by people they personally dislike, but they tend to like individuals who are disliked by people they personally dislike (e.g., Aronson & Cope, 1968). According to Heider, a triad of interpersonal relations is balanced when it has either no or an even number of disliking relations; however, a triad of interpersonal relations is imbalanced when it has an odd number of disliking relations.

An interesting question is how the logic of cognitive balance may influence the formation of interpersonal attitudes. Drawing on the

distinction between associative and propositional processes, balance-related inferences in interpersonal attitude formation can be assumed to involve higher-order propositional processes that determine the consistency between attitudes, as defined by balance-logic. Consider, for example, that you dislike a person named Paul, and that Paul dislikes a third person named John. From a mere associative perspective, your cognitive representation of John may include two negative associations: (a) John is associated with the quality of being disliked, and (b) John is associated with the disliked person Paul. Hence, simple processes of spreading activation in associative memory may lead to a negative evaluation of John on the associative level. This, however, should be different on the level of higher-order propositional processes. On this level, the logic of cognitive balance may be applied to the two negative associations, thus leading to a positive evaluative judgment about John because he is disliked by a negatively evaluated individual.

Notwithstanding these considerations, a sufficient understanding of how balance-logic may influence implicitly and explicitly assessed attitudes requires an additional consideration of the mutual interplay between the two processes. According to the RIM (Strack & Deutsch, 2004), propositional processes should influence associative evaluations when propositional reasoning leads to an affirmation of a given evaluation, but not when it implies a negation of an evaluation. This assumption has important implications for the influence of cognitive balance on explicit and implicit attitude measures. Previous research has shown that cognitive balance primarily affects the encoding of social information (e.g., Hummert, Crockett, & Kemper, 1990; Picek, Sherman, & Shiffrin, 1975). Importantly, such an impact on the encoding of social information implies an affirmation of a given evaluation, which should lead to an indirect effect on associative evaluations that is mediated by processes of propositional reasoning (see Gawronski & Bodenhausen, 2006). Specifically, a priori attitudes toward a given person may influence the interpretation of this person's sentiments about another individual, such that perceivers spontaneously interpret a positive (negative) sentiment exhibited by a positively evaluated source individual as positive (negative) information about the target, whereas a positive (negative) sentiment exhibited by a negatively evaluated source individual may be interpreted as negative (positive) information about the target. Thus, the available information may be stored in a manner that is already consistent with a balanced triad. Accordingly, a priori source attitudes, observed sentiments, and newly formed attitudes towards the targets may result in a balanced triad for both explicitly and implicitly assessed attitudes.

It is important to note, however, that such proactive, encoding-related influences are possible only if perceivers have an a priori positive or negative attitude toward the source before they learn about his or her sentiments. If perceivers form a positive or negative source attitude after they learn about this person's sentiments about a given target, encoding of these sentiments cannot differ as a function of a priori attitudes (see Srull & Wyer, 1980; Trope & Alfieri, 1997). In this case, the subsequent application of balance-logic implies a rejection (or negation) of the valence implied by the previously observed sentiment information (i.e., a given person is liked or disliked by someone else), thus leaving implicitly assessed attitudes unaffected. Moreover, the influence of cognitive balance on explicitly assessed attitudes should depend on whether or not people retroactively apply the logic of cognitive balance to the available information.

In a series of three studies, Gawronski et al. (2005) provided evidence that cognitive balance (a) proactively influences both explicitly and implicitly assessed attitudes via differences in the encoding of social information, and (b) has no retroactive influence on either explicitly or implicitly assessed attitudes. In a first study, participants formed either positive or negative attitudes toward several source individuals, and then learned that these source individuals either liked or disliked another set of neutral target individuals. Consistent with the assumption that cognitive balance can influence the encoding of social information, Gawronski et al. (2005) found balanced triads for both explicitly and implicitly assessed attitudes. Specifically, participants showed more positive attitudes toward targets who were liked rather than disliked by positive source individuals, but they showed more negative attitudes toward targets who were liked rather than disliked by negative source individuals. In a second study, Gawronski et al. (2005) used the same manipulation, the only difference being the order of information presentation. In this study, participants first learned whether a neutral source individual either liked or disliked a neutral target individual, and then formed a positive or negative attitude toward the source. In this case, the two kinds of information influenced target attitudes in an additive rather than interactive manner. That is, participants showed more positive attitudes toward targets who were liked rather than disliked, irrespective of whether the liking or disliking person was positive or negative. In addition, participants showed more positive attitudes toward targets who were associated with positive rather than negative source individuals, irrespective of whether the source individual liked or disliked the target (see also Hebl & Mannix, 2003; Walther, 2002).

