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and empirical evidence. We hope the book is of interest both to graduate students initiating work on attitudes as well as to long-standing scholars in the field. In addition, because of the many potential directions for application of work on attitude strength to amelioration of social problems, the book may be of interest to scholars in various applied disciplines studying attitudinal phenomena.

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Attitude Strength: An Overview

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Throughout history, many of the most sensational events and changes have focused public attention on powerful attitudes. From the French Revolution to recent bombings of abortion clinics by right-to-life activists, the incidents that attract our attention are often those associated with strong sentiments. Furthermore, many of the most significant sea changes in U.S. society have involved the shifting of seemingly unmovable and highly consequential attitudes. Among the most notable of these transformations are the shift from the overt racist attitudes of the 1950s to the seemingly more tolerant stance of contemporary society, and the reshaping of traditionalist opposition to a significant role for women in positions of societal leadership into widespread acceptance of such a role. In these cases and various others like them, powerful attitudes were gradually transfigured as the result of intense social pressure and heated public debate. Such concerted efforts at inducing collective attitude change in these instances were inspired partly by the belief that people's attitudes (e.g., prejudice) were responsible for destructive behaviors (e.g., racial discrimination). Therefore, changing the attitudes would change behavior.

Consistent with these informal observations, a number of studies conducted since the 1950s have made it clear that attitudes can be very stable, consequential, and very difficult to change. As Hovland (1959), Hyman and Sheatsley (1947), and others pointed out, most attitudes appear to change only rarely in the course of normal daily life, even when elaborate influence campaigns are mounted to induce such shifts. And some attitudes, such as those toward political candidates, are very powerful determinants of relevant behaviors (e.g., voting in elections; see Schuman & Johnson, 1976).

At the same time, however, social psychologists have accumulated evidence that suggests that attitudes sometimes can be anything but stable and consequential. For example, beginning with LaPiere's (1934) investigation of hotel and restaurant acceptance of Chinese patrons, numerous studies have shown that attitudes are sometimes only very weakly associated with behavior (for a review, see Wicker, 1969). Furthermore, many of the attitude change studies conducted in the laboratory during the last four decades can be viewed as documenting how easy it is to change people's opinions (see, e.g., Eagly & Chaiken, 1993; Petty & Cacioppo, 1981). One especially cogent and influential statement of this view was offered by Philip Converse (1964), who asserted that many people really have "nonattitudes" on major issues of the day, because their apparent preferences are so flexible.

Although these bodies of literature on attitudes may appear to be in conflict with each other, during the last few decades a great deal of research has demonstrated that whereas some attitudes are indeed stable and consequential, others are quite flexible and have few if any important effects. The primary goal of this book is to understand the intrapsychic processes responsible for this variation in the *strength* of attitudes. The various chapters in this volume examine attitude attributes related to attitude strength and the processes by which attitudes attain these attributes. We begin by offering a working definition of attitude strength and outlining a series of attributes of attitudes related to strength that have been the focus of extensive empirical study and that are the focus of the chapters to follow. We also review evidence linking these attributes to the defining features of strength, and we consider the relations among these attributes. Our goal in this discussion is to place the following chapters in a historical and conceptual context.

DEFINING ATTITUDE STRENGTH

Although attitude strength has often been discussed in the social science literature over the years (see, e.g., Raden, 1985; Schuman & Presser, 1981), it has been more of a vague metaphor than a formally defined social scientific construct. For example, when Raden reviewed the literature on attitude strength in 1985, he noted that "attitude strength has generally not been defined with any precision and it does not appear to have any agreed-upon meaning for attitude researchers" (p. 312). Yet the notion that some attitudes are stronger than others has powerful intuitive appeal. But what does it mean for an attitude to have strength? Webster's unabridged dictionary (McKechnie, 1976) provides several meanings for *strength*. Of particular relevance are the notions that strength refers to "the power to resist attack . . . durability . . . force . . . the power to produce a reaction or effect . . ." (p. 1801). That is, just as physically strong people are hard to budge from where they stand and have powerful effects on others and the world around them, so

too can it be that some attitudes are harder to change and have more powerful effects on peoples' lives than do others. Thus, it would seem that strong attitudes are ones that possess these two features: They are durable, and they have impact.

In order to formally define attitude strength, we would need to specify its relation to these manifestations. In this regard, we have at least two choices. First, we could define attitude strength as a latent psychological construct that is presumably represented in memory by various attributes of the attitude. From this perspective, durability and impactfulness would be viewed as *effect indicators* of an attitude's strength, because these observable qualities would presumably be results of an attitude's strength (see, e.g., Bollen & Lennox, 1991). If we were to take this approach, we would presume that an attitude's durability and impactfulness covary to at least some extent, and strength would be said to exist only when *both* of these attributes are present in an attitude.

Alternatively, we could treat durability and impactfulness as *causal indicators* of attitude strength, which would be viewed as a *phantom variable* (Bollen & Lennox, 1991; MacCallum & Browne, 1993). In this case, strength itself is not presumed to be a latent psychological construct somehow represented in memory. Rather, it is a heuristic label we attach to certain attitudes as a way of efficiently noting that they possess certain characteristics. Taking this approach, we could assert that an attitude is strong to the extent that it manifests either durability or impactfulness or both. The more of each feature an attitude possesses (i.e., the more durable and the more impactful), the stronger it is. Thus, the two defining features of strength could be said to combine with one another additively or multiplicatively to yield an overall level of an attitude's strength.

