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The Matrix of Attitude-Relevant Influences
The Structure of Attitudes

Leandre R. Fabrigar
Tara K. MacDonald
Queen's University
Duane T. Wegener
Purdue University

Throughout its history in social psychology, the attitude construct has been defined in myriad ways. Core to most definitions has been that attitudes reflect evaluations of objects on a dimension ranging from positive to negative. Thus, researchers have characterized attitudes in terms of their valence and extremity. In practice, attitudes have been routinely represented by a single numerical index reflecting the position of an attitude object on an evaluative continuum. However, social scientists have long recognized that characterizing attitudes solely in terms of valence and extremity is insufficient to fully capture all relevant properties of an attitude. For example, in his seminal article on attitude measurement, Thurstone (1928) noted that attitudes are multifaceted and that attempting to describe them with a single numerical index is analogous to attempting to describe an object like a kitchen table with a single numerical index. Other early attitude researchers also noted a variety of relevant attitudinal properties. For example, early advocates of the tripartite perspective proposed that evaluative responses could be classified into the categories of affect, behavior, and cognition (e.g., Katz & Stotland, 1959; Rosenberg & Hovland, 1960; Smith, 1947). Other scholars distinguished among the underlying functions a global evaluation might serve (e.g., Katz, 1960; Katz & Stotland, 1959; Smith, Bruner, & White, 1956). And still others noted that evaluations might vary in the amount of information on which they were based (e.g., Rosenberg & Abelson, 1960) and the extent to which they were linked to other attitudes (e.g., Converse, 1964). Thus, social scientists have long recognized the importance of attitude structure. In this chapter, our first goal is to acquaint readers with the major theories and empirical findings that have emerged in over 60 years of attitude structure research. We also hope to highlight important unresolved issues, suggest some new ways of organizing and interpreting past results, and provide possible directions for future research.
What Is Attitude Structure?

Although the term attitude structure is ubiquitous in the literature, precise definitions are less common. The concept of structure must begin with one’s conceptualization of attitude. For an attitude per se to exist, it makes sense to view the attitude as a type of knowledge structure stored in memory or created at the time of judgment. Some attitude theorists (e.g., Fazio, 1989, 1995) have proposed that attitudes be thought of as object–evaluation associations. That is, an attitude can be viewed as a simple two-node semantic network, with one node representing the object, the second node the global evaluation of the object, and the link between the two nodes the strength of the association.¹

Although attitudes can be characterized as simple object-evaluation associations, attitudes may be part of larger sets of knowledge structures (e.g., see Eagly & Chaiken, 1993, 1998; Petty & Krosnick, 1995; Pratkanis, Breckler, & Greenwald, 1989). For example, one might associate specific attributes with the representation of the object and each of these attributes might in turn be associated with an evaluation (Fishbein & Ajzen, 1975). Likewise, one might associate specific emotional responses with an object and each of these affective states might be associated with an evaluation (e.g., see Zanna & Rempel, 1988). From this perspective, the structure of an attitude can be represented as an object-evaluation association and the knowledge structures linked to it. The term attitude structure refers to the content and the number of knowledge structures, the strength of the associative links making up the attitude and its related knowledge structures, and the pattern of associative links among the attitude and its related knowledge structures (see also Eagly & Chaiken, 1998; Wegener & Gregg, 2000).

Some researchers have distinguished between two general types of attitude structure (Eagly & Chaiken, 1993, 1995, 1998; McGuire, 1989). Intra-attitudinal structure refers to the structure of a single attitude. Inter-attitudinal structure refers to structures involving more than one attitude (also referred to as attitude systems, e.g., Judd, Drake, Downing, & Krosnick, 1991; McGuire, 1989; or belief systems, e.g., Converse, 1964). As noted earlier, an overall attitude toward an object might be influenced by evaluations of many specific attributes of the object or emotions associated with the object. Therefore, one could technically refer to many situations as involving inter-attitudinal structure even when only one object is considered. In our discussions, however, we retain the previous labels of intra-attitudinal when a single object is considered and inter-attitudinal when two or more objects are involved (usually at roughly the same level of abstraction).

Attitudes: Stored Knowledge Structures or Temporary Constructions?

The traditional and most prevalent conceptualization of attitudes is that attitudes are global evaluations that people can access from memory when called on to do so. However, some researchers have suggested that it may be useful to conceptualize attitudes as temporary constructions, created at the time people are asked to make attitudinal judgments (e.g., Ben, 1972; Schwarz & Bohner, 2001; Wilson & Hodges, 1992). According to this perspective, people often lack preconsolidated general evaluations. When asked to report attitudes, people consider readily available information and integrate this information into an overall attitudinal judgment.

From a structural perspective, the constructionist view suggests that people may often have representations of objects that are associated with various knowledge structures that are evaluative in nature (e.g., beliefs about the object’s attributes or emotional reactions associated with the object). However, the object representation may have no global evaluation associated
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with it. Thus, people construct a summary evaluation based on linked knowledge structures that are either strongly associated with the object representation or are temporarily accessible at the time of judgment. Presuming the newly formed global evaluation does not become strongly associated with the object representation, this global evaluation should decay over time. Thus, at a later time, the construction process might once again need to be undertaken.

It should be noted that the strongest version of a constructionist view (i.e., that no attitudes are stored in memory, see also Wyer & Albarracin, this volume) would not allow for stored evaluations of attributes or emotions any more than for global evaluations of objects, because an attribute for one attitude object could also be its own attitude object. Information would have to be stored in a nonevaluative form, waiting to take on evaluative meaning in a particular context. But one would have to possess a concept of evaluation in order to interpret those contexts. Because of the functionality of overall evaluations preparing people for approach or avoidance, it simply seems odd to assume that all assessments of goodness or badness must be constructed anew when encountering familiar objects (see Fazio & Olson, 2003a). This is not to say that all attitudes must be stored and that construction never occurs. Rather, it seems likely that for any given attitude object, some people may have clearly formed global evaluations that are strongly linked to the attitude object representation. For these people, construction may often be unlikely. However, other people may lack well-developed global evaluations, and construction may be more likely (Priester, Nayakankuppum, Fleming, & Godek, 2004). Similarly, some attitudes may be a mixture of these conceptualizations (i.e., a global evaluation may exist, but may be only weakly associated with the object representation). Thus, both traditional and temporary construction perspectives may simply describe attitudes with different structural properties. We will touch on this issue throughout the chapter.

REVIEW OF ATTITUDE STRUCTURE PROPERTIES

Attitude Accessibility

Perhaps the most basic structural property of attitudes is that of attitude accessibility. Accessibility can be viewed as the strength of the associative link between object and evaluation, such that for highly accessible attitudes, the evaluation of an object is automatically activated from memory when that object is encountered (Fazio, Sanbonmatsu, Powell, & Kardes, 1986). Alternatively, accessibility could be conceptualized as represented in the connection weights within a connectionist model. In this model, accessibility would correspond to the ability of partial stimulus input to quickly and accurately produce the entire pattern of activation for the attitude (e.g., see Smith & DeCoster, 1998; Smith, Fazio, & Cejka, 1996; see also Bassili & Brown, this volume). Consistent with either conceptualization, attitude accessibility is usually assessed using an adjective connotation task, in which participants are presented with an attitude object on a computer screen, and then are asked to make an evaluation (e.g., good or bad) in response to that object. Response latencies are recorded, and it is inferred that quick reaction times indicate high accessibility, whereas slow reaction times indicate low accessibility.

Accessibility is determined in part by the frequency with which the attitude is activated, such that repeated expressions strengthen the associations between objects and evaluations, thereby increasing the ease of retrieval of the evaluation from memory (Fazio, Chen, McDonel, & Sherman, 1982; Powell & Fazio, 1984). Attitudes can also be particularly accessible when based on information the person considers as highly diagnostic (i.e., credible evaluative information). Fazio (1995) posits that sensory information about the object, emotional reactions engendered by the object, past behavior toward the object, and direct experience with the object are classes of information that are commonly viewed as highly diagnostic.
Types of Attitude-Relevant Information

Affective/Cognitive/Behavioral Bases

The tripartite theory, or the notion that attitudes have three components—affect, cognition, and behavior—has enjoyed a long history (e.g., Katz & Stotland, 1959; Rosenberg & Hovland, 1960; Smith, 1947). Traditionally, affect has been used to describe the positive and negative feelings that one holds toward an attitude object (Rosenberg & Hovland, 1960). Cognition has been used to refer to beliefs that one holds about the attitude object, and behavior has been used to describe overt actions and responses to the attitude object. In its original form, the tripartite theory held that attitudes were comprised of these three components, which subsequent researchers demonstrated are distinguishable from each other (Breckler, 1984; Kothandapani, 1971; Ostrom, 1969).

Although acknowledging these early contributions, more contemporary attitude researchers have modified the tripartite theory (e.g., Cacioppo, Petty, & Geen, 1989; Petty & Cacioppo, 1986; Zanna & Rempel, 1988). These theorists have argued that affect can best be described as consisting of specific and distinct emotional states (see also Schimmack & Crites, this volume), in contrast to the more generally evaluative “approval or disapproval” (Smith, 1947, p. 509) or “attribution of good or bad qualities” (Katz & Stotland, 1959, p. 430). Moreover, the traditional tripartite theorists tended to imply that all three components were constituents that were the “anatomy” of an attitude (Smith, 1947, p. 508) or were three types of possible responses to a stimulus (e.g., Rosenberg & Hovland, 1960). In contrast, the contemporary view holds that an attitude is an entity distinguishable from the classes of affect, behavior, and cognition. An attitude, therefore, does not consist of these elements, but is instead a general evaluative summary of the information derived from these bases (Cacioppo et al., 1989; Crites, Fabrigar, & Petty, 1994; Zanna & Rempel, 1988).

With this shift to considering attitude as conceptually separable from the bases of the attitude, research has addressed the potential differences across attitudes primarily based on affect, cognition, or behavior. A fair amount of research has addressed attitudes based primarily on affect or cognition (including studies that have experimentally created such attitudes in the absence of past behavior), but less attention has been given to attitudes with purely behavioral bases. Consistent with Bem’s (1972) self-perception theory, social perceivers might sometimes directly infer an attitude from past behaviors. Yet, because these past behaviors could also have influenced beliefs or emotional responses, it is also plausible for effects of past behavior to be mediated by these classes of responses. Although some research has attempted to control for behavioral effects on beliefs (e.g., Albarracín & Wyer, 2000), investigations controlling for both beliefs and affect have yet to be conducted.

Functional Nature of Attitudes

Researchers have long speculated about the motivations for forming and holding attitudes (e.g., Katz & Stotland, 1959; Kelman, 1961; Smith, Bruner, & White, 1956; for reviews, see Kruglanski & Stroebe, this volume; Shavitt, 1989). For instance, Katz (1960) proposed that there are four classes of attitude functions. The knowledge function posits that attitudes facilitate the management and simplification of information processing by providing a schema with which to integrate existing and new information. The utilitarian (or instrumental) function posits that attitudes help individuals to achieve desired goals and avoid negative outcomes. The ego-defensive function, derived from psychoanalytic principles, pertains to the maintenance or promotion of self-esteem. Finally, the value-expressive function states that individuals use attitudes to convey information about their values and self-concepts. Smith et al. (1956) also proposed the social-adjustive function, which posits that attitudes facilitate the maintenance
of relationships with others who are liked. None of the proposed taxonomies are necessarily exhaustive nor are they necessarily mutually exclusive.

Although seldom described as such, functions may be linked to structural properties of attitudes (e.g., see Fabrigar, Smith, & Brannon, 1999). Specifically, whether an attitude serves a particular function may, to some extent, be a result of the content of the knowledge structures associated with that attitude. For example, attitudes based on information linked to core values could result in an attitude that serves a value-expressive function. Likewise, an attitude based on information directly relevant to self-worth could produce an ego-defensive attitude, and so on. Functions themselves would also likely have implications for knowledge content, such that a value-expressive function, for example, would encourage attention to, and memory for, value-relevant information. Thus, in certain respects, taxonomies of attitude functions can be thought of as systems for categorizing attitude-relevant information.

Amount and Breadth of Attitude-Relevant Information

Working Knowledge

Working knowledge is defined as the number of attitude-relevant thoughts and experiences that spontaneously come to mind when encountering an object (Wood, Rhodes, & Biek, 1995). As such, working knowledge is likely a subset of all the knowledge available in memory, with thoughts and experiences strongly associated with the attitude object most likely to be included as working knowledge (Wood, 1982). In this way, knowledge pertains directly to core aspects of attitude structure such as the number of knowledge structures associated with the attitude and the strength of the associations among the structures and the attitude.

One common measure of working knowledge is to ask participants to generate lists of all the thoughts and experiences that they believe are relevant to an attitude object (e.g., Biek, Wood, & Chaiken, 1996; Davidson, Yantis, Norwood, & Montano, 1985; Wood, 1982). Other measures ask participants for their subjective impressions of how knowledgeable they are about an attitude object (e.g., Wood, 1982; Davidson et al., 1985; Kraft, & Dunn, 1989). It is notable that the knowledge-listing technique and subjective reports of knowledge are modestly correlated (see Krosnick, Boninger, Chuang, Berent, & Carnot, 1993; see also Wood, 1982; Wood et al., 1995).

When asked to list thoughts and experiences, some individuals generate factually correct information, whereas others generate erroneous information. Indeed, working knowledge is not always highly correlated with factual accuracy (see Scott, 1969; Wood et al., 1995). Wood et al. (1995) contend that knowledge-listing is the most representative index of the thoughts, feelings, and behavioral information that a person uses when evaluating an attitude object, and so may be generally more useful than factual accuracy. In some cases, however, accuracy of information may be diagnostic of attitude outcomes (e.g., see Davidson, 1995).

To be considered part of working knowledge, attitude-relevant thoughts and experiences must be accessible in response to an attitude object. It follows, then, that working knowledge will be determined in part by factors that increase the ease with which thoughts or experiences are brought to mind. Frequent exposure to the attitude object and high levels of cognitive elaboration about the attitude object are among the variables that could increase the likelihood that many thoughts or experiences are recalled when an attitude object is encountered.