Finally, in a third study, Gawronski et al. (2005) replicated these findings by manipulating source valence, observed sentiments, and order of information acquisition in a single study.

An important question related to these findings concerns their potential inconsistency with the available evidence on cognitive dissonance. As outlined above, Gawronski and Strack (2004) have shown that cognitive dissonance changes only explicitly but not implicitly assessed attitudes. However, cognitive balance has been shown to affect both explicitly and implicitly assessed attitudes, at least when participants first form an attitude about one person, and then learn about this person's sentiments about another individual (Gawronski et al., 2005). Given that both cognitive dissonance and balance-related inferences may reflect a propositionally rooted desire for cognitive consistency (Zajonc, 1960), one may expect cognitive balance to affect only explicit but not implicit attitudes. Drawing on the considerations outlined above, we argue that a crucial difference between the two lines of research is that dissonance-related attitude changes resulting from counterattitudinal behavior imply a rejection of an associative evaluation, whereas the obtained influence of cognitive balance on implicitly assessed attitudes reflects an affirmative influence on the encoding of social information. Whereas counterattitudinal behavior under conditions of low situational pressure led to a rejection of already existing associative evaluations, a priori attitudes toward a given source individual proactively influenced how this person's sentiments were encoded, and thus how this information was stored in associative memory. Most importantly, if the particular order of information acquisition in the balance paradigm implied a retroactive discounting of observed sentiments (Gawronski et al., 2005, Experiment 2), implicitly assessed attitudes were unaffected by cognitive balance, such as implicitly assessed attitudes have been shown to be unaffected by cognitive dissonance (Gawronski & Strack, 2004).

This interpretation, however, raises the new question of why consistency concerns did not affect explicitly assessed attitudes under rejection conditions—as was the case in Gawronski and Strack's (2004) research on cognitive dissonance. A possible explanation may be the independent encoding of source information (i.e., valence of the liking or disliking person) and message information (i.e., a person is liked or disliked by someone) under rejection conditions. Similar to the sleeper effect (for a review, see Kumkale & Albarracín, 2004), source valence and observed sentiments may be stored independently in memory when source valence is encoded after observed sentiments. In this case,

observed sentiments may be discounted only if (a) both kinds of information are retrieved from memory, and (b) the two kinds of information can be related to one another. If both conditions are met, cognitive balance may indeed show an influence on explicitly assessed attitudes. Most importantly, such an influence should lead to the same dissociation Gawronski and Strack obtained for cognitive dissonance, such that cognitive balance affects only explicitly assessed attitudes, but not implicitly assessed attitudes. Future research may help to clarify the particular conditions under which cognitive balance influences explicitly assessed attitudes.

Final Discussion

The main goal of the present chapter is to provide an integrative review of research on cognitive consistency employing implicit attitude measures. This review is guided by a theoretical framework proposing that implicit and explicit attitude measures tap two distinct evaluative tendencies that have their roots in qualitatively different processes: associative and propositional processes (Gawronski & Bodenhausen, 2006; Strack & Deutsch, 2004). Specifically, we argue that a distinction between associative and propositional processes offers a deeper understanding of several phenomena commonly explained in terms of consistency theories, thus providing a new perspective on how cognitive consistency influences basic attitudinal processes. In addition, we posit that an application of consistency principles to research comparing explicit and implicit attitude measures can provide deeper insights into the distinct nature of their underlying evaluative processes, thus providing a better understanding of the conditions under which the two kinds of measures show converging or diverging effects.