Treating attitude strength in this manner allows us to incorporate the most common meaning of the construct and to be consistent with the past work reviewed in this book. Therefore, as a working definition, we are inclined to treat attitude strength as the extent to which attitudes manifest the qualities of durability and impactfulness. Two manifestations of durability have received the most conceptual and empirical attention in past research. The first aspect of durability is the *persistence* of the attitude (or stability, as it is often called). This refers to the degree to which an attitude remains unchanged over an extended period in the course of normal daily life, even if it were never challenged. A second aspect of durability is *resistance*, which refers to an attitude's ability to withstand an attack (Petty & Cacioppo, 1986; see Petty, Haugtvedt, & Smith, ch. 5, this volume). Strong attitudes presumably show persistence and/or resistance.

Likewise, two manifestations of attitudinal impact have been the focus of extensive research. First, attitudes can *influence information processing and judgments*, in the sense that they make it more likely that certain information will come to mind, or that certain decisions will be rendered. Strong attitudes are more likely to impart a bias to information processing activity and judgments than are weak ones. In addition, attitudes can *guide behavior*, and strong attitudes should be more likely to do so than weak ones.

We refer to these four aspects of attitudes (i.e., persistence, resistance, impact on information processing and judgments, and guiding behavior) as the *defining features* of strength. Thus, consistent with common dictionary definitions of strength, we define *attitude strength* in terms of postulated marker characteristics or consequences that strong attitudes are thought to possess. That is, an attitude's strength is the degree to which it possesses these features. The primary goal of this book is to understand how and why attitudes come to have these strength properties, as well as sources of relations among them.

RELATIONS AMONG THE DEFINING FEATURES OF ATTITUDE STRENGTH

Although the various defining features of strong attitudes can be separated conceptually and empirically, they do seem likely to co-occur, for a number of reasons. First, some of the features appear to influence others in a rather direct manner. For example, an attitude's stability over time is likely to be a joint function of its resistance to overt challenges as well as the degree to which its representation in memory fades naturally over time. Also, attitudes that are expressed frequently in behavior are likely to be reinforced in memory, contributing to persistence. Furthermore, as Schwarz (1978) noted, an attitude assessed at one time is unlikely to predict behavior at a later time if the attitude does not persist over the time interval. That is, the ability of an attitude to predict a subsequent behavior is dependent on the attitude's stability. Similarly, Fazio (1986; ch. 10, this volume) argued that attitudes influence our behavior in part by shaping our perceptions of the world around us. That is, the ability of an attitude to predict behavior is dependent in part on the attitude's ability to bias perceptions of the attitude object and the behavioral context.

In addition to the relatively direct influence of some features on others, there are also likely to be indirect influences of one feature on another. For example, the more a person performs behaviors toward an object that are consistent with his or her attitude toward it, the more committed he or she will be to the attitude (see Kiesler, 1971). The more committed an individual is to an attitude, the more likely he or she is to resist attempts to change it (Hovland, Campbell, & Brock, 1957).

Yet another possible source of commonality among the four features of strong attitudes is shared origins. For instance, factors that might enhance an attitude's impact on information processing also seem likely thereby to enhance its resistance to change. So, for example, the more knowledgeable a person becomes about an attitude object, the harder it will likely be to change his or her attitude toward the object, because there is so much support for the existing viewpoint. In addition, having more knowledge about an object is also likely to enhance the impact of the attitude on information processing, because the person will have a greater ability to interpret events as consistent with the attitude.

Thus, there are a number of reasons to expect that attitudes possessing any one of the four aspects of strength that we have identified will often possess all

of them. Yet remarkably little research has been done to date exploring the degree of empirical overlap among these features of attitudes or the degree to which they can reasonably be thought of as reflecting a single underlying construct that might be called strength. We therefore adopt the definition of strength that makes no presumptions about these relations.

STRENGTH-RELATED DIMENSIONS OF ATTITUDES

Numerous studies have investigated the attributes of attitudes (e.g., knowledge) that are correlates of each of the four strength features (e.g., resistance to change). Since the late 1960s, a variety of strength-related attributes have been proposed and investigated. For example, in his chapter on attitude measurement in the *Handbook of Social Psychology*, Scott (1968) described 10 such properties: magnitude (extremity), intensity, ambivalence, salience, affective salience, cognitive complexity, overttness, embeddedness, flexibility, and consciousness. Since Scott's chapter appeared, some of these properties have been the subject of extensive empirical research, whereas other properties have been largely ignored in the empirical literature. In his literature review in the mid-1980s, Raden (1985) expanded Scott's list by examining accessibility, evaluative-cognitive consistency, certainty, direct behavioral experience, importance, latitudes of acceptance and rejection, and vested interest. Since then, a number of other attributes related to strength have been proposed and explored. These specific properties were of interest mostly because they were assumed to relate to an attitude's durability and/or impactfulness.