Complexity

Complexity of knowledge refers to the extent to which attitude-relevant information represents a number of distinct underlying dimensions (i.e., the extent to which information can be classified as pertaining to multiple categories; Scott, 1969; Tetlock, 1989). For example,
two people could be equally positive in their evaluation of an attitude object and demonstrate the same amount of working knowledge. Despite these similarities, they could differ greatly in terms of complexity. A person whose knowledge represents multiple underlying dimensions or perspectives (high differentiation) would be higher in complexity than a person whose knowledge corresponds to a single dimension or perspective (i.e., low differentiation). Some researchers have also distinguished between two different types of complex attitudes: those based on multiple orthogonal dimensions (i.e., attitudes high in differentiation and low in integration) and those based on multiple related dimensions (i.e., attitudes high in differentiation and integration; e.g., Judd & Lusk, 1984; Scott, 1969; Tesser, Martin, & Mendolia, 1995).

Indeed, evaluating the relations among the dimensions that underlie beliefs is a defining feature of some classifications of complexity. Integrative complexity (Tetlock, 1989) pertains not only to the number of distinct dimensions underlying an attitude, but also the extent to which these dimensions are linked or conceptually related to one another. Attitudes that are high in integrative complexity are characterized by a high number of underlying dimensions that are highly connected to each other. In contrast, attitudes low in integrative complexity are characterized by underlying dimensions that are relatively isolated and diffuse.

Integrative complexity is typically assessed through content analysis (e.g., Baker-Brown, Ballard, Bluck, de Vries, Suedfeld, & Tetlock, 1992; Tetlock & Suedfeld, 1988). Raters assign a value of 1 (representing no differentiation or integration) to 7 (representing both high differentiation and integration) to text. In this coding system, differentiation refers not only to mention of multiple dimensions, but there must also be some conflict or tension implied among dimensions. Scores on this scale are routinely low (e.g., means of around 2 for undergraduates and around 4 for U.S. Supreme Court Justices; Baker-Brown et al., 1992), representing some differentiation, but no integration. Because scores for most people simply reflect the presence or absence of conflicting dimensions, one might argue that research on integrative complexity differs from traditional complexity, and may be reconceptualized as pertaining to ambivalence.

Although the structural properties of working knowledge and complexity are theoretically distinct, these two constructs may often be positively correlated. The more information a person generates in response to an attitude object, the greater the possibility that these responses will tap into a high number of distinct underlying dimensions (see Linville, 1982). Of course, this relation is not necessarily true (e.g., a person could generate 2 or 42 beliefs representing a single dimension), but in general, the greater the amount of working knowledge, the greater the potential for high complexity. Cognitive elaboration is also a likely determinant of complexity. Individuals who elaborate may be likely to generate a greater number of dimensions underlying their attitude and recognize increasing and more intricate bonds among those dimensions (e.g., see work on accountability by Tetlock, 1983a; Tetlock & Kim, 1987).

Evaluative Consistency of Attitude-Relevant Information: Ambivalence

Attitudinal ambivalence occurs when there is evaluative tension associated with one's attitude because the summary includes both positive and negative evaluations (Kaplan, 1972; Scott, 1969; Thompson, Zanna, & Griffin, 1995). Direct measures of the experience of ambivalence include measures of the person feeling mixed or torn about the attitude object (Jamieson, 1988, 1993; Priester & Petty, 1996; Tourangeau, Rasinski, Bradburn, & D'Andrade, 1989), whereas potential ambivalence is typically assessed by combining the positive and negative evaluations using one of a number mathematical models (Kaplan, 1972; Priester & Petty, 1996; Thompson et al., 1995). Correlations between potential and experienced ambivalence tend to be moderate.
The relation is particularly strong when the conflicting evaluations are simultaneously accessible, especially among people high in preference for consistency (Newby-Clark, McGregor, & Zanna, 2002). Priester and Petty (2001) have also demonstrated that individuals experience ambivalence when their attitudes are discrepant from those of others who are liked (e.g., parents, high-status peers).

**Types of Ambivalence**

Attitudinal ambivalence can result from different types of evaluative inconsistency. Within-dimension ambivalence occurs when one's evaluations within a dimension conflict (e.g., both positive and negative beliefs or both positive and negative emotions related to an attitude object). Between-dimension ambivalence is experienced when there is a conflict between two dimensions, such as affective-cognitive inconsistency (i.e., when emotions and beliefs are not congruent), evaluative-affective inconsistency (i.e., when overall attitude conflicts with the feelings or emotions associated with the object), see Chaiken, Pomerantz, & Giner-Sorolla, 1995) or evaluative-cognitive inconsistency (i.e., when overall attitude conflicts with the knowledge or beliefs associated with the object, Chaiken et al., 1995).

Most research on between-dimension and within-dimension ambivalence uses the dimensions of affect and cognition; however, the study of ambivalence need not be limited to these dimensions. Ambivalence can occur when any dimensions of attitude structure are inconsistent, whether these dimensions are the bases described by the tripartite model, functions associated with an attitude object, or other dimensions relevant to an attitude object.

Few researchers assessing ambivalence have attempted to classify or label the type of ambivalence under investigation. However, the consequences of holding ambivalent attitudes may vary according to the specific type of ambivalence that is experienced. It may therefore be instructive for researchers to make distinctions among types of ambivalence to more effectively compare findings across studies and to work toward the development of a coherent framework that can explain how the specific types of inconsistencies operate to affect attitudes and behavior.

**Inter-Attitudinal Structure**

Research in attitude structure has typically focused on the intra-attitudinal properties previously described. However, it is also possible to view attitudes as units that are linked together in cognitive structures (e.g., Converse, 1964; Eagly & Chaiken, 1995; Judd, Drake, Downing, & Krosnick, 1991; Judd & Krosnick, 1989; McGuire, 1985). Thus, one can characterize structure in terms of the relations among attitudes toward different but related attitude objects. Similarly, researchers have recently discussed structure in terms of two or more attitudes toward the same object (e.g., dual attitudes, Wilson, Lindsey, & Schooler, 2000).

**Attitude Systems**

Initial work assessing consistency among related attitudes generated influential cognitive consistency theories (Abelson & Rosenberg, 1958; Festinger, 1957; Heider, 1958; see also Cartwright & Harary, 1956). These theories posited that individuals experience tension when they recognize attitudinal inconsistency and are motivated to maintain inter-attitudinal congruity (see Abelson et al., 1968; for reviews, see Olson & Stone, this volume; Wyer & Albarracin, this volume). More recently, researchers have studied specific properties of inter-attitudinal structure, including the extent to which attitudes are associated in long-term memory, and the consistency and strength of those links (Judd et al., 1991; Judd & Krosnick, 1989; Lavine, Thomsen, & Gonzales, 1997).
Applying associative network principles of spreading activation (Anderson, 1983), Judd and his colleagues (Judd et al., 1991; Judd & Krosnick, 1989) theorized that attitudes are linked together in cognitive structures in such a way that, if one attitude is called to mind, other attitudes linked in memory will also be activated. Links are formed when attitude objects are considered simultaneously, which happens when a person “comes to believe that one object implies, favors, contradicts, or opposes the other object” (Judd & Krosnick, 1989, p. 109). In this model, attitudes are the nodes. Links among the nodes are characterized by implicational relations (consistent or inconsistent) and strength (the probability that the nodes will activate each other).

Attitudes can be linked and organized in cognitive frameworks according to general ideologies such as liberalism or conservatism (Converse, 1964), or because they influence a common set of consequences such as value-expression (Lavine et al., 1997). Attitudes that are organized within such schemas are more likely to be consistent with one another than are attitudes with fewer and weaker associative links (Judd & Krosnick, 1989). In this way, individuals are likely to have attitudes that are consistent in valence when they know about relevant attitude objects (i.e., have a high number of nodes), and recognize connections among those attitudes (i.e., have a high number of links per node). For example, Judd and Krosnick (1989) hypothesized that these criteria would be fulfilled by political experts, who should be able to invoke ideologies when thinking about attitude objects and thus recognize links to other attitude objects. Similarly, when individuals view an attitude as important, they should spend more time thinking about the attitude object and develop stronger links to related attitude objects. Indeed, Judd and Krosnick demonstrated that individuals who were experts in the domain of politics (who held extensive knowledge about, and interest in, politics) were more likely to demonstrate evaluative consistency. Judd and Downing (1990) established that the relation between political expertise and evaluative consistency was mediated by the propensity of experts, relative to nonexperts, to organize their attitudes in cognitive frameworks such as ideologies. Although nonexperts may not organize attitudes according to elaborate schemas such as ideologies, they can recognize other links among attitudes (e.g., in terms of value goal attainment), and so can also achieve attitudinal consistency (Lavine et al., 1997).

**Dual-Attitude Structure**

The inter-attitudinal structures discussed refer to links among evaluations of separate attitude objects. It is possible, however, to hold two (or more) attitudes toward the same attitude object, as has been proposed in the dual attitude model (Wilson et al., 2000) and the past attitudes still there (PAST) model (Petty, Tormala, Bröniol & Jarvis, 2005).

In the dual attitude model, Wilson and colleagues assert that when an attitude changes, the old attitude is not necessarily discarded. Instead, older attitudes may be retained alongside the new attitude. They argue that individuals can hold dual attitudes because one attitude is expressed at a conscious level (i.e., explicit) whereas the other is often outside awareness (i.e., implicit, see Greenwald & Banaji, 1995). In this view, either the implicit or the explicit attitude can be activated. Implicit attitudes are the default attitudes that are activated automatically, whereas explicit attitudes are expressed only when an individual has sufficient capacity and motivation to override the implicit attitude and retrieve the explicit attitude.

The PAST model also holds that after attitude change occurs, the older attitude still exists. This model assumes that when an individual changes his or her attitude, that person will tag the original attitude as false or as being associated with low confidence. Both the new attitude and the old attitude are still linked to the attitude object in memory, and so either (or both) can be activated. According to the PAST model, the original attitude will be activated when the original attitude has not been tagged, when that tag cannot be retrieved in memory, or when that attitude cannot be inhibited.
At first glance, dual-attitude structures may seem akin to the intra-attitudinal property of ambivalence. Wilson and his colleagues, however, draw a number of distinctions between these two concepts. They note that when ambivalence occurs, tension results as a consequence of two conflicting evaluations that are both in awareness. They maintain that with dual attitudes, there is no psychological tension to resolve when an individual is not consciously aware of the implicit attitude, and so only acknowledges the explicit attitude. Interestingly, Petty and colleagues have recently conducted research suggesting that inconsistency between self-report and implicit association test measures of attitudes (indexing implicit ambivalence) can have similar processing consequences to those observed using traditional explicit measures of ambivalence (Brinol, Petty & Wheeler, 2005). Even so, the PAST model differs from the dual-attitude approach because, in some circumstances (e.g., when individuals do not successfully access the false tag), both the old and new attitude can be simultaneously activated and open to awareness. In such instances, individuals can experience a state similar to explicit ambivalence.

Although most of the research on dual attitudes focuses on implicit–explicit dual attitude structures, it is theoretically possible to hold implicit–implicit dual attitudes, or explicit–explicit dual attitudes. Implicit–implicit dual attitudes could occur when both attitudes are formed at a level below awareness (e.g., via mere exposure or conditioning, see Olson & Fazio, 2001, 2002; Walther, 2002). Explicit–explicit dual attitudes could occur when attitude change occurs, but the individual recalls both the original attitude and the new attitude (Petty et al., 2003). In fact, some researchers (e.g., Fazio & Olson, 2003b) have questioned whether it has been demonstrated that implicit attitudes are actually below awareness at all. Furthermore, much of the research on dual-attitude structures implies that the two attitudes are evaluatively inconsistent (see Wilson et al., 2000). It could be, however, that the attitudes would be similarly valenced. In domains such as prejudice, attitudes assessed via implicit measures exhibit low correlations with attitudes assessed via explicit measures. Yet, with more mundane objects, the correlations tend to be higher (Fazio & Olson, 2003b). In future research, it will be instructive to assess the possible combinations of dual-attitude structures. As with ambivalence, the consequences of dual attitudes may vary as a function of the type of dual attitude held.

ASSOCIATIONS AMONG STRUCTURAL PROPERTIES AND WITH OTHER CONSTRUCTS

As the previous section illustrates, theorists have proposed a host of structural properties of attitudes. Thus, it is not surprising that one important theme in attitude structure research has been attempting to develop more parsimonious conceptual organizations of structural properties. Because many of the properties are related to the strength of attitudes, it is perhaps reasonable that properties might covary. Researchers have also been interested in examining the extent to which structural properties relate to other attitude strength constructs. Research has identified a number of subjective beliefs about attitudes (e.g., attitude confidence) as well as properties of the attitude itself (e.g., attitude extremity) associated with strength. Hence, researchers have examined whether structural properties of attitudes are related to these beliefs and properties.

Taxonomies of Attitude Structure and Related Constructs

The goal of developing a conceptual organization of structural properties and related constructs is an intuitively compelling objective for both theoretical and practical reasons. Unfortunately, although useful advances have been made, empirical research to date has been far from definitive. Findings have often been inconsistent across studies and no widely accepted taxonomy of structural properties or other strength-related constructs has emerged. For example,
Erber, Hodges, and Wilson (1995) proposed that structural properties and other strength-related constructs could be conceptualized as two factors reflecting the evaluative consistency of the database underlying the attitude and the strength of the evaluation. However, a principal components analysis of 13 strength-related constructs failed to provide evidence of two underlying factors.

Bassili (1996) proposed a taxonomy based on the nature of the measurement procedure used. He distinguished between meta-attitudinal measures, which involve reporting subjective beliefs about some aspect of the attitude or attitude object (e.g., subjective reports of certainty), and operative measures, which involve objective—rather than subjective—indices of judgmental processes in attitudinal responses (e.g., response latencies of attitudinal responses). Factor analyses provided some evidence of a two-factor structure consistent with the meta-attitudinal/operative distinction. However, attitude certainty (a meta-attitudinal measure) was found to load on both factors. Furthermore, other interpretations of the factor structure are possible. For instance, measures that loaded on the meta-attitudinal factor could also be argued to be measures likely to reflect the amount of information underlying the attitude (e.g., self-reports of knowledge, frequency of thought, and importance). Measures that loaded on the operative factor could be alternatively conceptualized as measures sensitive to the evaluative consistency of information underlying the attitude (e.g., attitude response latencies, ambivalence, extremity). This alternative conceptualization might also explain why certainty loaded on both factors. It is intuitively sensible that certainty regarding attitudes would be related to both the amount and evaluative consistency of information underlying an attitude.