Two Mechanisms

One of our major claims is that cognitive consistency is exclusively a concern of propositional reasoning. More precisely, we argue that (in)consistency between two propositions cannot even be defined without an assignment of truth values. Thus, cognitive inconsistency represents a propositional phenomenon that has to be resolved either by changing the truth value of one proposition or by finding an additional proposition that resolves the inconsistency (Gawronski & Bodenhausen,

2006; Kruglanski, 1989). Notwithstanding this propositional nature of cognitive consistency, it is important to note that associative processes often result in activation patterns that can be described as consistent from a logical perspective. However, the mere possibility of a propositional description does not necessarily imply that the process that gives rise to these activation patterns is itself propositional. Thus, the distinction between spreading activation and consistency assessment becomes crucial when it comes to understanding the convergence and divergence between explicit and implicit attitude measures. Whereas phenomena that have their roots in associative processes of spreading activation should be more likely to emerge on implicit rather than explicit attitude measures, phenomena that have their roots in propositional processes of consistency assessment should be more likely to emerge on explicit rather than implicit attitude measures. Moreover, even when a given process leads to corresponding effects on explicit and implicit attitude measures, spreading activation and consistency assessment should be characterized by different patterns of mediation (Gawronski & Bodenhausen, 2006). If a given phenomenon has its roots in associative processes of spreading activation, this phenomenon should be characterized by a direct effect on implicit attitude measures and an indirect effect on explicit attitude measures that is mediated by the effect on implicit attitude measures. In contrast, if a given phenomenon has its roots in propositional processes of consistency assessment, this phenomenon should be characterized by a direct effect on explicit attitude measures and an indirect effect on implicit attitude measures that is mediated by the effect on explicit attitude measures. Even though several of our assumptions regarding specific mediation patterns are still speculative at this point, future research may provide empirical support for these predictions.

Attitudinal Discrepancies

Even though the present chapter is primarily concerned with consistency *within* explicitly and implicitly assessed attitudes, the distinction *between* associative and propositional processes also has several implications for consistency between explicitly and implicitly assessed attitudes (e.g., Jordan, Spencer, Zanna, Hoshino-Browne, & Correll, 2003; Petty, Tormala, Briñol, & Jarvis, 2006; see also Briñol, Petty, & Wheeler, 2006). Previous research has shown that discrepancies between explicitly and implicitly assessed attitudes are often associated with particular behavioral patterns. For instance, Jordan et al.

(2003) found that individuals with high levels of explicitly assessed self-esteem and low levels of implicitly assessed self-esteem tend to show enhanced narcissism and defensive behaviors. In a similar vein, Petty et al. (2006) have shown that individuals with discrepancies between explicitly and implicitly assessed attitudes are more likely to engage in elaborate processing of attitude-relevant information. Drawing on the distinction between associative and propositional processes, we argue that discrepancies between explicitly and implicitly assessed attitudes predominantly reflect cases in which an automatic affective reaction is rejected as a valid basis for an evaluative judgment. If this rejection is motivationally driven, for example when a particular conclusion is set as the desired outcome of propositional reasoning (Gawronski & Bodenhausen, 2006), the resulting discrepancy may promote defensive behaviors to protect the desired conclusion (e.g., Jordan et al.). Moreover, if the rejection is cognitively driven, for example when an inferentially reached conclusion contradicts an automatic affective reaction (Gawronski & Bodenhausen, 2006), the resulting discrepancy may promote elaborate information processing either to corroborate or to reassess the conclusion (e.g., Petty et al., 2006).

Methodological Issues

Throughout this chapter, we largely equated evaluative judgments resulting from propositional processes with responses on explicit measures, and automatic affective reactions resulting from associative processes with performance on implicit measures. However, it is important to acknowledge that implicit attitude measures are not process-pure measures of automatically activated associations. For instance, Conrey, Sherman, Gawronski, Hugenberg, and Groom (2005) presented a multinomial model (see Batchelder & Riefer, 1999) that is able to disentangle the contribution of four qualitatively different processes on implicit task performance: (a) automatic activation of associations, (b) discriminability of the stimulus, (c) success at overcoming automatic associations, and (d) general guessing biases. Applied to the present question, such process dissociation models are a desirable way to disentangle the genuine contribution of associative processes from other nonassociative processes when investigating the mutual interplay between associative evaluations and evaluative judgments.