The chapters in this book focus on some of the strength-related dimensions of attitudes that have been addressed in empirical research extensively since the 1950s. As we describe in the following, these strength-related attributes can be viewed as falling into four categories: (a) aspects of the attitude itself, (b) aspects of the cognitive structure associated with the attitude and attitude object in memory, (c) subjective beliefs about the attitude and attitude object, and (d) cognitive processes by which an attitude is formed.¹

Aspects of Attitudes

Attitudes are presumed to vary along an evaluative continuum ranging from a strongly positive orientation to a neutral orientation to a strongly negative orientation. This continuum can be decomposed into valence (i.e., positive or nega-

¹Some researchers have recently begun to explore the genetic determinants of attitude strength as well (e.g., see Tesser, 1993). That is, some attitudes may be durable and impactful because they have an inherited component. For example, attitudes such as liking to work may have biological origins that are common to all humans (Arvey, Bouchard, Segal, & Abraham, 1989). Other attitudes (e.g., liking of loud parties) may be tied to inherited individual differences (e.g., introversion/extraversion; Eysenck, 1967). The chapters in this book focus on aspects of strength that are presumably learned, and thus might be more easily modifiable.

tive) and extremity (degree of favorability). Both valence and extremity might be related to strength in that, for example, holding extremity constant, negative attitudes might be more durable or impactful than positive ones. However, most research attention has focused on extremity. *Extremity* is the extent to which the attitude deviates from neutrality. The more extreme an attitude is, the more an individual likes or dislikes the object (see Abelson, ch. 2, this volume; Judd & Brauer, ch. 3, this volume).

Aspects of Attitude Structure

Many theorists assume that attitudes exist in memory within a network of associative links connecting them to other cognitive elements (e.g., Pratkanis & Greenwald, 1989). Fazio (1986) proposed that an attitude can be thought of as a link between the representation of an attitude object and its evaluation in memory. Attitude *accessibility* is defined as the strength of the object-evaluation link and is most directly manifest as the ease with which an attitude comes to mind in the course of social perception (see Fazio, ch. 10, this volume).

Attitudes are also thought to be linked to *knowledge* about the attitude object. Some attitudes are accompanied by a great deal of attitude-relevant knowledge, whereas others are associated with little knowledge (e.g., Wood, 1982). In the attitude strength literature, knowledge has been examined in terms of the size of the body of information one has about an object, a person's subjective perception of the amount of information he or she has, and the content of that information (see Davidson, ch. 12, this volume; Jaccard, Radecki, Wilson, & Dittus, ch. 13, this volume; Wood, Rhodes, & Biek, ch. 11, this volume). This information can include memories of emotions and past behaviors that are evoked by the object as well as more specific attributes of the object.

Furthermore, attitudes vary in the degree to which there is consistency between evaluations of the object and the information associated with it. Most research attention has focussed on two kinds of consistency: consistency of the attitude with beliefs about the object's attributes (evaluative-cognitive consistency), and consistency of the attitude with emotions associated with the object (evaluative-affective consistency; Breckler, 1984; Crites, Fabrigar, & Petty, 1994; Rosenberg, 1956; see Chaiken, Pomerantz, & Giner-Sorolla, ch. 15, this volume).

Rather than conceiving of attitudes as single evaluations of objects, it is possible to view an attitude as the summary of two distinct components: the degree to which one evaluates an object positively, and the degree to which it is evaluated negatively (e.g., Kaplan, 1972). *Ambivalence* refers to the degree of conflict between these two components (see Thompson, Zanna, & Griffin, ch. 14, this volume). Attitudes low in ambivalence involve either mostly positive evaluation or mostly negative evaluation, whereas highly ambivalent attitudes involve both positive and negative evaluations.

Subjective Beliefs About Attitudes and Attitude Objects

People hold a number of beliefs about the attributes of their own attitudes and about the attitude object. For example, people perceive some attitude objects to be closely connected to their important personal goals, desires, and wishes (e.g., Petty & Cacioppo, 1990; Petty, Cacioppo, & Haugtvedt, 1992). That is, some attitude objects are high in *personal relevance* and produce a sense of *personal involvement* with the issue (see Thomsen, Borgida, & Lavine, ch. 8, this volume). One particular basis of personal relevance or involvement is *vested-interest* (see Crano, ch. 6, this volume), the extent to which the attitude object is perceived to be instrumental to one's tangible outcomes (see also, Johnson & Eagly, 1989).²

In a similar vein, some people consider an attitude to be very important to them personally, and consequently they care deeply and are especially concerned about it (Krosnick, 1988a). Attitude *importance* is thus the degree of psychological significance people attach to an attitude (see Boninger, Krosnick, Berent, & Fabrigar, ch. 7, this volume). Attitude importance is thought to be a manifestation of the degree of personal relevance of the attitude object (Boninger, Krosnick, & Berent, 1995).

Attitude researchers generally believe that people are motivated to hold "correct" attitudes (see, e.g., Festinger, 1954; Petty & Cacioppo, 1986). Yet people are more confident in the correctness of some attitudes than others. Furthermore, people vary in the extent of their confidence that their attitudes toward any given object accurately represent their overall orientations toward it. Attitude *certainty* refers to the degree to which an individual is confident in his or her attitude toward an object, in both of these senses (see Gross, Holtz, & Miller, ch. 9, this volume).

Processes

Rather than focusing on a particular characteristic of the attitude or its structure, some theorists have focused on the cognitive processes by which an attitude is formed. The most notable of these is *elaboration* (e.g., Petty & Cacioppo, 1981; 1986). Elaboration refers to the degree of thinking one does and has done about an attitude object's attributes, its merits and drawbacks (see Petty, Haugtvedt, & Smith, ch. 5, this volume; Tesser, Martin, & Mendolia, ch. 4, this volume).³

²Because links to the self can sometimes be structural (e.g., an attitude that is connected in memory to a self-schema), one might classify personal relevance as a structural feature of attitudes. Although this is reasonable, researchers have emphasized the consequences of *perceived* self-relevance rather than actual self-relevance in the form of structural linkage.