Krosnick et al. (1993) conducted confirmatory factor analyses of structural properties, attitude extremity, and strength-related beliefs. Their analyses rejected a model postulating a single underlying strength factor and supported a model with each strength-related property as a distinct construct. Though this preferred model fit the data well, it was not particularly parsimonious, nor did it provide guidance regarding why structural properties and other strength-related properties are more versus less related to one another.

Limitations of Past Research

Why have results been so inconsistent in research on taxonomies of structure and other strength-related constructs? One possibility may be that somewhat different sets of measures have been used across studies and many studies have incompletely sampled strength-related constructs. Furthermore, the psychometric properties of measures have seldom been explored. Ultimately, the results of any factor analysis are dependent on the extent to which the measures adequately sample the domain of interest and possess sound psychometric properties (e.g., see Fabrigar, Wegener, MacCallum, & Strahan, 1999).

A second limitation has been the lack of fully developed theoretical rationales for proposed taxonomies. The precise mechanisms by which specific constructs are related to one another have seldom been articulated. Consider the Erber et al. (1995) two-factor taxonomy of consistency of database and strength of evaluation. This model implies that various forms of evaluative consistency load on a common factor (i.e., these properties should be highly intercorrelated). However, there seems little reason to expect that because one type of inconsistency exists (e.g., affective-cognitive inconsistency), another type of inconsistency should also exist (e.g., belief inconsistency). Similarly, the Bassili (1996) meta-attitudinal/operative distinction implies that sharing a measurement method is sufficient for two measures to be highly correlated. Based on this logic, a subjective (meta-attitudinal) report of ambivalence should be more highly correlated with a subjective report of knowledge than it is with an operative measure of ambivalence. Yet, there seems to be little reason people who subjectively experience low levels of ambivalence should perceive themselves as highly knowledgeable. People are likely
to experience little ambivalence when they know very little about an attitude object. Likewise, this perspective cannot account for correlations between subjective reports of ambivalence and operative measures of ambivalence (e.g., see Priester & Petty, 1996, 2001; Thompson et al., 1995) or for stronger relations between these alternative measures of the same construct than between pairs of meta-attitudinal or operative constructs (e.g., Krosnick et al., 1993). 6

Another potential reason for past inconsistencies is that the studies have failed to examine whether associations among constructs are sometimes nonlinear or moderated by other strength-related constructs. For instance, consider the seemingly obvious prediction that subjective certainty increases as working knowledge increases. This prediction is only sensible if increases in working knowledge involve evaluatively consistent information. When knowledge is inconsistent, there may be no association between working knowledge and certainty. Past research has not generally addressed such possibilities. A final limitation is that most studies of associations among strength-related constructs have been nonexperimental. Thus, it is difficult to know the degree to which third variables have obscured true associations among constructs (see Wegener, Downing, Krosnick, & Petty, 1995).

Exploring Associations Among Structural Properties and Related Constructs

Although no widely accepted taxonomy of attitude structure exists, it is nonetheless important to consider how such properties are related to one another. Here, we review structural properties of attitudes and propose hypotheses regarding their associations with other structural properties and strength-related constructs. Although there are theoretical bases to make hypotheses about virtually all combinations of structural variables, not all of these associations have received empirical attention. In the interest of brevity, we confine our discussion to the pairings for which there are some data, the findings of which are summarized in Table 3.1.

**Accessibility With Attitude Accessibility**

Accessibility is perhaps the most widely studied structural property of attitudes. In considering its associations with other constructs, it is important to recognize that associations might be driven by effects of accessibility on the other strength variable or by effects of the strength variable on accessibility. Thus, in our discussion of accessibility (and other structural properties), we consider both possibilities.

*Type of Attitude-Relevant Information and Accessibility.* As noted earlier, attitude theorists have distinguished among various types of attitude relevant information. There seems to be little reason to expect that simply strengthening the object-evaluation association should result in an attitude based on a particular type of information. However, it is possible that attitudes derived from different types of information could produce attitudes that differ in accessibility. It has been suggested that the perceived diagnosticity of the informational basis of an attitude may influence the strength of an object-evaluation association and that affective information may be perceived as more diagnostic of attitudes than cognitive information (Fazio, 1995).

In a study examining 20 different attitude objects, analyses revealed a positive correlation between the extent to which attitude objects were described in affective terms and the accessibility of attitudes toward those objects (see Fazio, 1995). Giner-Sorolla (2001) measured the extent to which attitudes were based on affect/cognition and the accessibility of attitudes in two studies. Controlling for attitude extremity, there was no overall effect of attitude basis on accessibility. However, a significant interaction between extremity and attitude basis revealed that for extreme attitudes, affective attitudes were more accessible than cognitive attitudes.
<table>
<thead>
<tr>
<th>Type of Information</th>
<th>Type of Information</th>
<th>Knowledge</th>
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<tr>
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<td>Fazio et al. (1989)-nonexp</td>
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<td>Fazio &amp; Williams (1986)-nonexp</td>
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<td>Houston &amp; Fazio (1989)-nonexp</td>
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</tr>
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<td>Kronick et al. (1993)-nonexp</td>
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</tr>
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<td></td>
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<td>Krosnick (1993)-nonexp</td>
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<td>Kronick et al. (1993)-nonexp</td>
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<td>Lavine et al. (1996)-nonexp</td>
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<tr>
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<td>none-sig</td>
<td>Edwards (1990)</td>
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<tr>
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</tr>
<tr>
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<td>None</td>
<td>None</td>
</tr>
<tr>
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<td>Burgh et al. (1992)-general</td>
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<tr>
<td>Linville (1982)</td>
<td>- sig</td>
<td>Krosnick et al. (1993)-aff/cog</td>
</tr>
<tr>
<td>Linville &amp; Jones (1980)</td>
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<td>Smith et al. (2003)-belief</td>
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<td>Miller &amp; Tesser (1966)</td>
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<td>.01/- .09/- .05</td>
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<td></td>
<td>Smith et al. (2003)-belief</td>
<td>- sig</td>
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In contrast, for moderate attitudes, cognitive attitudes were more accessible than affective attitudes.

These studies present a mixed picture, and some additional caveats seem warranted. First, given the correlational nature of the data, it is possible that confounds may have been present in comparisons of affective/cognitive attitudes. Second, the extent to which information of a particular type is seen as diagnostic of attitudes may be moderated by a variety of factors. For example, different types of information may be seen as diagnostic for different classes of attitude objects. The manner in which information is acquired and/or subsequently processed may also influence its perceived diagnosticity. Fazio (1995) has noted that cognitive information may be seen as diagnostic if it is carefully elaborated (e.g., see Chaiken, Liberman, & Eagly, 1989; Petty & Cacioppo, 1986). Given these issues, it is not clear that one should generally expect a simple association between the basis or bases of attitudes and attitude accessibility.

Working Knowledge and Accessibility. Researchers have suggested that accessibility is related to working knowledge (e.g., Davidson et al., 1985; Kallgren & Wood, 1986), though the mechanisms underlying this association have not been explicitly stated. Because increased accessibility is associated with increased frequency of attitude activation (Powell & Fazio, 1984), spreading activation to linked structures should lead to frequent coactivation of these structures, thereby resulting in stronger associative links between the attitude and attitude-relevant information (Judd & Brauer, 1995). As noted earlier, one important determinant of working knowledge is the strength of associative links of information to the attitude. Therefore, repeated activation of the attitude could increase reports of working knowledge. To the extent that increasing accessibility of attitudes increases the sheer amount of working knowledge, attitude accessibility might also increase working complexity of that knowledge.

There is also reason to predict that increases in working knowledge/complexity might lead to greater accessibility. First, each time a new link between a piece of information and an attitude is formed, the attitude is likely to be activated. Thus, increasing working knowledge is likely to produce repeated attitude activation. Second, attitudes linked to numerous knowledge structures and/or to knowledge structures reflecting multiple dimensions may be more likely to be activated as a result of situational cues. The more extensive or complex the representation of an attitude object, the more likely that a situation will contain cues relevant to some aspect of the attitude object representation and thus trigger activation of the attitude.

It is interesting to note that only a little empirical research on the working knowledge-accessibility association exists. Research examining the association between subjective reports of knowledge and attitude accessibility (assessed using response latencies) have produced positive, but weak, correlations (Erber et al., 1995; Krosnick et al., 1993)' as has research assessing knowledge through a knowledge-listing measure (Krosnick et al., 1993). One experiment using repeated attitude expression to manipulate attitude accessibility did not produce differences in perceived knowledge (MacDougall, Fabrigar, Ackbar, & Smith, 2003). Although past research suggests only a weak association between working knowledge and accessibility, our previously stated limitations of past research apply. For example, one relatively obvious moderator of the working knowledge-accessibility association may be the evaluative consistency of attitude-relevant information. An implicit assumption in our discussions of working knowledge and accessibility has been that attitude-relevant information is evaluatively consistent. However, when ambivalence exists, greater working knowledge should not necessarily lead to enhanced accessibility. Many objects used in past studies were objects likely to elicit ambivalence (e.g., abortion, capital punishment).

Ambivalence and Accessibility. There are numerous reasons why accessibility might be related to ambivalence. As stated earlier, strengthening the object-evaluation
association involves repeated attitude activation, which in turn could lead to activation of linked knowledge structures thereby strengthening associations with the attitude. However, attitude activation may differentially influence knowledge structures that are evaluatively consistent versus inconsistent with the attitude (see Judd & Brauer, 1995). When an object representation is activated, features primarily used to initially categorize the object are more likely to be activated than features that did not play a dominant role in the categorization of the object. Given that global evaluation is one important dimension by which objects are categorized (Osgood, Suci, & Tannenbaum, 1957), repeated attitude activation may strengthen associations among evaluatively consistent pieces of information more than evaluatively inconsistent pieces of information. Additionally, research suggests that activation of an attitude tends to facilitate activation of knowledge structures that are evaluatively consistent with the attitude and inhibit activation of knowledge structures that are evaluatively inconsistent with the attitude (Bargh, Chaiken, Govender, & Pratto, 1992; Bargh, Chaiken, & Hymes, 1996; Fazio, 1995; Fazio, Jackson, Dukon, & Williams, 1995; Fazio et al., 1986). Hence, repeated attitude activation should lead to stronger links between the attitude and evaluatively consistent rather than inconsistent information, thus leading to less ambivalence. Considering a reverse causal mechanism, increasing (decreasing) ambivalence could lead to decreased (increased) accessibility for similar reasons. Each time a link is established between an attitude and a knowledge structure that is evaluatively inconsistent, this adds another related knowledge structure whose activation could inhibit activation of the attitude.

It is interesting to note that these processes may not be the same for different types of ambivalence. Within-dimension ambivalence involves highly interrelated information, so coactivation of contradictory information may be likely. Thus, it might be difficult for activation of an attitude to activate information evaluatively consistent with the attitude and not also activate information evaluatively inconsistent with the attitude. In such situations, repeated attitude activation may not decrease ambivalence. However, decreased ambivalence within a dimension should still increase accessibility. In contrast, for between-dimension ambivalence, differential activation of information that is consistent versus inconsistent with the attitude may be more likely because contradictory information is less strongly linked and thus less likely to be coactivated.

Evidence of relations between ambivalence and accessibility is inconsistent. Studies of general ambivalence and accessibility have reported negative associations (Bargh et al., 1992; see also Fazio, 1995). Studies assessing the relation between affective-cognitive ambivalence and accessibility have produced mixed results (Erber et al., 1995; Krosnick et al., 1993). Ambivalence within beliefs has been uncorrelated with accessibility (Erber et al., 1995).

**Attitude Extremity and Accessibility.** There has also been interest in examining the relation of accessibility to other strength properties such as attitude extremity. Perhaps the most well-developed model related to the accessibility-extremity association was proposed by Judd and Brauer (1995). They began with the assumption that repeated attitude activation/expression leads to greater attitude accessibility and also stated that repeated attitude activation/expression can alter extremity by influencing stages of the attitudinal response process. According to this model (and discussed earlier), repeated attitude activation/expression strengthens associations with those features that served as the primary basis for the initial evaluation of the object. Thus, if an attitude object was initially evaluated positively, repeated attitude activation will cause positive object features to become more strongly associated with the object than negative features, thereby leading to greater extremity. Similarly, if prompted to recompute an evaluation of an attitude object, this strengthening of associative links can lead people to weight attitude-consistent features more than attitude-inconsistent features, thereby producing greater extremity. Finally, when people are asked to report their attitudes, this task usually involves
mapping the evaluation onto a numerical and/or verbal response scale. Repeated expression of an attitude on that scale may enhance the association of a particular response label (e.g., good) with the object, which in turn may lead to more extreme responses.

Nonexperimental research suggests a positive association between extremity and accessibility (Bargh et al., 1992; Erber et al., 1995; Fazio, Powell, & Williams, 1989; Fazio & Williams, 1986; Houston & Fazio, 1989; Krosnick et al., 1993; Powell & Fazio, 1984). Interestingly, experimental tests have produced mixed results. Although nearly all experiments have indicated that repeated attitude expression increases attitude accessibility, most studies have found no increases in extremity (Bizer & Krosnick, 2001; Fabrigar, Priester, Petty, & Wegener, 1998; Fazio, Ledbetter, & Towles-Schwen, 2000; Fazio et al., 1986; Powell & Fazio, 1984; Roskos-Ewoldsen & Fazio, 1992), although some have shown extremity effects (Brauer, Judd, & Gliner, 1995; Downing, Judd, & Brauer, 1992; Judd et al., 1991; Smith, Fazio, & Cejka, 1996).

Judd and colleagues (Downing et al., 1992; Judd & Brauer, 1995) have suggested that failures to find extremity effects were due to the particular response scales used. They argue that when repeated attitude expressions occur on a response scale, the internal representation of the evaluation takes the form of that response label. Thus, when subsequently reporting attitudes, people provide a response that reflects the particular response label that has become their internal representation of the attitude. However, if people express their attitudes using only the scale endpoints or using an open-ended format, no specific point on the response continuum is internalized and thus greater extremity on a subsequent rating scale occurs.

This interpretation has not gone unchallenged. Fazio (1995) noted that some studies using dichotomous repeated attitude expression manipulations have still failed to produce increased extremity (Fazio et al., 1986; Roskos-Ewoldsen & Fazio, 1992). Furthermore, when such extremity effects occur, they may be driven primarily by people who were initially neutral. Because dichotomous attitude expressions force them to adopt a position on one side of the issue, neutral people may come to see themselves as possessing a positive or negative evaluation. Consistent with this interpretation, Fazio and Powell (1994, as cited in Fazio, 1995) categorized people at varying levels of initial attitude extremity. They found that repeated dichotomous attitude expression only produced greater extremity for people who were initially neutral.