Another important methodological issue concerns the interpretation of null effects. In the preceding sections, we discussed several cases in which a given factor should influence explicit but not implicit attitude

measures, or implicit but not explicit attitude measures. Even though the interpretation of null effects poses several problems (e.g., lack of statistical power, beta-error), these problems can be circumvented by the prediction of specific patterns of correlations. For instance, with regard to Gawronski and Strack's (2004) finding that cognitive dissonance changed only explicitly but not implicitly assessed attitudes, one could object that reliability of the implicit measure may have been low, thus undermining significant effects on this measure. However, this interpretation can be ruled out on the basis of the predicted correlation pattern, such that explicit and implicit attitude measures were highly correlated when participants had a situational explanation for their counterattitudinal behavior as well as under control conditions, but not when participants did not have a situational explanation for their counterattitudinal behavior. Thus, even though some of the predictions outlined in this chapter imply null effects on either explicit or implicit attitude measures, it seems important to independently establish the validity of the respective measures, such as, for example, by means of predicted correlation patterns (e.g., Gawronski & Strack, 2004).

Finally, it is important to consider that the different lines of research reviewed in this chapter employed different kinds of implicit measures. Whereas research on balanced identities (Greenwald et al., 2002; Nosek et al., 2002; Rudman et al., 2001) and cognitive dissonance arising from induced compliance (Gawronski & Strack, 2004) primarily used the IAT as a measure of associative evaluations, research on the spreading-of-alternatives effect (Gawronski et al., 2007) and cognitive balance (Gawronski et al., 2005) employed affective priming tasks. As different kinds of implicit measures have been shown to differ in a number of important ways (e.g., Gawronski & Bodenhausen, 2005; Olson & Fazio, 2003), future research is needed to establish the generality of the obtained effects across different kinds of implicit measures.

Conclusion

Overall, we suggest that focusing on the processes that underlie implicit and explicit attitude measures (i.e., associative and propositional processes) may highlight important differences between phenomena that are commonly subsumed under the label *cognitive consistency*. In the present chapter, we identify two general mechanisms that can have different implications for explicitly and implicitly assessed attitudes: (a) associative processes of spreading activation, and (b) propositional processes of consistency assessment. As the two kinds of processes can lead to different effects on explicit and implicit attitude measures, it seems important to determine (a) which of the two processes is affected in the first place, and (b) whether changes in one kind of process lead to indirect changes in the other (Gawronski & Bodenhausen, 2006). These two questions can help to identify the particular conditions that lead to effects on implicit but not explicit attitude measures, effects on explicit but not implicit attitude measures, or corresponding effects on both implicit and explicit attitude measures. Thus, future research applying consistency principles to the study of explicitly and implicitly assessed attitudes might benefit from focusing on mediating processes and the mutual interplay between associative and propositional processes. Such a focus may help to achieve a deeper understanding of how exactly consistency principles affect basic attitudinal processes. In addition, it may provide further insights into the particular conditions under which explicit and implicit attitude measures show convergent or divergent effects.

References

Abelson, R. P., Aronson, E., McGuire, W. J., Newcomb, T. M., Rosenberg, M. J., & Tannenbaum, P. H. (Eds.). (1968). *Theories of cognitive consistency: A sourcebook*. Skokie, IL: Rand McNally.

Aronson, E., & Cope, V. (1968). My enemy's enemy is my friend. *Journal of Personality and Social Psychology, 8,* 8–12.

Batchelder, W. H., & Riefer, D. M. (1999). Theoretical and empirical review of multinomial process tree modeling. *Psychonomic Bulletin & Review, 6,* 57–86.