³Some other strength-related attitude attributes have been discussed at length in the literature, such as direct behavioral experience (Fazio & Zanna, 1981) and latitudes of acceptance, rejection, and noncommitment (Sherif, Sherif, & Nebergall, 1965). Although these dimensions are not central foci of this book, they are discussed in various chapters.

RELATIONS OF THE DIMENSIONS TO STRENGTH

These attitude dimensions have typically been examined in separate investigations that related each one individually to durability and/or impactfulness (e.g., Fazio, Chen, McDonel, & Sherman, 1982; Haugtvedt & Petty, 1992; Wood, 1982). Furthermore, the key attributes of attitudes related to strength have been defined and operationalized in ways that may make them appear clearly distinct from one another. Thus it is plausible that they may have unique origins and unique effects. As distinct as these constructs appear, however, they all share one feature in common: They appear to be related to the four defining features of strong attitudes.

Studies to date have used a variety of approaches to assess these features. For example, resistance has been gauged most often by exposing people to persuasive messages in laboratory settings and assessing how much attitudes change as a result (e.g., Ewing, 1942). But other studies have employed different change-inducing methodologies. In some, people were asked leading questions about their attitudes that led some to change (e.g., Swann & Ely, 1984). In other studies, people were instructed to think about the reasons for their attitudes, a procedure that also induces change in some of them (Wilson, Kraft, & Dunn, 1989; see Erber, Hodges, & Wilson, ch. 17, this volume). All such manipulations are expected to have more impact on weak attitudes than on strong ones.

Studies of attitude persistence have typically assessed an attitude at one time point, reassessed it at a later time point, and estimated the correlation between the two (e.g., Schuman & Presser, 1981). In some cases, multiple indicators have been collected at each time point, or attitudes have been measured at three or more time points, allowing researchers to estimate attitude stability while correcting for the distorting impact of random and systematic measurement error (e.g., Feldman, 1989; Krosnick, 1988b). In still other studies, stability has been assessed by seeing how much a group's mean attitude is maintained over time (e.g., Chaiken, 1980; Haugtvedt & Petty, 1992). As gauged in any of these ways, the stability of strong attitudes is expected to exceed that of weak attitudes.

A wide diversity of approaches have been taken to assessing the impact of attitudes on information processing. In each case, the valence of attitudes (ranging from favorable to unfavorable) has been used to predict valenced judgments or biases of some sort, based on the assumption that attitudes play a role in determining these judgments. For example, attitudes can bias the evaluation of scientific data: Evidence supporting our attitudes is seen as more compelling than evidence that disagrees with our attitudes (Lord, Ross, & Lepper, 1979). Also, attitudes are presumed to influence attraction to others. We presumably like others who share our attitudes more than those who do not (e.g., Byrne, 1971). Attitudes are also presumed to influence our perceptions of other people's attitudes—we presume that others share our attitudes if we like them, and we presume that they do not share our attitudes if we dislike them (e.g., Heider,

1958). In addition, attitudes are presumed to shape memory for relevant information, such that people are more likely to remember attitude-consistent information than attitude-challenging information (e.g., Festinger, 1957; Roberts, 1985). Conventional paradigms assessing these effects, either in experimental laboratory settings or via survey questionnaires, have all been used to examine whether strong attitudes have more powerful effects than weak ones.

Finally, attitude-behavior consistency has been gauged in a variety of different ways. For example, some studies have measured people's attitudes toward an object and then given them an opportunity to perform a behavior that is either favorable or unfavorable toward the object, such as signing a petition advocating a certain view (e.g., Weigel & Newman, 1976). In other studies, subjects' behaviors performed in the course of everyday life were measured directly and compared with attitude reports (Ajzen & Madden, 1986). In still other studies, instead of observing people's behavior, researchers have relied upon subjects' reports of their past behavior or upon reports of behavioral intentions regarding the future (e.g., Davidson & Morrison, 1983; Miller & Grush, 1986). In each case, strong attitudes were expected to be more consistent with behavior than weak ones.

Studies to date have not yet assessed the relations of all strength-related dimensions to all four defining features in these ways. However, those relations that have been assessed are remarkably consistent: Each dimension has been shown to be positively associated with one or more of the four defining features (for reviews, see Krosnick & Abelson, 1992; Krosnick, Boninger, Chuang, Berent, & Carnot, 1993; Raden, 1985). Furthermore, only in very few instances has one of the dimensions been found to be unrelated to one of these features, and in no case has a dimension been found to be negatively related to one of the features. Thus, at the very least, all of these dimensions seem related to strength.

RELATIONS AMONG THE DIMENSIONS

Why might there be such strong similarity among these dimensions in terms of their correlations with the defining features of attitude strength? One possibility is that all these dimensions reflect a single underlying construct. That is, although the various dimensions are clearly conceptually and operationally distinct from one another, they may share a small set of common causes. One might therefore think of the confluence of these dimensions as constituting emotional and intellectual engagement in an attitude. Such engagement could be sparked initially, for example, by recognizing the personal relevance of the issue (Petty & Cacioppo, 1979). This might instigate a sense of importance at first, which might then inspire extensive thinking and information-gathering, which might ultimately yield extremity, certainty, expanded knowledge, and so forth (e.g., Boninger et

al., ch. 7, this volume; Petty et al., ch. 5, this volume). Ultimately, all of the attitude dimensions might be uniformly shaped by a set of common causes, leading to such high correlations among the dimensions that they might be viewed as reflecting a single underlying construct. More generally, inducing a high level in any one of these dimensions might, over a period of time, reverberate throughout the system, ultimately producing high levels in them all. Consequently, any departures from perfect association among the dimensions for any given attitude might then simply reflect the fact that these sequential processes have not yet completely unfolded. According to this view, virtually all associations between these dimensions and attitude strength features would be redundant.