**Strength-Related Beliefs and Accessibility.** Attitude strength-related beliefs are subjective beliefs about attitudes or attitude objects that have been found to relate to the underlying strength of an attitude (see Petty & Krosnick, 1995). Although there is substantial evidence that these beliefs are associated with strength-related outcomes (for reviews, see Boninger, Krosnick, Berent, & Fabrigar, 1995; Crano, 1995; Davidson, 1995; Gross, Holtz, & Miller, 1995; Wood et al., 1995), little is known of their origins. Nonetheless, accessibility has often been assumed to be a cause and/or consequence of such beliefs.

The most extensive research on accessibility and strength-related beliefs has focused on the importance–accessibility association. There are numerous reasons for an accessibility–importance relation. First, people may use the ease of retrieving their attitudes as a basis for inferring how important those attitudes are (Roese & Olson, 1994). Second, one function served by attitudes is to help orient a person to attend to consequential objects in their environment (Roskos-Ewoldsen & Fazio, 1992). Attitudes assist people in allocating cognitive resources by signaling that an object has hedonic consequences. Because accessible attitudes are spontaneously activated and thus signal that objects have hedonic consequences, highly accessible attitudes may be seen as more important than less accessible attitudes (Fabrigar et al., 1998). Finally, accessibility and importance could be associated because increased importance causes increases in accessibility. Importance can result in more active seeking of attitude-relevant information and more extensive elaboration of that information, which can lead to greater accessibility (Bizer & Krosnick, 2001; Boninger et al., 1995; Petty, Haugtvedt, & Smith, 1995).
Nonexperimental studies have reported positive associations between importance and accessibility (Erber et al., 1995; Krosnick et al., 1993; Lavine, Sullivan, Borgida, & Thomsen, 1996; Tourangeau, Rasinski, & D’Andrade, 1991). Yet, experimental studies have provided less consistent results. On one hand, Roese and Olson (1994) conducted a repeated attitude expression manipulation and found that this manipulation produced increases in both accessibility and importance. Mediation analyses suggested that repeated expression enhanced accessibility, which in turn led to increased importance. However, other studies manipulating repeated expression have revealed evidence of increased accessibility without corresponding increases in importance (Bizer & Krosnick, 2001; MacDougall et al., 2003). Some evidence also points to importance leading to accessibility. Bizer and Krosnick (2001) reported data suggesting that, when people can seek out and elaborate attitude-relevant information, increases in importance lead to increases in accessibility. Thus, to date, there seems to be substantial theoretical and empirical support for an association between accessibility and importance. However, the causal direction of that association and the precise mechanisms underlying it remain in doubt. It is possible that these mechanisms are not mutually exclusive and may manifest themselves under different conditions. For example, use of ease of retrieval to infer importance may primarily occur when people have not previously formed clear beliefs about the importance of their attitudes and when other salient information is not present to allow them to construct judgments of importance. Importance may lead to enhanced accessibility under conditions when importance can produce greater information seeking and elaboration.

Far less research has occurred on the association of accessibility with other strength-related beliefs. For example, some have proposed that certainty and accessibility should be positively related (Gross et al., 1995). It is intuitively plausible that frequency of attitude activation and ease of attitude retrieval could serve as cues to infer certainty. Although nonexperimental research has supported such a prediction (Krosnick et al., 1993), one experimental study involving a repeated attitude expression manipulation did not find significant increases in certainty, although the effects were in the expected direction (MacDougall et al., 2003).

Associations With Working Knowledge and Complexity

Ambivalence and Working Knowledge. Although there are reasons to expect a relation between ambivalence and working knowledge, this is unlikely to be a simple relation. Because the total number of contradictory knowledge structures in memory will be greater as working knowledge increases, a number of theoretical perspectives predict that increases in working knowledge are likely to lead to greater evaluative conflict (see Festinger, 1957; Priester & Petty, 1996; Thompson et al., 1995). When knowledge is generally consistent, however, increases in knowledge could leave ambivalence unchanged or even decrease ambivalence. There could be reverse causal effects (i.e., ambivalence leading to greater working knowledge), though the form of this relation is unlikely to be a simple one. Processing of inconsistent information might be difficult and might sometimes lead to greater effort (e.g., Jonas, Diehl, & Bromer, 1997), though, as described later in this chapter, ambivalence might enhance processing of some persuasive messages and not others (e.g., Clark, Wegener, & Fabrigar, 2004). When taken as a whole, it is not surprising that studies find only weak associations between ambivalence and working knowledge (Erber et al., 1995; Krosnick et al., 1993).

Inter-Attitudinal Structure and Amount/Complexity of Knowledge. There are reasons to expect that both the amount and complexity of working knowledge will be related to inter-attitudinal structure. Inter-attitudinal links often result from perceiving logical relations between attitude objects (e.g., relevance to common values). If attitudes are based on information that is extensive and complex, people are more likely to be able to recognize...
logical links between attitude objects. Some indirect evidence supports this prediction. Nonexperimental studies have shown that increases in political expertise are related to the strength of associations among political attitudes (e.g., Bishop, Hamilton, & McConahay, 1980; Converse, 1964; Judd & Krosnick, 1989). However, other studies have provided somewhat more mixed evidence (Judd, Krosnick, & Milburn, 1981; Judd & Milburn, 1980). Studies have also shown that manipulating thought about political issues and considering the relations among issues strengthens the associations among political attitudes (Judd & Downing, 1990; Lavine et al., 1997). Interestingly, this effect is stronger for people high rather than low in political expertise.

*Extremity, Working Knowledge, and Complexity.* Although it is intuitive to expect that working knowledge and complexity are related to attitude extremity, these relations are not as straightforward as they seem. For example, with working knowledge, this association is likely to depend on the evaluative consistency of information and the manner in which it is combined to form the attitude. If working knowledge is evaluatively consistent and it is combined using a summation strategy (e.g., see Fishbein & Ajzen, 1975), increases in working knowledge might lead to more extreme attitudes. However, if information is evaluatively inconsistent and/or information is combined using an averaging strategy (e.g., see Anderson, 1996), increased working knowledge may not lead to greater extremity.

The few nonexperimental studies examining the relation between self-reports of knowledge and attitude extremity have found positive correlations (Erber et al., 1995; Krosnick et al., 1993). Of course, these properties may have been confounded with other constructs that were responsible for the association. For example, as we later discuss, subjective reports of knowledge may reflect more than working knowledge (e.g., elaboration). Studies examining the association between knowledge listing measures and attitude extremity have failed to produce significant effects (Krosnick et al., 1993; see also Wood et al., 1995). Likewise, in experiments in which working knowledge was manipulated, no effect was found on extremity (Smith, Fabrigar, MacDougall, & Wiesenthal, 2003). Thus, empirical evidence in support of an association between working knowledge and extremity is not especially compelling.

Complexity has also long been assumed to be related to the extremity of attitudes (see Tesser et al., 1995). Some researchers have argued that greater complexity should be associated with increased extremity (Millar & Tesser, 1986a; Tesser & Leone, 1977). This prediction is based on the notion that when people think about an attitude object, a well-developed representation of an object will guide thinking in ways that are consistent with the representation, thereby resulting in greater extremity. Studies assessing complexity using measures of topic expertise have revealed greater increases in extremity as a result of mere thought about the object for people with high topic expertise than with low topic expertise (Millar & Tesser, 1986a; Tesser & Leone, 1977).

In contrast, Linville (1982) has suggested that increased complexity is associated with less extremity because a greater number of distinct dimensions underlying an attitude should increase the likelihood that some inconsistencies will arise. Studies assessing complexity by counting the number of independent dimensions underlying attitudes and then examining the extremity of attitudes have confirmed this prediction (Linville, 1982; Linville & Jones, 1980).

Subsequent researchers (Judd & Lusk, 1984) resolved this apparent contradiction by proposing that the complexity—extremity association is moderated by the extent to which dimensions of knowledge are correlated (i.e., the extent to which knowledge of standing on one dimension has clear implications for standing on the other dimension). When dimensions are correlated (and evaluatively consistent), increased complexity should lead to greater extremity. In contrast, when dimensions are orthogonal (i.e., when knowledge of standing on one dimension does not imply standing on the other dimension), enhanced complexity should lead to
less extremity. Judd and Lusk (1984) found support for this moderator both in studies in which correlations among dimensions were measured and in which correlations among dimensions were experimentally manipulated. Likewise, Millar and Tesser (1986a) conducted an induced thought experiment in which complexity and correlations among dimensions were measured. Inducing thought produced a greater increase in extremity for complex correlated-dimension attitudes, but produced a decrease in extremity for complex orthogonal-dimension attitudes.

**Strength-Related Beliefs, Working Knowledge, and Complexity.** As noted earlier, subjective judgments of knowledge and knowledge listing measures are only modestly correlated. Studies manipulating the amount of working knowledge have found that increases in working knowledge produce increases in perceived knowledge (Fabrigar, Petty, Smith, & Crites, 2003; MacDougall et al., 2003; Smith et al., 2003). In contrast, studies manipulating complexity have found effects of perceived knowledge to be weak or nonsignificant (Fabrigar et al., 2003; Smith et al., 2003).

Researchers have assumed that perceptions of attitude certainty should be a function of working knowledge (Gross et al., 1995). Nonexperimental studies using subjective knowledge ratings have supported this contention (Krosnick et al., 1993). However, a study that examined the correlation between a knowledge listing measure and perceived certainty failed to produce a significant effect (Krosnick et al., 1993). Experimental manipulations of working knowledge have demonstrated significant effects on certainty (Fabrigar et al., 2003; MacDougall et al., 2003; Smith et al., 2003). Experiments exploring the impact of complexity on certainty have revealed very weak or nonsignificant effects (Fabrigar et al., 2003; Smith et al., 2003).

Some researchers have also theorized that perceived importance should be associated with working knowledge (Boninger et al., 1995). Perceiving an attitude as important should motivate people to seek out and think about attitude-relevant information, which should result in greater working knowledge and complexity. Some studies have suggested that people with high importance attitudes are more likely to obtain information about an attitude object when given an opportunity to do so (see Boninger et al., 1995). Studies assessing subjective knowledge and importance have produced sizable correlations (Erber et al., 1995; Krosnick et al., 1993), but one study examining the correlation between a knowledge listing measure and perceived importance produced a much weaker correlation (Krosnick et al., 1993; see also Wood, 1982).

**Associations With Ambivalence**

**Extremity and Ambivalence.** It has long been assumed that ambivalence should decrease attitude extremity. Both averaging and summation models of attitude formation predict that extremity should be negatively related to ambivalence (e.g., Anderson, 1996; Fishbein & Ajzen, 1975). Also, ambivalence has been assumed to be most likely with near midpoint responses, requiring means to differentiate between ambivalence and indifference (Kaplan, 1972). Although some research has found no association between certain forms of ambivalence and extremity (Erber et al., 1995), most nonexperimental studies have reported significant negative correlations (Bargh et al., 1992; Krosnick et al., 1993). Manipulations of ambivalence also show that greater ambivalence results in less extremity (Priester & Petty, 1996; Smith et al., 2003).

**Strength-Related Beliefs and Ambivalence.** As stated earlier, nonexperimental studies have demonstrated that subjective judgments of ambivalence are positively associated with actual levels of evaluative inconsistency (Conner & Sparks, 2002; Lipkus, Green,
Feaganes, & Sedikides, 2002; Priester & Petty, 1996, 2001; Thompson et al., 1995). Experimental studies have confirmed that manipulations of ambivalence influence subjective judgments of ambivalence (Jonas et al., 1997; Priester & Petty, 1996; Smith et al., 2003).

Ambivalence might also influence perceptions of certainty (Gross et al., 1995), but few data exist. Krosnick et al. (1993) found no evidence that affective-cognitive consistency was related to certainty. In contrast, Smith et al. (2003) found that manipulated ambivalence produced lower levels of certainty. Finally, ambivalence has not been related to subjective judgments of importance or knowledge (Krosnick et al., 1993; Smith et al., 2003).

Associations With Inter-Attitudinal Structure

Strength-Related Beliefs and Inter-Attitudinal Structure. Although little work has explored the relations between strength-related beliefs and inter-attitudinal structure, one exception is attitude importance. Greater importance should produce stronger motivation to maintain consistency among attitudes. Also, people may be more likely to think about important attitudes and, thus, more likely to recognize logical connections among attitudes. Nonexperimental studies have suggested that political attitudes are more strongly linked when these attitudes are rated as highly important rather than unimportant (Judd & Krosnick, 1982, 1989).

THE ROLE OF STRUCTURE IN ATTITUDE CHANGE PROCESSES

Although numerous studies have documented the impact of structural properties on attitude change (e.g., see Eagly & Chaiken, 1993, 1998; Petty & Krosnick, 1995; Pratkanis et al., 1989), much of this research has not explored underlying processes. In this section, we outline a conceptual framework for the impact of structure on attitude change that relies heavily on distinctions among low, moderate, and high levels of elaboration in attitude change (see also, Petty & Wegener, 1998a; Wegener & Carlston, this volume). In using this framework to organize the literature on structural variables in attitude change, we begin each section by discussing how the various structural properties might influence attitude change under low elaboration conditions. We then review potential mechanisms for each structural variable under high elaboration conditions. Finally, we discuss mechanisms for each structural property under moderate elaboration. Although the present framework could potentially be applied to any structural variable, we restrict our discussion to properties for which data currently exist.

A Conceptual Framework for the Role of Structure in Attitude Change

Thoughtfulness and Attitude Change

Mechanisms by which structural properties influence persuasion may vary depending on whether attitude change occurs via relatively thoughtful or nonthoughtful processes. This continuum of thoughtfulness was first advanced in the elaboration likelihood model (ELM; Petty & Cacioppo, 1981, 1986) and the heuristic-systematic model (HSM; Chaiken, 1987; Chaiken, Liberman, & Eagly, 1989) and has since become a broadly accepted premise in many subsequent models of persuasion (e.g., Albarracín, 2002; Kruglanski & Thompson, 1999; see also Johnson, Maio, & Smith-McLallen, this volume). These models generally posit that highly thoughtful attitude change occurs when individuals are willing and able to carefully consider available information about the issue or object. When motivation and ability are high, attitudes are largely determined by a person’s assessments of the central merits of the attitude object.
Less thoughtful attitude change occurs when individuals lack the motivation or the capacity to evaluate information carefully and instead rely on heuristics or other peripheral cues as a simple basis to arrive at an attitude. In the discussion that follows, many features of these models would apply to the theoretical framework that we put forward. Because these models employ different terminologies, however, for the sake of simplicity we use terms consistent with the ELM.