Beggan, J. K. (1992). On the social nature of nonsocial perception: The mere ownership effect. *Journal of Personality and Social Psychology, 62,* 229–237.

Blair, I. V. (2002). The malleability of automatic stereotypes and prejudice. *Personality and Social Psychology Review, 6,* 242–261.

Bosson, J. K., Swann, W. B., & Pennebaker, J. W. (2000). Stalking the perfect measure of implicit self-esteem: The blind men and the elephant revisited? *Journal of Personality and Social Psychology, 79,* 631–643.

Brehm, J. W. (1956). Postdecision changes in the desirability of alternatives. *Journal of Abnormal and Social Psychology, 52,* 384–389.

Brehm, J. W., & Cohen, A. R. (1962). *Explorations in cognitive dissonance*. New York: Wiley.

Briñol, P., & Petty, R. E. (2004). Self-validation processes: The role of thought confidence in persuasion. In G. Haddock & G. R. Maio (Eds.), *Contemporary perspectives on the psychology of attitudes* (pp. 205–226). London: Psychology Press.

Briñol, P., Petty, R. E., & Wheeler, S. C. (2006). Discrepancies between explicit and implicit self-concepts: Consequences for information processing. *Journal of Personality and Social Psychology, 91,* 154–170.

Butler, E. A., Egloff, B., Wilhelm, F. H., Smith, N. C., Erickson, E. A., & Gross, J. J. (2003). The social consequences of expressive suppression. *Emotion, 3,* 48–67.

Cadinu, M. R., & Rothbart, M. (1996). Self-anchoring and differentiation processes in the minimal group setting. *Journal of Personality and Social Psychology, 70,* 661–677.

Conrey, F. R., Sherman, J. W., Gawronski, B., Hugenberg, K., & Groom, C. (2005). Separating multiple processes in implicit social cognition: The Quad Model of implicit task performance. *Journal of Personality and Social Psychology, 89,* 469–487.

Crandall, C. S., & Eshleman, A. (2003). A justification-suppression model of the expression and experience of prejudice. *Psychological Bulletin, 129,* 414–446.

Deutsch, R., Gawronski, B., & Strack, F. (2006). At the boundaries of automaticity: Negation as reflective operation. *Journal of Personality and Social Psychology, 91,* 385–405.

Deutsch, R., & Strack, F. (2006). Duality models in social psychology: From dual processes to interacting systems. *Psychological Inquiry, 17,* 166–172.

Devine, P. G. (1989). Stereotypes and prejudice: Their automatic and controlled components. *Journal of Personality and Social Psychology, 56,* 5–18.

Dovidio, J. F., Kawakami, K., & Beach, K. R. (2001). Implicit and explicit attitudes: Examination of the relationship between measures of intergroup bias. In R. Brown & S. L. Gaertner (Eds.), *Blackwell handbook of social psychology: Vol. 4. Intergroup processes* (pp. 175–197). Malden, MA: Blackwell.

Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes.* Fort Worth, TX: Harcourt Brace Jovanovich.

Fazio, R. H. (1990). Multiple processes by which attitudes guide behavior: The MODE model as an integrative framework. In M. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 23, pp. 75–109). San Diego: Academic Press.

Fazio, R. H. (1995). Attitudes as object-evaluation associations: Determinants, consequences, and correlates of attitude accessibility. In R. E. Petty & J. A. Krosnick (Eds.), *Attitude strength* (pp. 247–282). Mahwah, NJ: Erlbaum.

Fazio, R. H., Jackson, J. R., Dunton, B. C., & Williams, C. J. (1995). Variability in automatic activation as an unobtrusive measure of racial attitudes: A bona fide pipeline? *Journal of Personality and Social Psychology, 69,* 1013–1027.

Fazio, R. H., & Olson, M. A. (2003). Implicit measures in social cognition research: Their meaning and use. *Annual Review of Psychology, 54,* 297–327.

Festinger, L. (1957). *A theory of cognitive dissonance.* Evanston, IL: Row Peterson.