The great similarity between the dimensions in terms of their relations to the four defining features of strong attitudes justifies empirical examination of the associations among the dimensions. On the one hand, the dimensions may be highly overlapping with one another and may therefore have essentially identical effects on attitude strength features. Alternatively, it is possible that each of the dimensions is uniquely related to the strength features, enhancing an attitude's persistence, resistance, and impact on cognition and behavior through unique processes. Or, there may be at least some overlap among some of the dimensions that reflect a smaller set of higher order constructs.

Support for the notion of reverberation comes from evidence that some of the attitude dimensions cause others. For example, thinking about an attitude object increases its accessibility (Rennier, 1988). Also, thinking about an attitude can increase its extremity (Tesser, 1978). Thus it is conceivable that once one such dimension is elevated (e.g., an individual comes to perceive the personal relevance of the attitude object and begins to think about it; Petty & Cacioppo, 1979), various cognitive and behavioral processes are set in motion to elevate some or even most of the other dimensions (e.g., accessibility, extremity).

If the dimensions are all perfectly overlapping with one another, it would be most parsimonious to think of them all as manifestations of a single latent construct. And if this is true, it would greatly simplify theory building and empirical testing in this arena, because the array of dimensions currently being addressed by separate research programs could be reduced to a single dimension that could then be studied in a much more streamlined fashion. What might appear to be distinct qualities of attitudes could then be thought of as only one single property, with one set of causes and one set of effects. Future research could then identify and measure or manipulate the most effective indicators of this underlying dimension, and future theory building could focus on that one dimension instead of on a multitude of higher order properties.

Given the clear distinctions between the dimensions in terms of definitions and operationalizations, however, such perfect overlap seems unlikely. Nevertheless, some overlap seems quite plausible, and some groups of dimensions might reflect single underlying constructs. Indeed, there are a number of instances in the attitudes literature where higher order constructs have been measured with

a wide variety of different specific measures. For example, investigators have presumed that attitudinal *intensity* can be measured via certainty (Brim, 1955; Guttman & Suchman, 1947; Katz, 1944; McDill, 1959; Suchman, 1950) or extremity (McDill, 1959; Tannenbaum, 1956). Attitudinal *salience* has been measured by questions about importance (Hoelter, 1985; Jackson & Marcus, 1975; Lemon, 1968; Powell, 1977; Tedin, 1980) and frequency of thought (Brown, 1974). One of the most studied higher order constructs, *involvement*, has been assessed by measuring importance (Apsler & Sears, 1968; Borgida & Howard-Pitney, 1983; Gorn, 1975; Howard-Pitney, Borgida, & Omoto, 1986), amount of thought (Bishop, 1990), knowledge (Stember & Hyman, 1949-1950), the confluence of thought, information gathering, and self-interest (Flora & Maibach, 1990), or the confluence of importance, thought, commitment, and social support (Miller, 1965).

Another higher order construct about which there has been a great diversity in approaches is attitude *centrality*. Questions about importance have frequently been used to gauge this construct (Converse, 1964; Judd & Krosnick, 1982; Krosnick, 1986; Petersen & Dutton, 1975; Schuman & Presser, 1981), an approach that comes closest to the definitions of it offered by Smith, Bruner, and White (1956, p. 35) and Freedman (1964). However, Converse (1970) defined *centrality* as the "proportion of 'mental time' that is occupied by attention to the attitude object over substantial periods" (p. 182), which seems closer to the notions of attitude salience and accessibility. At the same time, Lewin (1951), Bem (1970), Katz (1960), and others defined "centrality" as the extent of structural linkage among attitudes, thus resembling Scott's (1968) notion of embeddedness. Yet direct measures of such structural linkage have rarely if ever been used in the attitude literature to operationalize this construct. Thus there is a fair amount of disagreement in the literature about the extent to which these dimensions can be used to measure each other and about which higher order constructs, if any, they reflect.

Even if the dimensions all represent independent but moderately overlapping constructs, questions would arise about the extent to which relations between individual dimensions and defining features of attitude strength are spurious. For example, it is conceivable that attitude accessibility is the sole determinant of attitude-behavior consistency, and that importance and evaluative-cognitive consistency are only associated with attitude-behavior consistency by virtue of their correlations with accessibility. This sort of theoretical viewpoint has been offered most clearly by Fazio (1989), who suggested that at least some attitude attributes (e.g., certainty and direct experience) may enhance an attitude's impact on behavior and information processing by strengthening the object-evaluation link in memory (i.e., the attitude's accessibility). Therefore if multivariate analyses were to be conducted predicting attitude-behavior consistency using accessibility, certainty, direct experience, and other attitude attributes, many of these correlates of consistency might turn out not to be causes of it. On the other hand, if the

dimensions are completely nonoverlapping, such multivariate analyses would likely leave all bivariate relations unaltered. Each dimension might have reasonably unique origins and effects. Thus, in order to understand which attitude attributes are directly responsible for attitude strength, it is useful to assess the overlap among the dimensions.