Thoughtful versus nonthoughtful attitude change is not simply a dichotomous distinction; elaboration of information lies along a continuum (Petty & Cacioppo, 1986; Petty & Wegener, 1999). According to the ELM, variables can serve multiple roles in persuasion, and the likelihood of each role differs across different levels of elaboration (Petty & Cacioppo, 1986; Petty & Wegener, 1998a, 1999). If elaboration is high, impact of persuasion variables is most likely when the variable acts as a persuasive argument (i.e., when the variable can represent a central merit of the issue or object) or produces a bias in processing of attitude-relevant information. If elaboration is low, impact of variables is most likely when they can function as a simple cue. When elaboration is not constrained to be high nor low (i.e., under more moderate levels), variables can affect the extent of elaboration. Like many other persuasion variables, structural properties associated with initial (pre-message) attitudes should also function in multiple roles across the elaboration continuum (see also Petty & Wegener, 1998a).

The Role of Structure With Low Elaboration Likelihood

When people lack ability or motivation to carefully consider a persuasive appeal, pre-message attitudes can serve as peripheral cues to infer if the appeal should be accepted (Fabrigar, Petty, Wegener, Priester, & Brooksbank, 2002; Wegener, Petty, Smoak, & Fabrigar, 2004). In the absence of effortful processing, a message congruent with the pre-message attitude is likely to be accepted, whereas a message that is incongruent is likely to be rejected (see Sanbonmatsu & Fazio, 1990). This is predicated on the assumption that one’s pre-message attitude is activated at the time of the persuasive appeal—if an attitude is not activated, it cannot serve as a cue. Various structural properties might influence the likelihood that pre-message attitudes are activated and become available to serve as a cue to accept or reject a message.

The Role of Structure With High Elaboration Likelihood

When individuals have capacity and motivation to consider the merits of a persuasive appeal, pre-message attitudes can bias evaluation of the arguments in a message (Fabrigar et al., 2002; Wegener et al., 2004). Arguments compatible with one’s pre-message attitudes are accepted, whereas arguments incompatible with one’s pre-message attitude are undermined (Edwards & Smith, 1996; Kunda, 1990; Lord, Ross, & Lepper, 1979). There are a number of ways that structural variables can moderate the extent to which pre-message attitudes will serve as biasing factors. Attitudes should only bias processing if they are activated at the time of message processing, so highly accessible attitudes should be more likely to bias processing (Houston & Fazio, 1989). However, even if attitudes are accessible and activated, individuals can try to correct for their attitudes when they are perceived as inappropriate influences (Wegener & Petty, 1997). Even if the attitude is judged as applicable and appropriate, the level of bias exerted will vary according to factors affecting one’s ability to implement the bias (e.g., informational resources) and one’s motivation to implement the bias (e.g., consistency pressures). Thus, as discussed in the following sections, other structural variables (such as the type, the amount, or the consistency of attitude-relevant knowledge) may influence the extent to which pre-message attitudes bias judgments and may determine the magnitude and the evaluative valence of that bias (see also Biek, Wood, & Chaiken, 1996).
The Role of Structure With Moderate Elaboration Likelihood

When no constraints render elaboration high or low, pre-message attitudes may influence the extent to which one processes a persuasive message. Structural properties of attitudes may influence a person’s motivation or ability to process information via their impact on such variables as the activation of the attitude, the perceived self-relevance of the message, or the person’s ability to scrutinize the message.

Empirical Research on the Role of Structure in Attitude Change

A substantial amount of empirical evidence has accumulated documenting the impact of structural properties on attitude change. However, as implied by our framework, such effects could occur for a number of reasons. In the sections that follow, we begin by briefly reviewing empirical evidence for impact of various structural properties on attitude change and discuss how each of these demonstrated effects could be a result of low elaboration processes. We then review how these effects could be a result of high elaboration processes. Finally, we discuss potential moderate elaboration mechanisms that might account for past effects.

Structure and Attitude Change Under Low Elaboration

Accessibility. The current literature suggests that accessible attitudes are harder to change than less accessible attitudes. Such studies begin with a measurement of accessibility (e.g., Bassili, 1996; Bassili & Fletcher, 1991) or a manipulation of accessibility (Houston & Fazio, 1989), followed by a persuasive message and a reassessment of attitudes after the message. Although there is consistent evidence that accessibility increases resistance to persuasion, the mechanisms underlying this relationship have not been identified. When elaboration is low, accessibility may influence attitude change by moderating the extent to which a person’s pre-message attitude will served as a peripheral cue (see Wegener et al., 2004). Independent of thoughtful scrutiny, a person may be likely to accept an evaluatively consistent persuasive message or reject an evaluatively inconsistent message.

Types of Attitude-Relevant Information. We noted previously that most research has focused on the distinction between attitudes that are primarily cognitive versus affective in nature (see Crites et al., 1994). Researchers have also used this distinction to classify persuasive appeals as being either affective or cognitive (e.g., Becker, 1963; Knepprath & Clevenger, 1965; Ruechelle, 1958). Integrating these two concepts, research has examined whether affective or cognitive communications are more persuasive when they match or mismatch the base of the attitude. Some studies have found greater impact of mismatching appeals (Millar & Millar, 1990), whereas others have found greater impact of matching appeals (Edwards, 1990; Edwards & von Hippel, 1995; Fabrigar & Petty, 1999).

Other work has tested function matching. For example, Snyder and DeBono (1985) posited that high self-monitors’ attitudes would largely serve a social-adjustive function, whereas low self-monitors’ attitudes would largely serve a value-expressive function. They presented participants with product advertisements that were either social-adjustive in nature (i.e., highlighting image) or value-expressive (i.e., highlighting quality) in nature. High self-monitors rated the social-adjustive ads more positively than the value-expressive ads, whereas low self-monitors rated the value-expressive ads more positively than the social-adjustive ads. Others have provided further support for the function-matching hypothesis (DeBono, 1987; Lavine & Snyder, 1996; Murray, Haddock, & Zanna, 1996; Shavitt, 1990).
Although matching effects have been generally replicable (for exceptions, see Millar & Millar, 1990; Petty & Wegener, 1998b), the cognitive processes responsible for matching (or mismatching) effects have not been clearly specified (see Lavine & Snyder, 1996; 2000). The framework described in this chapter may help resolve inconsistencies in this domain and explain the processes underlying matching and mismatching effects (see also Lavine & Snyder, 2000; Petty & Wegener, 1998b; Petty, Wheeler, & Bizer, 2000). When elaboration likelihood is low, a match between the content of a message and the functional or affective/cognitive base underlying one's attitude may increase the likelihood of attitude activation, thus allowing that attitude to serve as a cue to accept or reject messages. Also, when a message matches the basis of an attitude, the match per se might be taken as a cue that the advocacy has merit.

**Working Knowledge and Complexity.** Manipulations and measurements of knowledge have shown that attitudes are more resistant to change when the attitudes are associated with high levels of knowledge (e.g., Lewan & Stotland, 1961; Wood, 1982; Wood & Kallgren, 1988; Wood, Kallgren, & Preisler, 1985). This result is consistent with the idea that attitudes with high levels of horizontal structure (i.e., many pieces of information leading to the same evaluation) should be more difficult to change (McGuire, 1960). As previously implied, there are reasons to expect working knowledge to be positively related to accessibility. Thus, it is possible that greater likelihood of activation would make the attitude available for use as a cue and thereby account for greater resistance of attitudes based on high versus low levels of knowledge.

**Ambivalence.** Relatively little research has investigated the relation between ambivalence and attitude change. Some studies show that ambivalent attitudes are more susceptible to persuasive communications (e.g., Armitage & Conner, 2000; Chaiken & Baldwin, 1981) and others have found weak or inconsistent evidence (see Chaiken et al., 1995). Perhaps one reason for this mixed pattern is that the effects of ambivalence on persuasion may depend on the extent to which people elaborate messages. Without the requisite motivation and ability to process a persuasive communication thoroughly, ambivalence may decrease the likelihood that an existing attitude is activated and thus available for use as an acceptance/rejection cue. Because most research addresses counteraliduidal messages, decreased attitude activation (with high ambivalence) would result in less likelihood of the attitude serving as a rejection cue.

**Structure and Attitude Change Under High Elaboration**

**Accessibility.** With high levels of elaboration, accessibility may affect the likelihood of pre-message attitudes biasing processing. Accessible attitudes may therefore be more resistant to change because individuals are more likely to use their pre-message attitudes to interpret available information. Consistent with this reasoning, Fazio and his colleagues have found that highly accessible pre-message attitudes were more likely to bias evaluation of presidential debates (Fazio & Williams, 1986) or favorable and unfavorable messages about capital punishment (Houston & Fazio, 1989; Schuette & Fazio, 1995).

**Types of Attitude-Relevant Information.** Existing attitudes, once activated, may bias how new information is perceived and evaluated (Cacioppo, Petty, & Sidera, 1982; Lord, Ross, & Lepper, 1979). Provided that the argument is relatively strong (or at least ambiguous), arguments based on information that matches the affective/cognitive or functional basis of an attitude may be viewed as more compelling than arguments based on mismatching information. Lavine and Snyder (1996, 2000) tested the biased processing hypothesis that perceptions
of message quality mediate the relationship between functional matching and postmessage attitudes. Low and high self-monitors were presented with either value-expressive or social-adjustive messages to encourage voting behavior. Consistent with predictions, functionally relevant messages were associated with greater pro-voting attitudes than were functionally irrelevant messages. Furthermore, perceptions of message quality mediated the relationship between functional matching status and attitudes (see also Lavine et al., 1999). Another possible high-elaboration mechanism is greater likelihood that one will recognize the attitude as applicable to the message if the content of the message matches the affective/cognitive or functional basis of the attitude.

It is possible, however, that the relations among matching status, perceptions of message quality, and attitude change are more complex than previously described. Factors such as argument strength and the consistency with a person’s existing attitude may moderate these relations, such that arguments that match rather than mismatch a person’s affective/cognitive or functional base may sometimes be evaluated more negatively and may be less persuasive. This could especially occur if they are inconsistent with one’s attitude and particularly if the arguments are weak. If elaboration is high, and a dimension is central to a person’s attitude, that person may be able and motivated to counterargue opposing messages (see Millar & Millar, 1990). That is, information matching the attitude basis may motivate resistance if viewed as more threatening than information mismatching the attitude basis. Also, the predominant information type in memory may enable people to better find flaws in information that matches that type of information. Thus, when counterattitudinal arguments are weak, matching arguments may actually be less persuasive than arguments mismatching the basis of the attitude.

Working Knowledge and Complexity. Knowledge can affect the likelihood that an attitude is activated and biases processing. It is also likely that individuals with a wealth of information about an attitude object will be more apt to recognize that their attitude is applicable to the persuasive message. Here, the complexity of knowledge may be more important than the amount of knowledge. Attitudes with high levels of differentiation may be more likely to be judged as applicable to a message than those that are relatively undifferentiated, because there is a greater probability that the arguments contained in the message will pertain to the specific dimensions represented by the attitude. Even when a message is not relevant to the dimensions underlying an attitude, complex attitudes (that are evaluatively consistent) may still be judged as applicable to a given message because one may be willing to extrapolate beyond one’s knowledge base and assume that the attitude is generally informative (Fabrigar et al., 2003).

Knowledge may also affect willingness to use one’s attitude in processing. Even if an attitude has been deemed applicable to a message, a person with a relatively impoverished or undifferentiated information base may lack confidence in the validity of the attitude and question whether it should be used. In contrast, a person with multidimensional (consistent) knowledge may be more likely to believe that attitude use is legitimate. Finally, knowledge may increase the biasing impact of attitudes by conferring ability to generate effective counterarguments to opposing information and to integrate compatible information into existing schemas.

Wood and her colleagues (e.g., Biek et al., 1996; Wood et al., 1995) have demonstrated that knowledge does not always lead to biased processing of new information. Highly knowledgeable individuals can employ their knowledge in either biased or impartial ways, depending on whether they are motivated to defend their attitude. Wood et al. (1995) hypothesized that when an attitude is associated with intense affect, individuals are motivated to defend their existing attitude because change may be threatening because of its implications for the self, personal outcomes, and cherished values (Biek et al., 1996; Wood et al., 1995). One could think of this approach as knowledge providing the ability to process in a biased manner
and affect providing the motivation to do so. When attitudes are not affect-laden, individuals may be less motivated to preserve their existing attitude and high levels of knowledge may be associated with motivation for accuracy. The hypotheses put forward by Wood and colleagues would most likely extend beyond affect intensity as there are other strength-related properties (e.g., importance, certainty) that would also heighten one’s motivation to defend one’s attitude (see also Petty, Tormala, & Rucker, 2004; Wegener et al., 2004).

**Ambivalence.** Ambivalence may attenuate the likelihood that an attitude is used in processing, because ambivalent attitudes are less accessible than nonambivalent attitudes. Even if the attitude is activated, it may be that ambivalent attitudes are less likely to be viewed as an appropriate influence on information processing. Individuals may recognize the underlying conflict associated with their attitudes and thus be less certain of their validity. This may lead people to conclude that they should attempt to avoid use of the attitude. Finally, even when the attitude is activated and seen as applicable, ambivalence may decrease ability to effectively counterargue a message (Chaiken & Yates, 1985; Eagly & Chaiken, 1995) because conflicting evaluations underlying an attitude may preclude generating strong and consistent refutations. We believe that the decreased likelihood that an attitude will bias processing might be particularly marked if the ambivalence is within-dimension, as opposed to cross-dimension. If a person holds within-dimension ambivalence toward an attitude object, any message that applies to that dimension will activate both the positive and the negative aspects of the attitude, thus decreasing the likelihood that a person will view the attitude as a clear guide to message processing. Although cross-dimension ambivalence might allow for more biased processing to occur, the direction of this biased processing might depend on the direction of knowledge activated by the message. A message addressing a dimension on which a person’s evaluation is positive should activate positive elements of the attitude, such that favorable information is likely to be bolstered, and unfavorable information is likely to be counterargued. However, a message addressing a negative dimension would activate negative elements of the attitude and lead to a bias such that negative information is favored.