Festinger, L., & Carlsmith, J. M. (1959). Cognitive consequences of forced compliance. *Journal of Abnormal and Social Psychology, 58,* 203–210.

Florack, A., Scarabis, M., & Bless, H. (2001). When do associations matter? The use of automatic associations towards ethnic groups in person judgments. *Journal of Experimental Social Psychology, 37,* 518–524.

Forehand, M. R., & Perkins, A. (2005). Implicit assimilation and explicit contrast: A set/reset model of response to celebrity voice-overs. *Journal of Consumer Research, 32,* 435–441.

Frey, D. (1986). Recent research on selective exposure to information. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 19, pp. 41–80). New York: Academic Press.

Gawronski, B., & Bodenhausen, G. V. (2005). Accessibility effects on implicit social cognition: The role of knowledge activation and retrieval experiences. *Journal of Personality and Social Psychology, 89,* 672–685.

Gawronski, B., & Bodenhausen, G. V. (2006). Associative and propositional processes in evaluation: An integrative review of explicit and implicit attitude change. *Psychological Bulletin, 132,* 692–731.

Gawronski, B., Bodenhausen, G. V., & Becker, A. P. (2007). I like it, because I like myself: Associative self-anchoring and post-decisional change of implicit evaluations. *Journal of Experimental Social Psychology, 43,* 221–232..

Gawronski, B., Deutsch, R., Mbirkou, S., Seibt, B., & Strack, F. (2008). When "just say no" is not enough: Affirmation versus negation training and the reduction of automatic stereotype activation. *Journal of Experimental Social Psychology, 44,* 370–377.

Gawronski, B., Peters, K. R., Brochu, P. M., & Strack, F. (2008). Understanding the relations between different forms of racial prejudice: A cognitive consistency perspective. *Personality and Social Psychology Bulletin, 34,* 648–665.

Gawronski, B., & Strack, F. (2004). On the propositional nature of cognitive consistency: Dissonance changes explicit, but not implicit attitudes. *Journal of Experimental Social Psychology, 40,* 535–542.

Gawronski, B., Walther, E., & Blank, H. (2005). Cognitive consistency and the formation of interpersonal attitudes: Cognitive balance affects the encoding of social information. *Journal of Experimental Social Psychology, 41,* 618–626.

Gilbert, D. T. (1991). How mental systems believe. *American Psychologist, 46,* 107–119.

Greenwald, A. G. (1968). Cognitive learning, cognitive response to persuasion, and attitude change. In A. G. Greenwald, T. C. Brock, & T. M. Ostrom (Eds.), *Psychological foundations of attitudes* (pp. 147–170). New York: Academic Press.

Greenwald, A. G., & Banaji, M. R. (1995). Implicit social cognition: Attitudes, self-esteem, and stereotypes. *Psychological Review, 102,* 4–27.

Greenwald, A. G., Banaji, M. R., Rudman, L. A., Farnham, S. D., Nosek, B. A., & Mellott, D. S. (2002). A unified theory of implicit attitudes, stereotypes, self-esteem, and self-concept. *Psychological Review, 109,* 3–25.

Greenwald, A. G., & Farnham, S. D. (2000). Using the Implicit Association Test to measure self-esteem and self-concept. *Journal of Personality and Social Psychology, 79,* 1022–1038.

Greenwald, A. G., McGhee, D. E., & Schwartz, J. K. L. (1998). Measuring individual differences in implicit cognition: The Implicit Association Test. *Journal of Personality and Social Psychology, 74,* 1464–1480.

Gross, J. J. (1998). Antecedent- and response-focused emotion regulation: Divergent consequences for experience, expression, and physiology. *Journal of Personality and Social Psychology, 74,* 224–237.

Harmon-Jones, E., & Mills, J. (Eds.). (1999). *Cognitive dissonance: Progress on a pivotal theory in social psychology.* Washington, DC: American Psychological Association.

Hebl, M. R., & Mannix, L. M. (2003). The weight of obesity in evaluating others: A mere proximity effect. *Personality and Social Psychology Bulletin, 29,* 28–38.