Associations Among the Dimensions

In fact, many correlational studies have assessed the relations among a subset of the various strength-related dimensions and have consistently documented only low to moderately positive correlations. On the basis of this sort of evidence, Raden (1985) concluded that these dimensions are not all reflections of a single underlying, superordinate dimension. Raden did not collect original empirical data, but rather reviewed some of the existing published evidence on associations between some strength dimensions. The literature Raden reviewed provided only a small subset of all possible correlations among these dimensions, but most of the associations he observed were relatively weak. Therefore, Raden asserted that the one construct view of attitude strength should be abandoned in favor of a multiconstruct view in which the dimensions are essentially independent of one another.

However, it is difficult to know exactly what to make of the zero order correlations that were the focus of Raden's study, because they are likely to have been distorted by random and systematic measurement error. Random measurement error attenuates correlations between indicators, and correlated measurement error due to shared method can make correlations either more positive or more negative (see, e.g., Alwin & Krosnick, 1985; Boruch & Wolins, 1970; Green, 1988; Krosnick & Alwin, 1988). Consequently, zero order correlations may either overestimate or underestimate correlations between attitude dimensions. Given Cote and Buckley's (1987) evidence that random and systematic measurement error typically account for more than 50% of the variance in psychological measures, it seems quite plausible that zero order correlations among attitude dimensions are misleadingly attenuated and that there is more overlap among them than Raden (1985) believed there to be.

In order to estimate these correlations more precisely, Krosnick et al. (1993) collected multiple measures of each of ten strength-related dimensions. These investigators then applied structural equation modeling techniques to the resulting data in order to correct for the impact of random and systematic measurement error. In all, Krosnick et al. (1993) estimated four correlation matrices, one for each of four attitude objects. Table 1.1 displays the results involving the dimensions addressed in this book from a typical example, regarding attitudes toward defense spending by the U.S. government (all variables were coded so that positive correlations would be expected). These dimensions include measures presumably tapping accessibility (frequency of talking about the object, as well

TABLE 1.1
Krosnick et al. (1993) Estimates of Correlations Between Latent Attitude Dimensions Corrected for Random Error and Method Covariance (Attitudes on U.S. Defense Spending)

	Talking	Thinking	Perceived Knowledge	Knowledge Listing	Response Latency	Importance	Certainty	Extremity
Thinking	.84							
Perceived Knowledge	.79	.76						
Knowledge Listing	.19	.19	.28					
Response Latency	.34	.49	.25	.11				
Importance	.60	.77	.64	.19	.26			
Certainty	.49	.71	.59	.08	.26	.75		
Extremity	.33	.37	.22	.11	.35	.38	.55	
Evaluative-Cognitive Consistency	-.02	-.02	-.17	-.05	.24	-.14	-.05	.38

as response latency), elaboration (frequency of thinking about the object), the amount of knowledge people had about the object (as assessed via self-perceptions as well as listings of everything people knew about the object), importance, certainty, extremity, and evaluative-cognitive consistency.

Although some of the correlations shown here are relatively strong, most of them are moderate to weak. This is particularly so for the amount of knowledge people could list about the object and for evaluative-cognitive consistency. These results are comparable to those in the other three corrected correlation matrices Krosnick et al. (1993) estimated, highlighting some cases of strong overlap, some cases of moderate overlap, and some cases of no overlap at all.

It is interesting that different means of assessing the same construct appear to have yielded distinct results. For example, self-perceptions of knowledgeability were only weakly associated with the amount of knowledge people were actually able to list about an object. Similarly, some measures that would be expected to be correlated were not. For example, if people possess considerable knowledge about an attitude object, one might expect them to be more confident in their attitudes, but they were not.

Krosnick, Jarvis, Strathman, and Petty (1994) reanalyzed data originally collected by Strathman (1991). Multiple measures of some of the dimensions examined by Krosnick et al. (1993), as well as additional ones were examined. Because of the nature of some of the measures, Krosnick et al. (1994) estimated phantom variable structural equation models (Bollen, 1984; Bollen & Lennox, 1991; MacCallum & Browne, 1993) to correct for the impact of random measurement error. The corrected correlations they obtained for one of their attitude objects (George Bush) are shown in Table 1.2.

Consistent with Krosnick et al.'s (1993) findings, some of these correlations are relatively strong; others are moderate; and many are near zero. Some of the stronger correlations involve importance, certainty, amount of thought, and extremity, and consistently weaker correlations involve evaluative-cognitive consistency, evaluative-affective consistency, and cognitive-affective consistency. In fact, for some of these later variables, surprisingly strong negative correlations appeared (again, the variables were coded so that positive associations would be expected). Thus it seems that the general complexion of Krosnick et al.'s (1993) results were replicated.