Decreased impact of ambivalent attitudes may not always be the outcome, however. For example, if people seek to resolve inconsistencies in their attitude-relevant knowledge, then processing could be biased in high elaboration settings to favor whichever attitudinal position seems most likely to the message recipient to serve this resolution. This bias could favor the original direction of the overall evaluation (such that pre-message ambivalent attitudes create especially strong biases) or the direction of the message (even if opposing initial attitudes, as long as the message appears capable of providing a consistent rationale and basis for favoring one side of the issue rather than the other).

**Structure and Attitude Change Under Moderate Elaboration**

**Accessibility.** Under moderate elaboration conditions, attitude accessibility can influence the amount of elaboration given to a persuasive message. Fabrigar et al. (1998) proposed that high levels of accessibility could lead one to infer that the attitude is important (because of the corresponding ease of retrieval or through associations of accessibility with greater hedonic consequences, e.g., Roskos-Ewoldsen & Fazio, 1992). These increases in perceived importance could elevate motivation to devote cognitive resources to message processing. In two studies, measured and manipulated accessibility have been associated with enhanced message scrutiny (Fabrigar et al., 1998). That is, the quality of arguments influenced post-message attitudes to a greater extent when accessibility was high rather than low. More recently, Clark, Wegener, and Fabrigar (2004) have found that increases in accessibility need not always increase message scrutiny. In particular, when a message is consistent with a person’s existing attitude, greater
accessibility can be associated with less rather than more message scrutiny, perhaps because the message seems redundant with what the recipient already knows.

**Types of Attitude-Relevant Information.** Some researchers have suggested that messages whose content matches the functional or affective/cognitive basis of an attitude are scrutinized more carefully than messages that mismatch the basis of the attitude (Lavine & Snyder, 2000; Petty et al., 2000; Petty & Wegener, 1998b). One hypothesized mediator of the relation between matching messages and increased elaboration is perceived relevance. Indeed, past research has shown that messages matching the functional base of one’s attitudes are perceived as more pertinent to the self than are mismatching messages (DeBono, 1987). Such increased self-relevance is associated with more thoughtful information processing (Petty & Cacioppo, 1979, 1986). Moreover, one may be more able to process matching messages, because one may have greater knowledge directly relevant to the information contained in the arguments.

The strongest support for this hypothesis was reported by Petty and Wegener (1998b). Participants received product ads containing strong or weak messages that were functionally matched or mismatched with the basis of participants’ attitudes. Argument quality influenced post-message attitudes more when the message matched rather than mismatched the functional base. One implication of these findings is that matching a message with one’s attitudinal basis does not necessarily lead to greater persuasion than mismatching messages. Instead, the efficacy of matching and mismatching arguments may vary as a function of argument quality. Although these ideas were assessed in the functional domain, they may also help to resolve inconsistencies in the literature on matching messages to affective/cognitive bases (see Fabrigar & Petty, 1999).

**Working Knowledge and Complexity.** Complexity of knowledge might influence the extent of processing because of the increased likelihood of matching the basis of the attitude with the message. If the attitude is activated and individuals are sufficiently motivated to scrutinize a message, knowledge can also increase ability to process a persuasive message by enabling individuals to encode, understand, evaluate, and integrate new information. Consistent with these speculations, Wood and colleagues (Wood et al., 1985; Wood & Kallgren, 1988) found that participants highly knowledgeable about environmental preservation were more likely to carefully process arguments related to this issue. Less knowledgeable people were less likely to critically evaluate new information and relied on cues such as message length (Wood et al., 1985) and source characteristics (Wood & Kallgren, 1988). Of course, the issue was not affectively charged for most participants, and, thus, knowledgeable individuals might be less threatened by counterattitudinal messages and might choose to seek out such information (see Wood et al., 1995). Without strong affect, knowledge might signal interest in the issue.

**Ambivalence.** Individuals who are ambivalent about an attitude object may be more motivated than nonambivalent individuals to scrutinize a message if they believe that it will help them to resolve the concomitant psychological tension associated with ambivalence. This hypothesis was tested by Maio, Bell, and Esses (1996), who assessed participants’ ambivalence, and then presented strong or weak messages. Ambivalent participants were more sensitive to message quality than nonambivalent participants. Moreover, among ambivalent participants, issue-related thoughts mediated the relationship between message strength and attitudes.

However, the impact of ambivalence on processing may be more complex than depicted in past work. If elaboration is supposed to be in the service of decreasing ambivalence, then elaboration might be more likely when available information is proattitudinal (and thinking is likely to resolve or overwhelm inconsistencies by adding “dominant reactions”; Priester & Petty,
1996) rather than counterrattitudinal (when, before deliberation can decrease ambivalence, it would add to “conflicting reactions”; Priester & Petty, 1996). Also, motives to process a message in order to decrease ambivalence might be greater among those with within-dimension ambivalence, rather than cross-dimension ambivalence. With within-dimension ambivalence, a persuasive message that applies to the dimension might often exacerbate feelings of uncertainty about the attitude object, which would then heighten the motivation to resolve the ambivalence. In contrast, with cross-dimension ambivalence, a message addressing any single dimension may decrease feelings of uncertainty. This would decrease the likelihood of people recognizing their conflicting evaluations, thereby decreasing motives to alleviate inconsistency-based tension.

THE ROLE OF STRUCTURE IN ATTITUDE-BEHAVIOR CONSISTENCY AND RELATED PROCESSES

A Conceptual Framework for the Role of Structure in Attitude–Behavior Consistency

In the sections that follow, we draw parallels between the previous discussions of attitude change and structural influences on the attitude–behavior relation. In addition, we note the ways in which this approach to prediction of behavior diverges from other current approaches. After outlining this extension of attitude change theories to attitude–behavior consistency, we present effects of the specific structural variables on attitude–behavior relations. Before describing the framework, however, it is useful to summarize the status of the attitude–behavior literature and to note some issues that complicate interpretation of attitude–behavior studies.

Status of the Attitude–Behavior Consistency Literature

A central theme of attitude structure research has been the impact of structural properties on attitude–behavior consistency (e.g., see Kraus, 1995; Petty & Krosnick, 1995; Pratkanis et al., 1989; Raden, 1985). Despite important advances, there are nonetheless notable limitations to our understanding. First, some researchers (e.g., Fazio, 1990) have noted that there has been relatively little theorizing and few empirical investigations of the psychological processes underlying the effects of structure on attitude–behavior consistency. Second, much of the attitude structure literature on attitude–behavior consistency has been nonexperimental in nature.

Distinguishing Between Prediction and Influence

Researchers have typically defined attitude–behavior consistency in terms of prediction. That is, attitude–behavior consistency has been assessed by measuring an attitude, measuring a behavior at a subsequent point in time, and then computing the association between the attitude and the behavior. Moderators (e.g., attitude structure) have then been tested by comparing attitude–behavior associations under differing levels of the proposed moderator. It is important to recognize that the extent to which an attitude predicts a behavior is not synonymous with the extent to which an attitude influences a behavior. Variations in predictive ability can be a result of different causes. A moderator may regulate how well a measure of attitudes accurately reflects the attitude at the time of behavior. Also, the moderator may determine the extent to which an attitude directly influences a behavior at the time of behavior or directly influences a mediator of the attitude–behavior association. Although most research has not distinguished between these possible causes of differential prediction, such distinctions are important because they imply different processes by which structure might regulate attitude–behavior consistency.
Structure, Attitude Measurement, and Attitude Stability

We focus on two mechanisms by which structure can affect prediction independent of variation in actual influence on behavior. First, structural properties may affect the extent to which measures accurately capture the attitude (see Bassili & Krosnick, 2000; Lavine, Huff, Wagner, & Sweeney, 1998). For instance, if structure inhibits attitude activation when responding to a measure, that response may be shaped by factors external to the actual attitude. If these factors are transitory and/or unlikely to influence the target behavior, the attitude measure will be a poor predictor of behavior. However, this does not necessarily imply that the attitude did not influence the behavior. It could be that the attitude exerted a strong influence, but that the influence was not reflected in the attitude-behavior correlation because responses to the attitude measure were a poor representation of the attitude.

Structure might also moderate the attitude–behavior relation (without changes in actual influence) via attitude stability (e.g., see Davidson et al., 1985; Doll & Ajzen, 1992; Eagly & Chaiken, 1993; Wilson et al., 1989). As discussed in the following, structural properties of attitudes may be associated with attitude stability. Thus, even if an attitude measure accurately captures the attitude at a particular point in time, it is possible the attitude could change during the time interval between attitude measurement and behavior, thereby producing low attitude–behavior correlations. However, such a mechanism does not imply anything about the magnitude of influence being exerted by attitudes at the time of behavior.12

Deliberative and Nondeliberative Influences of Attitudes on Behavior

Although some attitude structure effects may be independent of changes in actual influence, there are theoretical reasons to expect that structure can also moderate the influence of attitudes on behavior. In considering this possibility, our framework follows an important distinction made by the MODE model of attitude–behavior consistency (Fazio, 1990; Fazio & Towles-Schwen, 1999) as well as theories of attitude change such as the ELM and HSM. We assume that the impact of attitudes on behaviors may be a result of processes ranging from those that are highly deliberative to those that are relatively nondeliberative. Thus, this framework postulates that the mechanisms by which attitudes influence behavior will depend on the level of deliberativeness of the behavior in question (Fazio, 1990; Fazio & Towles-Schwen, 1999). Furthermore, based on the ELM’s postulate that variables can serve multiple roles (Petty & Cacioppo, 1986; Petty & Wegener, 1999), our framework assumes that there are multiple processes by which a structural property can moderate the impact of attitudes on behavior. The specific process involved in a given situation will depend on the extent to which people are deliberative in their behaviors.

The Role of Structure With Low Deliberation Behaviors. When people are constrained to be relatively nondeliberative in the performance of behaviors, attitudes may influence behavior in two ways. First, the attitude may serve as a direct peripheral cue to determine if a behavior relevant to the attitude object is appropriate (see Petty & Cacioppo, 1986; Petty & Wegener, 1999). For example, imagine a case where a person needs to purchase a particular type of product from one of two stores. A person’s general attitudes toward those stores could serve as simple cues to select a particular store in the absence of any scrutiny of the relative merits of the services and product selection provided for that category of products. The attitude may also serve as an indirect cue by focusing attention on attitude-congruent features of the attitude object or behavioral context that could themselves serve as cues for behavior (Fazio & Dunton, 1997; Fazio et al., 2000; Smith et al., 1996; see also Fazio, 1990; Fazio & Towles-Schwen, 1999).13 Of course, in order for the attitude to be a direct or indirect cue, it
must be activated at the time of the behavior (Fazio, 1990; Fazio & Towles-Schwen, 1999). Structural properties of attitudes may moderate the impact of attitudes on behavior under nondeliberative conditions via their influence on attitude activation at the time of behavior.

The Role of Structure With High Deliberation Behaviors. When people are motivated and able to be highly deliberative, attitudes may influence behavior by serving as either an argument or a biasing factor (Petty & Cacioppo, 1986; Petty & Wegener, 1999). If the attitude is perceived as directly relevant to the behavior in question, it may serve as a direct argument in favor of or against a course of action (i.e., the attitude may serve as information directly relevant to evaluating the merits of a particular behavior; Fabrigar et al., 2003). For example, the relative liking for two people could be seen as an argument in favor of one person versus the other when deciding which of two competing social invitations to accept. However, even if the attitude is not a direct basis for evaluating the merits of a behavior, it could still influence behavior by biasing the interpretation of information relevant to the behavior (presuming the behavioral context contains information sufficiently ambiguous to allow for bias in interpretation; see Chaiken & Maheswaran, 1994). For example, imagine choosing between cars from two salespeople. Attitudes toward the salespeople, although not directly relevant to evaluating the merits of the cars, might bias how information about the two vehicles is interpreted.

As with nondeliberative behaviors, attitudes will not always influence deliberative behaviors. Attitudes must be activated at the time of the behavior if they are to serve as an argument or biasing factor. Structure may influence the likelihood of attitude activation. However, under high levels of deliberation, there are other mechanisms by which structure may play a role in attitude–behavior consistency. First, activating an attitude may not be sufficient for it to influence behavior. The attitude may also have to be viewed as applicable to the behavior (e.g., see Borgida & Campbell, 1982; Fabrigar et al., 2003; Lord, Lepper, & Mackie, 1984; Snyder & Kendzierski, 1982). If an attitude is judged as an irrelevant or inappropriate guide, it will be disregarded as an argument in favor of or against a particular course of action. Second, people may try to eliminate any inappropriate biasing impact that this attitude might have on their interpretation of information relevant to the behavior (e.g., Dunton & Fazio, 1997; Schuette & Fazio, 1995; Towles-Schwen & Fazio, 2003; see also Wegener & Petty, 1997). Structural properties may influence whether an attitude is seen as applicable to a particular behavior.

It is important to note that this applicability mechanism should play a role primarily when behaviors are highly deliberative. Considering the applicability of an attitude and disregarding it if it is judged inapplicable (or inappropriate) is likely to require substantial cognitive effort. Consistent with this view, it has been demonstrated that corrections for perceived biases in social judgments are relatively effortful processes (Martin, Seta, & Crella, 1990; see Wegener & Petty, 1997). Similarly, research on attitude–decision consistency has revealed that when people are unable and/or unmotivated to think carefully about decisions, they may rely on attitudes even if they are inappropriate guides (Fabrigar et al., 2003; Sanbonmatsu & Fazio, 1990; Schuette & Fazio, 1995). In contrast, when people are motivated and able to think, they rely less on such attitudes.

Another high deliberation mechanism by which attitude structure might influence attitude–behavior consistency is structure determining the magnitude of bias that an attitude exerts on the processing of information. The structure of an attitude may determine the motivation and ability a person has to process behavior-relevant information in a biased manner.

The Role of Structure With Moderate Deliberation. When people are neither constrained to be extremely deliberative nor nondeliberative, structure may influence attitude–behavior processes by determining the extent to which a person is deliberative in performing the behavior. The mechanisms by which structure may do so could be due to motivation or ability.
Empirical Research on the Role of Structure in Attitude–Behavior Consistency

Numerous empirical studies have documented the impact of various structural properties on attitude–behavior consistency. However, as with attitude change, these effects could be due to a number of processes. In the sections that follow, we review evidence for impact of structural properties on attitude–behavior consistency and discuss the extent to which these effects could be a result of measurement and/or stability processes. We then discuss potential mechanisms for the influence of structural variables on attitude–behavior consistency under conditions that encourage nondeliberative behaviors and highly deliberative behaviors. Finally, we discuss potential moderate deliberation mechanisms that might account for past effects.