Heider, F. (1958). *The psychology of interpersonal relations.* New York: Wiley.

Hofmann, W., Gawronski, B., Gschwendner, T., Le, H., & Schmitt, M. (2005). A meta-analysis on the correlation between the Implicit Association Test and explicit self-report measure. *Personality and Social Psychology Bulletin, 31,* 1369–1385.

Hummert, M. L., Crockett, W. H., & Kemper, S. (1990). Processing mechanisms underlying use of the balance schema. *Journal of Personality and Social Psychology, 58,* 5–21.

Insko, C. A. (1984). Balance theory, the Jordan paradigm, and the Wiest tetrahedron. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 18, pp. 89–140). San Diego: Academic Press.

Jordan, C. H., Spencer, S. J., Zanna, M. P., Hoshino-Browne, E., & Correll, J. (2003). Secure and defensive high self-esteem. *Journal of Personality and Social Psychology 85,* 969–978.

Judd, C. M., & Lusk, C, M. (1984). Knowledge structures and evaluative judgments: Effects of structural variables on judgmental extremity. *Journal of Personality and Social Psychology, 46,* 1193–1207.

Kahneman, D. (2003). A perspective on judgment and choice: Mapping bounded rationality. *American Psychologist, 58,* 697–720.

Karpinski, A., & Hilton, J. L. (2001). Attitudes and the Implicit Association Test. *Journal of Personality and Social Psychology, 81,* 774–788.

Kawakami, K., Dovidio, J. F., Moll, J., Hermsen, S., & Russin, A. (2000). Just say no (to stereotyping): Effects of training in the negation of stereotypic associations on stereotypic activation. *Journal of Personality and Social Psychology, 78,* 871–888.

Koole, S. L., Dijksterhuis, A., & van Knippenberg, A. (2001). What's in a name: Implicit self-esteem and the automatic self. *Journal of Personality and Social Psychology, 80,* 669–685.

Kruglanski, A. W. (1989). *Lay epistemics and human knowledge: Cognitive and motivational bases.* New York: Plenum Press.

Kumkale, G. T., & Albarracín, D. (2004). The sleeper effect in persuasion: A meta-analytic review. *Psychological Bulletin, 130,* 143–172.

Lieberman, M. D., Gaunt, R., Gilbert, D. T., & Trope, Y. (2002). Reflection and reflexion: A social cognitive neuroscience approach to attributional inference. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 34, pp. 199–249). New York: Academic Press.

Lieberman, M. D., Ochsner, K. N., Gilbert, D. T., & Schacter, D. L. (2001). Do amnesics exhibit cognitive dissonance reduction? The role of explicit memory and attention in attitude change. *Psychological Science, 12,* 135–140.

Mayo, R., Schul, Y., & Burnstein, E. (2004). "I am not guilty" vs. "I am innocent": Successful negation may depend on the schema used for its encoding. *Journal of Experimental Social Psychology, 40,* 433–449.

Nosek, B. A., Banaji, M. R., & Greenwald, A. G. (2002). Math = male, me = female, therefore math ≠ me. *Journal of Personality and Social Psychology, 83,* 44–59.

Olson, M. A., & Fazio, R. H. (2003). Relations between implicit measures of prejudice: What are we measuring? *Psychological Science, 14,* 636–639.

Olson, M. A., & Fazio, R. H. (2006). Reducing automatically activated racial prejudice through implicit evaluative conditioning. *Personality and Social Psychology Bulletin, 32,* 421–433.

Olson, M. A., & Fazio, R. H. (in press). Implicit and explicit measures of attitudes: The perspective of the MODE model. In R. E. Petty, R. H. Fazio, & P. Briñol (Eds.), *Attitudes: Insights from the new implicit measures.* New York: Psychology Press.

Otten, S. (2003). "Me and us" or "us and them"? The self as a heuristic for defining minimal ingroups. *European Review of Social Psychology, 13,* 1–33.

Petty, R. E., Briñol, P., & Tormala, Z. L. (2002). Thought confidence as a determinant of persuasion: The self-validation hypothesis. *Journal of Personality and Social Psychology, 82,* 722–741.