Also consistent with Krosnick et al.'s (1993) results, Krosnick et al. (1994) found clear distinctions between self-perception and objective measures of the same construct. For example, the correlation between self-perceptions of knowledgeability and the amount of knowledge subjects listed was .14. Given the apparent distinction between subjective and objective measures of what might be considered the same construct, it seems worthwhile to speculate about the meaning of such a distinction. First, self-perceptions might reflect constructs different from those tapped by the direct measures but equally real and useful. Thus self-perceptions of a construct might even have effects different than those

TABLE 1.2
Krosnick et al. (1994) Estimates of Correlations Between Latent Attitude Dimensions Corrected for Random Error and Method Covariance for Attitudes Toward George Bush

	Thinking	Perceived Knowledge	Knowledge Listing	Response Latency	Importance	Certainty	Extremity	Evaluative-Cognitive Consistency	Evaluative-Affective Consistency
Perceived Knowledge	.78								
Knowledge Listing	.15	.14							
Response Latency	.50	.47	.24						
Importance	.60	.57	.05	.33					
Certainty	.70	.62	.10	.67	.45				
Extremity	.54	.45	.00	.61	.36	.62			
Evaluative-Cognitive Consistency	.02	.06	-.14	.28	.20	.15	.15		
Evaluative-Affective Consistency	-.25	.24	.19	-.55	.03	-.28	.21	-.07	
Cognitive-Affective Consistency	.10	.01	.22	-.10	.09	.09	.16	.07	-.09

of direct measures of it. Second, the self-perceptions and objective measures could tap the same construct, but imperfectly. Because random measurement error has been purged from the corrected correlations in Tables 1.1 and 1.2, this imperfection cannot be attributable to it. Conceivably, though, the imperfection could be due to the presence of method-specific systematic error. It is tempting to view the self-perception data as the more flawed, because it is presumably subject to intentional manipulation by respondents, whereas the objective measures are less susceptible. It is interesting to note, however, that medical researchers have found that self-perceptions of health status contain some valid information that predicts later mortality, over and above the information contained in objective measures of health status (Idler & Angel, 1990). It is thus conceivable that both the self-perceptions and the objective measures of attitude dimensions may both contain useful, valid, and independent information.

Do the Dimensions Reflect a Few Higher Order Constructs?

It seems clear from the evidence we reviewed (i.e., Krosnick et al., 1993, 1994) that there is a considerable amount of independence among the individual strength-related dimensions. However, even if these dimensions are in fact distinct from one another, it is nonetheless possible that two or more of them reflect common, higher order constructs. That is, the set of dimensions may be reflections of a smaller set of underlying latent constructs, and those underlying constructs might produce associations with stability, resistance, and impact on cognition and behavior. In fact, it is possible for all of the dimensions that are at least somewhat correlated with one another to reflect only a single latent construct.

Verplanken (1989, 1991) reported one pair of studies consistent with the notion that a group of strength-related dimensions reflects a higher order construct. He examined the structure of measures of interest, thinking, talking, and feeling involved in an issue, frequency of reading about the issue, desire to express one's opinion on the issue, and other such dimensions. Verplanken treated single indicators of each of these dimensions as if they were all indicators of a single underlying construct; Cronbach's alphas for indices derived from sets of them for three issues were .86, .86, and .75. This suggests that a single factor did indeed account for a great deal of the covariation among the dimensions. The remaining, unexplained covariation may simply represent random or systematic measurement error, or it could represent the existence of a more complex underlying factor structure.

Other investigations have uncovered clear evidence of more complex organizations. For example, Abelson's (1988) analysis of a series of attitude dimensions revealed three clusters of items across a set of issues. The first, which he called "emotional commitment," included items assessing certainty and relevance to self-concept. The second cluster, called "ego preoccupation," included items

measuring frequency of thought and importance. And the third cluster, "cognitive elaboration," included items measuring knowledge, as well as others not directly linked to the dimensions of interest here.

A similar investigation was conducted by Lastovicka and Gardner (1979). They also factor analyzed a set of relevant indicators and found yet a different three factor structure. Their first factor included items addressing frequency of talking, knowledge, and interest. The second factor included measures of certainty and ego defensiveness. And the third factor included importance and the relevance of one's social identity and values. Thus Lastovicka and Gardner's (1979) findings were quite different from Abelson's (1988), which raises questions about the reliability of these factor structures.

Krosnick et al. (1993) offered a resolution of this confusion by taking a somewhat different approach to assessing the latent structure of these dimensions. Instead of conducting exploratory factor analyses, these investigators conducted confirmatory factor analyses. Specifically, Krosnick et al. (1993) specified and tested the adequacy of a series of models that presumed two or more dimensions reflected a single underlying construct while controlling for the impact of random and systematic measurement error. Some of the models they tested were suggested by previous investigators' presumptions regarding interchangeability, and some were suggested by theoretical considerations. Despite this, every one of the models Krosnick et al. (1993) evaluated did not fit the observed data and was therefore empirically rejected. Because this approach involved explicit model testing and goodness-of-fit assessment, it seems quite informative. Furthermore, Krosnick et al.'s (1993) findings can explain the inconsistency of previous exploratory factor analyses: That method was apparently being used to uncover latent structure that did not exist. Thus the available evidence seems to support the view that many of the various attributes of attitudes that may contribute to strength are best thought of as distinct from one another.

Also consistent with the notion that many of these dimensions are distinct from one another is evidence that they can have nonoverlapping, independent, interactive, and mediated effects. For example, although attitude importance, intensity, and certainty generally do not regulate the magnitude of question wording effects (Bishop, 1990; Krosnick & Schuman, 1988), evaluative-cognitive consistency (Chaiken & Baldwin, 1981) and extremity (Hippler & Schwarz, 1986) do seem to exert such regulatory influences. Furthermore, these dimensions sometimes interact with one another. For example, Tourangeau, Rasinski, Bradburn, and D'Andrade (1989a, 1989b) showed that question order effects are especially likely to occur among people who are high in ambivalence and consider an attitude to be highly personally important. Similarly, Biek (1992) showed that attitude-defensive biased processing of a persuasive message is most likely among respondents high in knowledge and intensity.