Structure, Measurement, Stability, and Attitude–Behavior Consistency

Accessibility. A number of studies have documented that increased accessibility is associated with greater attitude–behavior consistency. Some studies have measured accessibility via response latencies (Bassili, 1993; 1995; Fazio, Powell, & Williams, 1989; Fazio & Williams, 1986; Kokkinaki & Lunt, 1997), whereas others have manipulated accessibility via repeated attitude expression or attitude object presentation (Fazio et al., 1982; Posavac, Sanbonmatsu, & Fazio, 1997). Although these studies provide evidence of the moderating role of attitude accessibility, the psychological mechanisms responsible for these effects are less clear. The framework we have outlined suggests that the mechanisms by which accessibility influences attitude–behavior consistency are quite varied.

One possibility is that past effects may be due to measurement and/or stability processes. For example, if an attitude is highly accessible, it is likely to be spontaneously activated on presentation of the attitude object (Fazio et al., 1986). This activation should result in the attitude exerting a substantial impact on responses to the attitude measure. In contrast, attitudes low in accessibility may not be activated, and thus individuals will need to construct an attitude in response to the measure (see Tourangeau & Rasinski, 1988; Wilson & Hodges, 1992). This response may be based on attitude–relevant information salient at the time of judgment or factors external to the attitude object. Such responses may fail to reflect people’s typical evaluation of the object and thus be poor predictors of behavior (see Wilson, Dunn, Kraft, & Lisle, 1989).

Accessibility could also influence attitude–behavior consistency via its effect on stability (Doll & Ajzen, 1992; Fazio, 1995). To the extent that an evaluation is strongly linked to an object representation, that attitude might persist over time and tend to be spontaneously activated, thereby further strengthening the object–evaluation association. Some research has revealed a positive association between accessibility and stability (Bargh et al., 1992; Grant, Button, & Noseworthy, 1994). However, these studies have not examined whether the accessibility–stability relation might account for the moderating role of accessibility in attitude–behavior consistency. The work most closely related to stability mechanisms was reported by Doll and Ajzen (1992). In this study, direct experience with computer video games was manipulated. Direct experience produced greater attitude–behavior consistency, attitude accessibility, and attitude stability than indirect experience. It is interesting to note that contrary to previous interpretations of direct experience effects (Fazio et al., 1982), analyses revealed that the impact of direct experience was mediated by stability rather than accessibility. Thus, these data might be interpreted as implying that accessibility has no influence on behavior independent of stability. However, the manner in which the responses’ latency data were collected and analyzed in this study did not follow standard procedures (see Fazio, 1995). Furthermore, the basic effect of attitude accessibility on attitude–behavior consistency was not obtained. Hence, these data may not provide a clear test of the role of stability in accessibility effects.
Types of Attitude-Relevant Information. Little work has assessed the role of attitude bases in attitude–behavior consistency. To date, this work has examined whether attitudes that differ in the type of information on which they are based best predict behaviors most relevant to the bases of attitudes. Most notably, Millar and Tesser (1986b) argued that attitudes based on affect best predict consumatory behaviors (i.e., those performed for their intrinsic reward), but attitudes based on cognition best predict instrumental behaviors (i.e., those performed to obtain some goal external to the behavior). Millar and Tesser (1989) showed that these attitude bases–behavior matching effects only emerged when affective and cognitive bases were inconsistent with one another. Recent research by Fabrigar et al. (2003) has suggested that attitude bases–behavior matching effects can also occur for distinct dimensions of cognition. Although attitude bases may moderate the extent to which attitudes predict different types of behavior, little evidence exists regarding the underlying mechanisms. To date, there is no clear evidence to suggest that measurement of attitudes based on a particular type of information or function is more reliable or valid. Likewise, there is no clear evidence that attitudes vary in their stability as a result of being based on different types of information.

Working Knowledge and Complexity. Although complexity has received little attention in attitude–behavior consistency research, working knowledge has been shown to be positively associated with attitude–behavior consistency (Davidson et al., 1985; Kallgren & Wood, 1986). However, the mechanisms underlying these working knowledge effects are poorly understood (Davidson et al., 1985; Eagly & Chaiken, 1993; Fabrigar et al., 2004a; Kallgren & Wood, 1986). One explanation for the influence of working knowledge and complexity is via their effects on the accuracy of attitude measures. As noted earlier, working knowledge and complexity may both be related to attitude accessibility, which could, in turn, influence the accuracy of attitude reports. It is also possible that attitudes based on greater working knowledge and complexity could be more predictive of behaviors because these attitudes are more stable and resistant to change than are attitudes based on little knowledge (see Davidson et al., 1985; Eagly & Chaiken, 1993; Wilson et al., 1989). Although direct tests have not been conducted, Wilson et al. (1989) reported research consistent with this idea, such that introspection decreased attitude–behavior consistency (see also Wilson, Dunn, Kraft, & Lisle, 1989) only among individuals who were unknowledgeable. Wilson et al. argued that attitude–behavior consistency was unaffected for high knowledge people because their attitudes were less likely to be changed by introspection.

Ambivalence. Most studies assessing the relation between ambivalence and attitude–behavior consistency have measured some form of ambivalence and have reported decreases in attitude–behavior consistency as attitude ambivalence increases. This pattern occurred using independent ratings of the global positive and global negative evaluations of the object (Conner, Povey, Sparks, James, & Shepherd, 2003; Conner, Sparks, Povey, James, Shepherd, & Armitage, 2002), ratings of felt ambivalence (Priester, 2002; Sparks, Hedderley, & Shepherd, 1992; but see Norman & Smith, 1995), ambivalence among beliefs (Armitage, 2003; Moore, 1973), or inconsistency between evaluations and beliefs (Norman, 1975; but see Fazio & Zanna, 1978).

A few studies have experimentally manipulated the evaluative consistency of information underlying attitudes. Armitage (2003) found that greater ambivalence among beliefs resulted in lower attitude–behavior consistency. In contrast, Jonas et al. (1997) found greater ambivalence in beliefs increased attitude–behavior consistency. They argued that this was due to ambivalence prompting people to engage in elaboration of the information in order to resolve inconsistencies. This greater elaboration, in turn, resulted in stronger attitude–behavior relations.
Sengupta and Johar (2002) explored the apparent contradiction between Jonas et al. (1997) and other ambivalence studies. Sengupta and Johar argued that when people engage in elaboration directed toward forming an integrated attitude, ambivalence should lead to greater attitude–behavior consistency (as in Jonas et al., 1997). However, when individuals do not specifically attempt to resolve inconsistencies (e.g., because they do not engage in elaboration or because that elaboration is not directed toward integrating evaluative responses), ambivalence should lead to lower attitude–behavior consistency. Sengupta and Johar (2002) manipulated ambivalence and accessibility of beliefs. Increased ambivalence led to greater attitude–behavior consistency when accessibility of beliefs was high and to lower attitude–behavior consistency when belief accessibility was low. In a second experiment, greater ambivalence led to enhanced attitude–behavior consistency when people were made accountable for their views and to less attitude–behavior consistency when they were not accountable.

Increased inconsistency could be associated with less valid measurement of attitudes. As noted earlier, there are conceptual reasons and some empirical evidence (Bargh et al., 1992; Erber et al., 1995; Fazio, 1995; Krosnick et al., 1993) suggesting ambivalence and attitude accessibility are inversely related. If an attitude is not activated at the time of measurement, extraneous factors rather than the attitude will drive attitudinal responses. Also, contextual factors could temporarily alter the evaluation that is activated at the time of measurement, thereby leading to an attitudinal response that is not representative of the typical evaluation of the object (e.g., see Bell & Esses, 1997; Erber et al., 1995; MacDonald & Zanna, 1998). Susceptibility to such factors may depend on the nature of the underlying ambivalence. For example, cross-dimension ambivalence may result in more extreme shifts in judgment than within-dimension ambivalence because the relative independence of positive and negative evaluative responses for cross-dimensionally ambivalent attitudes may allow for greater likelihood of activating one component and not the other (MacDonald & Grant, 2003). One may also expect increased inconsistency to be associated with less attitude stability. Changes in the measurement context over time are more likely to change attitudes or their reports if the attitudes are ambivalent than if they are unambivalent (see Chaiken et al., 1995; Erber et al., 1995; Norman, 1975).

Structure and Attitude-Behavior Consistency Under Low Deliberation

Accessibility. With nondeliberative behaviors, attitude accessibility should be a primary determinant of whether an attitude is activated and can thus serve as a direct cue or indirect cue for behavior. Some data are suggestive of this possible role. For example, studies have shown that activation of attitudes can direct attention to features of an object. Smith et al. (1996) manipulated the accessibility of attitudes toward social categories (e.g., Black, White, men, women). Participants were then presented with pictures of people and asked to quickly indicate if they belonged to particular social categories. Increased accessibility of attitudes toward a category was associated with greater speed in judging if people were members of that category, suggesting that attitudes directed people’s attention toward features relevant to that category.

Fazio et al. (2000) manipulated the accessibility of attitudes toward photos of people via an attitude expression manipulation. Participants were subsequently presented with the same photos as well as photos that had been morphed to look slightly different. Participants were asked to judge if each photo was a previously seen photo or a different photo. Increased accessibility resulted in slower and less accurate judgments, presumably because perception of features of new photos were assimilated toward the existing attitude.

Taken together, these studies provide good evidence that the more likely an attitude is activated, the more likely that attitude will exert a directive influence on how objects are perceived (i.e., the first step in our proposed causal chain of accessibility moderating attitudes
ability to serve as indirect cues). Evidence that selective attention to object features can, in turn, serve as cues to subsequent behavior has yet to be explicitly tested.15

Types of Attitude-Relevant Information. The match of the basis of an attitude to the nature of the behavior could also influence the likelihood of attitude activation. For instance, when a possible behavior is highly affective in nature, the setting or object itself might be more likely to trigger activation of the attitude if the attitude is affectively rather than cognitively based (by virtue of the shared affective content among the setting, behavior, and attitude).

Working Knowledge and Complexity. Working knowledge and complexity may also influence the likelihood of attitude activation, influencing the likelihood the attitude will serve as a direct or indirect cue. In addition, when the nature of a behavior matches the basis of an attitude, the opportunity for the behavior might activate the attitude. Because complex attitudes are based on more distinct informational dimensions, complex attitudes are more likely to have a basis or bases directly relevant to any given behavior (see Fabrigar et al., 2003).

Ambivalence. Because ambivalent attitudes are also less likely to be activated at the time of behavior, these attitudes should be less likely to serve as a direct or indirect cue to behavior.

Structure and Attitude-Behavior Consistency Under High Deliberation

Accessibility. For deliberative behaviors, there are two potential mechanisms by which accessibility might regulate attitude–behavior consistency. First, if an attitude is relevant to the merits of an action, accessibility could determine the likelihood that an attitude is activated and can thus serve as a direct argument for a behavior. Second, even if an attitude is not relevant to the merits of a behavior, accessibility may regulate the likelihood that an attitude is activated and can thus bias elaboration of information relevant to the behavior. The studies on biased processing in attitude change support this possibility, though not explicitly within the context of behavior prediction.16 Although our framework allows for two additional mechanisms (i.e., perceived applicability to a behavior or the ability and/or motivation of a person to be biased in elaboration of information), once an attitude is activated, there seems little basis to expect that additional accessibility would affect perceptions of the applicability of the attitude to the behavior. To the extent that consistency pressures help to motivate bias in processing, however, accessible attitudes might enhance such pressure compared with nonaccessible attitudes.

Types of Attitude-Relevant Information. Several high-deliberation mechanisms might account for attitude–behavior matching effects. Similar to low deliberation, the extent to which attitude bases match the nature of the behavior could influence the likelihood of attitude activation. Also, the match of attitude bases to behavior bases could influence whether an attitude serves as a compelling argument for or against a behavior (see Fabrigar et al., 2003). For instance, if a behavior is directly relevant to core values, a value-expressive attitude might be viewed as a compelling argument for or against the behavior. In contrast, if the attitude is based on another function, the attitude might be judged as a less applicable argument. For similar reasons, the match of attitude bases to behavior might influence the extent to which an attitude biases interpretations of behavior-related information. An attitude based on information recognized as irrelevant to the behavior might be ignored or seen as an inappropriate influence.
Attitude bases might also influence motivation or ability biases. People may be more able to identify behavioral information as consistent with an attitude if that information matches the basis of the attitude. In contrast, if the information is unrelated to the basis of the attitude, it may be more difficult for people to interpret the information as consistent with the attitude (an ability bias). People may also be motivated to interpret information as attitudinally consistent if it matches the basis of their attitudes because interpreting the information as inconsistent would more directly challenge their attitudes than inconsistent information related to a different basis.

To date, there is only one set of studies providing clear evidence for any of these mechanisms. Fabrigar et al. (2003) manipulated the cognitive information on which attitudes were based. Participants formed attitudes toward two department stores after receiving information about the camera departments of each store. Participants were then asked to decide which store they would choose if they needed to purchase a camera (matching condition) or jewelry (mismatching condition). Attitudes were better predictors of decisions in the matching condition than in the mismatching condition. These findings are most plausibly interpreted as evidence of an argument applicability effect. Such matching effects were unlikely to be due to differences in attitude activation because these studies deliberately made all attitudes accessible. Likewise, because no new information was presented with the decision task, attitudes should not have biased the processing of information relevant to the behavior.

Working Knowledge and Complexity. As previously mentioned, amount and complexity of knowledge may moderate attitude–behavior consistency via their association with attitude activation. Both constructs might also influence whether an attitude is seen as an argument directly applicable to the behavior. With respect to working knowledge, individuals might be more confident in using their attitudes as a direct argument for or against a behavior when that attitude is based on extensive rather than little knowledge. In terms of complexity, the more complex the knowledge base, the more likely the attitude will be based on information directly relevant to a given behavior (Fabrigar et al., 2003). Interestingly, complex attitudes might also be judged as applicable to a behavior even when the bases of the attitude are not directly relevant to the behavior. When a person’s attitude has multiple bases that are evaluatively consistent with one another, a person may assume that other potential bases for which the person has no information are likely to be evaluatively similar to the bases from which the attitude is derived. Thus, one might conclude that an attitude with multiple consistent bases is an informative guide even when the goal of the behavior has little relevance to the existing bases of the attitude.