Petty, R. E., Ostrom, T. M., & Brock, T. C. (Eds.) (1981). *Cognitive responses in persuasion.* Hillsdale, NJ: Erlbaum.

Petty, R. E., Tormala, Z. L., Briñol, P., & Jarvis, W. B. G. (2006). Implicit ambivalence from attitude change: An exploration of the PAST model. *Journal of Personality and Social Psychology,* 90, 21–41.

Picek, J. S., Sherman, S. J., & Shiffrin, R. M. (1975). Cognitive organization and coding of social structures. *Journal of Personality and Social Psychology, 31,* 758–768.

Rudman, L. A. (2004). Sources of implicit attitudes. *Current Directions in Psychological Science, 13,* 79–82.

Rudman, L. A., Greenwald, A. G., & McGhee, D. E. (2001). Implicit self-concept and evaluative implicit gender stereotypes: Self and ingroup share desirable traits. *Personality and Social Psychology Bulletin, 27,* 1164–1178.

Shiv, B., & Nowlis, S. M. (2004). The effect of distractions while tasting a food sample: The interplay of informational and affective components in subsequent choice. *Journal of Consumer Research, 31,* 599–608.

Sloman, S. A. (1996). The empirical case for two systems of reasoning. *Psychological Bulletin, 119,* 3–22.

Smith, E. R., & DeCoster, J. (2000). Dual-process models in social and cognitive psychology: Conceptual integration and links to underlying memory systems. *Personality and Social Psychology Review, 4,* 108–131.

Srull, T. K., & Wyer, R. S. (1980). Category accessibility and social perception: Some implications for the study of person memory and interpersonal judgments. *Journal of Personality and Social Psychology, 38,* 841–856.

Strack, F. (1992). The different routes to social judgments: Experiential versus informational strategies. In L. L. Martin & A. Tesser (Eds.), *The construction of social judgments* (pp. 249–275). Hillsdale, NJ: Erlbaum.

Strack, F., & Deutsch, R. (2004). Reflective and impulsive determinants of social behavior. *Personality and Social Psychology Review, 8,* 220–247.

Trope, Y., & Alfieri, T. (1997). Effortfulness and flexibility of dispositional judgment processes. *Journal of Personality and Social Psychology, 73,* 662–674.

Walther, E. (2002). Guilty by mere association: Evaluative conditioning and the spreading attitude effect. *Journal of Personality and Social Psychology, 82,* 919–934.

Wegner, D. M. (1994). Ironic processes of mental control. *Psychological Review, 101,* 34–52.

Wellens, A. R., & Thistlewaite, D. L. (1971). An analysis of two quantitative theories of cognitive balance. *Psychological Review, 78,* 141–150.

Wiest, N. M. (1965). A quantitative extension of Heider's theory of cognitive balance applied to interpersonal perception and self-esteem. *Psychological Monographs: General & Applied, 79,* 1–20.

Wilson, T. D., Lindsey, S., & Schooler, T. Y. (2000). A model of dual attitudes. *Psychological Review, 107,* 101–126.

Zajonc, R. B. (1960). The concepts of balance, congruity, and dissonance. *Public Opinion Quarterly, 24,* 280–296.

Endnotes

1 It is important to note that such other (evaluative or nonevaluative) propositions are also based on associations. The present model implies no independent storage of propositions in long-term memory (see also Deutsch & Strack, 2006).

2 An exception to this case is when the semantic content of the negated proposition is already stored independently in associative memory. This may be the case when the negated proposition has a specific referent (e.g., "no war" automatically activates "peace"; see Mayo, Schul, & Burnstein, 2004) or the negated proposition is used frequently in language (e.g., frequent use of "no problem" automatically activates positivity rather than negativity; see Deutsch et al., 2006).

3 The notion of logical consistency is intended to refer more broadly to subjective consistency resulting from any kind of inferential rule that is considered to be valid, rather than to strict logical consistency in terms of normative syllogistic rules.