Taken together, this evidence suggests that the one factor view of strength-related attributes may not be viable. Indeed, this evidence suggests that it is

difficult to reduce the set of dimensions to a smaller set of latent constructs and that doing so may be counterproductive. Consequently, it seems that a full understanding of attitude strength will require in-depth investigations of each of the attitude dimensions. The chapters in this book attempt to provide a state of the art discussion of many of the most researched dimensions of attitudes related to strength.

THIS BOOK

Although individual researchers have not concentrated exclusively upon single dimensions of attitudes related to strength, there has been a strong tendency for scholars to focus on just one dimension at a time. In organizing a 1991 conference on attitude strength that set this book in motion, we sought to bring together researchers exploring attitude strength to share their findings and perspectives. Our hope was that some direct exchange of ideas among ourselves and integration of our perspectives might be productive. Previously, the findings of individual researchers studying individual attributes had been published in relative isolation from one other. There was not a great deal of cross-citation taking place, and there were not central, overarching issues being addressed in a coordinated fashion from multiple perspectives. Yet the fact that these dimensions all appear to be related to the four defining features of strength suggested a common core to these individual research agendas. This book is intended partly to help make this common core more explicit in ways that might have constructive impact on future studies.

A second important goal of this book is to catalogue and systematize the many diverse findings on attitude strength and related attitude dimensions. Relatively few review articles have been written on this topic to date, so it seemed useful for leading researchers to present their perspectives on the accumulated findings and to suggest directions for future studies. In particular, we asked chapter authors to identify the antecedents of the attitude strength dimension(s) examined in their research programs, the strength consequences of these dimensions, the mechanisms by which these consequences are produced, and the conditions under which they are most likely to appear.

The book begins with Abelson's chapter focused on attitude extremity, the one strength-related dimension that is an attribute of the attitude itself. His emphasis is on the social and interpersonal sources of extremity. In the next three chapters, the focus shifts to thought processes and their impact on strength. Judd and Brauer explore how mere thought, encounters, and expressions can influence attitude extremity. Tesser, Martin, and Mendolia explore the impact of mere thought on extremity and attitude-behavior consistency. The next chapter, by Petty, Haugtvedt, and Smith, examines not mere thought but rather the effects of elaboration of persuasive messages on attitude persistence, resistance, and impact on behavior.

The next few chapters address both the origins and consequences of dimensions defined as subjective perceptions of attitude qualities: Crano reviews work on vested interest; Boninger, Krosnick, Berent, and Fabrigar on importance; Thomsen, Borgida, and Lavine on personal involvement; and Gross, Holtz, and Miller on certainty. Following this group, the next chapters address the causes and effects of structure-related dimensions. First is Fazio on accessibility. Next are three chapters on knowledge: Wood, Rhodes, and Biek; Davidson; and Jaccard, Dittus, Radecki, and Wilson. Thompson, Zanna, and Griffin then report on ambivalence; Chaiken, Pomerantz, and Giner-Sorolla consider evaluative-cognitive and evaluative-affective consistency; and Eagly and Chaiken review implications of interattitudinal and intraattitudinal structure. All of these chapters describe the existing bodies of research documenting the relations of these dimensions to the four defining features of strength. Finally, Erber, Hodges, and Wilson report multivariate analyses exploring the relations of numerous strength-related attitude attributes to attitude stability and resistance to change.

The book's final chapter is intended to provide practical help for investigators interested in conducting studies of strength-related attitude dimensions. In it, Wegener, Downing, Krosnick, and Petty provide an overview of the various ways in which strength-related attributes have been measured and manipulated. These techniques can be easily adapted for use in future investigations.

CONCLUSION

Focus on one strength-related dimension at a time has been the predominant approach employed in attitude strength research in the past. In future years, we suspect, some investigators will continue to concentrate on single dimensions, probing their idiosyncratic features and building models of their causes and effects. At the same time, however, valuable new insights can be produced by multivariate studies considering many dimensions simultaneously. Increasing numbers of investigators may well employ this sort of metadimensional approach in the future, attempting to understand the relations among the strength-related attributes and to identify their unique contributions to attitude strength. We hope that this volume helps to facilitate both sorts of work.

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Attitude Extremity

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Different meanings of attitude strength attach to different measures of what is almost certainly a multidimensional concept. Some measures of attitude strength command attention because of ease and frequency of empirical use; some because of theoretical and empirical coherence; and some because they are relevant to important social phenomena. In a recent review of a large number of candidate measures of attitude strength, Krosnick and Abelson (1991) recommended three measures: attitude *importance* for its simplicity and sheer frequency of appearance in a variety of relationships; attitude *accessibility* for its theoretical coherence; and attitude *extremity* for its practical importance. This chapter focuses on the last named, attitude extremity. Extremity has been conventionally measured by self-placement of subjects along a numerical scale of attitude position, usually labeled at the ends with the respective designations, *extremely unfavorable* and *extremely favorable*. *Neutral* may also be labeled, but the meaning of placements at less-than-extreme positions is left to the judgment of the subject—an option whose consequences are discussed later in this chapter. One social arena in which extreme attitudes are consequential is that of intergroup conflict, because conflict can breed attitude extremity, which in turn serves to maintain or increase conflict. I analyze later several interesting social psychological processes that may be implicated in this vicious cycle.

BACKGROUND

Throughout my academic career I have been fascinated by the capacity of holders of very strong attitudes to resist persuasive attempts at change. Public figures and ordinary folks alike often cling tenaciously to beliefs and attitudes that we,