Only a few studies have directly tested these possible mechanisms. Fabrigar et al. (2003) crossed manipulations of amount of knowledge, complexity of knowledge, and relevance of information to a decision. Attitudes were excellent predictors of decisions when at least one basis of the attitude was directly relevant to the decision and much poorer predictors when this was not the case. Even more interesting, complex attitudes remained good predictors of decisions even when decisions were not directly relevant to the bases of the attitude, whereas simple attitudes were poor predictors. There was no evidence that amount of working knowledge per se influenced attitude–decision consistency.17

Both working knowledge and complexity may influence the extent to which attitudes bias the processing of information relevant to a behavior. Low levels of working knowledge or low complexity (failing to match the nature of the behavior) might cause one to disregard the attitude and/or attempt to correct for any biases the attitude might exert. Both constructs might also play a role in the ability of attitudes to bias processing of behavior-relevant information. The more extensive and diverse the knowledge base underlying an attitude, the greater the informational resources individuals will have to construe new information in attitude-consistent ways.
Ambivalence. Ambivalence may influence attitude–behavior consistency as a function of attitude activation mechanisms. It may also alter the extent to which an attitude is judged to be applicable as a direct argument or a biasing factor in behavior. For example, increased within-dimension or cross-dimension ambivalence could lead to less overall confidence in the attitude, which could lead people to conclude that the attitude is not a compelling argument for or against a given behavior or that the attitude constitutes a bias that should be actively corrected.

Cross-dimension ambivalence could also affect judgments of applicability in two other ways (Fabrigar, Smith, Petty, & Crites, 2004). First, if a behavior happens to be relevant to a single dimension or a subset of dimensions, cross-dimensional ambivalence could lead to decreased attitude–behavior consistency if the basis (or bases) relevant to the behavior is inconsistent with the overall evaluation. In such situations, individuals may recognize that their global attitudes are uninformative and should not be used as direct arguments for or against a behavior and that their global attitudes should not be allowed to shape their interpretation of information relevant to the behavior. Second, when ambivalence exists across dimensions, people may be unwilling to extrapolate beyond what they know. Thus, when faced with a behavior that is directly relevant to a dimension for which they have no information, people may conclude that their attitudes are uninformative and, thus, should not be used as arguments and should not be permitted to influence their interpretation of information about the behavior. These mechanisms also suggest when cross-dimension ambivalence may not decrease attitude–behavior consistency. When a behavior is relevant to a dimension that is consistent with the overall evaluation or when a behavior is relevant to all of the dimensions on which an attitude is based, the global evaluation might well be judged to be an informative guide to behavior.

Although no studies have tested these principles as they relate to attitudes as biasing factors, some research has addressed possible applicability of attitudes as arguments for or against a behavior. Fabrigar et al. (2004) created simple attitudes about a department store (based on information about sporting goods) and created ambivalence in complex attitudes by making information about one department (sporting goods) inconsistent with the information about the other departments (cameras and garden supplies). Participants then completed one of three decision tasks: purchasing sporting goods (single high-relevant basis), purchasing housewares (single low-relevant basis), and purchasing sporting goods, a camera, and gardening supplies (multiple high-relevant basis).

As predicted, multidimensional ambivalent attitudes were poor predictors of decisions relevant to the contradictory dimension (i.e., purchasing sporting goods). They were also poor predictors of decisions for which participants had no information regarding the relevant behavioral dimension (i.e., purchasing housewares). In both situations, people recognized that the attitude was of questionable merit as a guide to the decision. This was in contrast to the earlier research in which evaluatively consistent multidimensional attitudes were good predictors of decisions relevant to a single basis of the attitude as well as decisions relevant to a dimension for which participants had no information (Fabrigar et al., 2003). But introducing ambivalence did not always harm attitude–decision consistency. When the decision was relevant to all three bases, the attitude was a good predictor. This is because the attitude was an informative guide, given that the decision required balancing the same competing goals as in the overall attitude.

A final way in which ambivalence might influence behavior under high deliberation is by moderating motivation and ability to be biased in processing behavioral information. On one hand, similar to dissonance–based biases in processing, ambivalence may make people prefer interpretations that enable them to reduce the ambivalence. On the other hand, ambivalence may make people less motivated or able to be biased because the ambivalence undermines confidence in use of the attitude as a guide in processing. Also, if amount of information is
equal, ambivalence within or across dimensions would mean fewer informational resources supporting the global attitude to use when attempting to interpret information in an attitude-congruent manner.

**Structure and Attitude-Behavior Consistency Under Moderate Deliberation**

**Accessibility.** When background factors do not constrain behavior to be highly deliberative or nondeliberative, attitude accessibility could determine how much effort is expended in thinking about the behavior. Similar to processing of persuasive messages, accessible attitudes may be more likely to alert people to objects that have hedonic consequences (Roskos-Ewoldsen & Fazio, 1992). This might motivate people to allocate more cognitive resources to deliberating about behaviors related to the object. Direct tests have yet to be conducted, but some research suggests that increased accessibility enhances scrutiny of the attitude object or related information (Roskos-Ewoldsen & Fazio, 1992; see also the earlier discussion of accessibility effects on scrutiny of persuasive messages).

**Types of Attitude-Relevant Information.** Matching attitude bases to behavior might enhance deliberation because such attitudes are more likely to be activated, so it is more likely that the attitude will signal that an object has hedonic relevance. Additionally, when a behavior matches the basis of the attitude, it may be seen as more self-relevant and, thus, receive greater scrutiny. These notions directly parallel the work on scrutiny of persuasive messages.

**Working Knowledge and Complexity.** People may be more able to carefully deliberate about behaviors if they have extensive or complex knowledge. Additionally, because of the enhanced possibility of attitude basis-behavior matching as complexity increases, people may be more likely to see behaviors as self-relevant and, thus, be motivated to deliberate.

**Ambivalence.** Ambivalence may play a role in encouraging or discouraging careful deliberation. This could occur for all the same reasons discussed regarding processing of persuasive messages.

**CONCLUSIONS**

Attitude structure has long been a central topic in the attitudes literature, and many effects of attitude structure have been demonstrated. In many of these cases, however, the mechanisms responsible for these effects are only now beginning to be understood. Many process-oriented questions remain, and we have attempted to point out a number of potentially fruitful directions for future research. Because a number of structural features of attitudes may co-vary with one another, future research would benefit greatly from greater manipulation of key variables and measurement of key alternative structures. This would often afford greater confidence in the independent effects of structure variables. In addition to treatment of structural variables as alternative explanations, however, consideration of structural variables in combination points to the utility of theorizing about possible interactions among structural properties. Thus, key questions remain about both moderation of structure effects (often by other structure variables) and mediation of those effects. We look forward to continued integration of research on attitude structure and attitude-behavior consistency with the process-oriented models of attitude change. In our view, much is to be gained by such integration.
3. STRUCTURE OF ATTITUDES

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ENDNOTES

1. Although not yet well integrated in the attitude structure literature, some researchers have also treated attitudes as represented within connectionist networks (e.g., Eiser, Fazio, Stafford, & Prescott, 2003; Smith, Fazio, & Cejka, 1996). Although the language of these networks is a bit different, they appear generally compatible with the distinctions and effects originally conceptualized using localist associative networks.

2. Some may think of knowledge as pertaining primarily to the cognitive base of attitudes. However, measurement of this construct simply asks respondents to list "the characteristics and facts that they believe to be true" about the object (e.g., Wood, 1982; Wood & Kallgren, 1988), which can include emotional reactions or prior behaviors as well as beliefs. Using this operationalization, knowledge refers to the amount of attitude-relevant information that a respondent lists about the attitude object, and no distinction is made among the three bases of attitudes. Accordingly, we use a definition of knowledge that refers not only to the cognitive base of attitudes, but also incorporates affect and behavior.

3. It is generally assumed that subjective knowledge is a consequence of the actual amount of knowledge rather than a cause of it. In fact, any causal impact of subjective knowledge could be negative. People who perceive themselves as highly knowledgeable may decide that they need not invest cognitive resources seeking out and processing new information. Similar predictions could be made for the relation between perceived certainty and amount of knowledge.

4. Although structural consistency is often treated separately from ambivalence (and the two are measured differently, see Wegener, Downing, Krosnick, & Petty, 1995), presence of evaluative-cognitive inconsistency, for example, implies some lack of consistency between cognition and the actual basis of the evaluation.

5. Other articles have also reported studies exploring taxonomies of strength-related constructs (Abelson, 1988; Pomerantz, Chaiken, & Tordesillas, 1995). However, because these studies focused on perceptions of attitudes (e.g., importance, conviction) with few traditional measures of structure per se, we do not discuss the taxonomies in this chapter.

6. By using factor analytic models to test taxonomies, researchers have clearly implied that attitude properties within the same "factor" tap a common underlying construct and should be highly intercorrelated. However, one might argue that, even if a taxonomy is not supported by a factor analytic model, this does not necessarily invalidate the proposed taxonomy. It could be that constructs within the same category do not co-vary with one another but do produce similar outcomes or exert influence via similar processes. However, such a taxonomy would seem to require clear theoretical rationales regarding common mechanisms and outcomes shared by constructs within the same category. Existing taxonomies have not provided such rationales.

7. Krosnick et al. (1993) report correlations among latent variables (i.e., correlations after removing the influence of random error). For this reason, the correlations are likely larger than if simple Pearson correlation coefficients had been examined.

8. Of course, one potential objection to these results may be ceiling effects. That is, the more extreme one initially is, the less room there is for enhanced extremity after repeated expressions. However, even moderate attitudes (which presumably allowed for increased extremity) showed no evidence of extremity effects with repeated expression. Another interesting issue is how to account for open-ended repeated attitude expressions producing enhanced extremity on subsequent rating scales. In theory, such expressions do not force neutral people to state either a positive or negative evaluation. However, subtle wording effects of such questions may create subtle pressures to do so. Some researchers have suggested that it is socially undesirable to report no opinion on issues (e.g., see Krosnick & Fabrigar, 1997; Krosnick & Fabrigar, in press; Schuman & Presser, 1981). Respondents may perceive no opinion or neutral answers to be unhelpful to researchers or to make the respondent appear unknowledgeable about the issue.

9. Domain expertise seems likely to be a relatively "impure" index of complexity. Although it is quite plausible that domain expertise is associated with greater complexity, expertise is also likely to be strongly related to the mere amount of information on which an attitude is based as well as the extent to which people have previously thought about that information.

In this section, we discuss the role of attitude structure in regulating the impact of attitudes on behaviors, intentions, decisions, and judgments. The psychological mechanisms and predictions are largely applicable to understanding attitudinal impact on all of these constructs. Thus, for the sake of simplicity, our use of the term behavior should be construed broadly, to include expression of intentions and making of decisions or judgments (unless otherwise noted).

It is useful to note that attitude stability is typically assessed by examining the correlation between attitude measures at two points in time. However, the correlation between two attitude measures can be influenced by different mechanisms. For example, variations in the validity and/or reliability of measures can produce variations in attitude test-retest correlations. Alternatively, variation in correlations can reflect fluctuations in the actual attitudes. In our discussion, we use the term attitude stability to refer to fluctuations of the actual attitudes.

In the MODE model of attitude-behavior consistency, nondeliberative attitude-behavior consistency is primarily conceptualized as a result of the attitude biasing perception of the attitude object, which, in turn, could influence how a person perceives a particular behavioral context. Such a process is assumed to be relatively automatic and thus involving little cognitive effort. For example, a positive attitude might trigger selective perception of attitudinally congruent features of the attitude object in the absence of any extensive thought about the object. In our discussion of nondeliberative attitude-behavior processes, we deviate slightly from the MODE perspective in two ways. First, we allow for the possibility that an attitude could also sometimes serve as a direct cue for inferring an appropriate behavior independent of any biasing effects on perception. In some cases, information in the behavioral context may be unambiguous and thus unlikely to be distorted (see Chaiken & Maheswaran, 1994). Alternatively, some behavioral or decision contexts may contain relatively little information to be distorted (see Lord & Lepper, 1999). In such cases, one still might expect attitudes to influence behaviors by serving as a direct cue. Second, we use the term indirect cue to refer to the sorts of low effort biasing processes discussed in the MODE. We use this term to differentiate this process from biased elaboration or biased processing, which has typically been used in the ELM to refer to the process by which a given factor biases thoughts about the central merits of an attitude object. Such biasing of effortful thinking is discussed in the MODE model under the rubric of mixed models of attitude-behavior processes (i.e., automatic components within deliberative processes).

A key assumption underlying the Millar and Tesser (1986b, 1989) studies is that asking participants to focus on how they feel creates affective attitudes, whereas asking participants to focus on why they feel the way they do creates cognitive attitudes. However, there is little direct evidence supporting this assumption (see Fabrigar & Petty, 1999). Because such manipulations have produced differences in attitude-behavior consistency, it seems possible that such instructions do alter the bases of attitudes. Whether the altered bases are purely affective versus cognitive is less than clear, however.

We have discussed these selective attention studies in relation to nondeliberative behavior. We do so because visual features of an object require relatively little effort to process and can thus be easily used as cues in behavioral contexts in which people are either unable or unmotivated to allocate substantial cognitive resources. However, this does not preclude the possibility that such features could also play a role in very deliberative behavior.

Studies examining the influence of accessibility on attitude-judgment relations have often been interpreted as evidence of biased processing of information, perhaps because the studies involved presentation of relatively complex information (e.g., Fazio & Williams, 1986; Houston & Fazio, 1989; Schuette & Fazio, 1995). The presumption is that correlations between attitudes and judgments reflect attitudes biasing the interpretation and evaluation of information and these interpretations and evaluations serving as the basis for subsequent judgments. Thus, we have presented these studies as demonstration of biased processing. However, no direct evidence for this assumption exists in the studies. It is possible that participants might not have based their judgments (e.g., ratings of study quality) on the thoughts they generated in response to the information, but instead simply used their attitudes as cues to directly infer their judgments.

Although this experiment found that amount of knowledge had little impact on attitude-decision consistency, this does not necessarily imply that amount of knowledge never plays a role in perceiving attitudes as valid guides to behavior. Amount of knowledge might have had an effect if conditions with lower levels of knowledge were included.

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