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## Importance, Knowledge, and Accessibility: Exploring the Dimensionality of Strength-Related Attitude Properties

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THE TERM *attitude strength* has been used often throughout the social sciences during the last century, but it has been used in many different ways and has rarely been formally defined in conceptual and operational terms. Recently, however, Krosnick and Petty (1995) proposed a definition pointing to four essential qualities of strong attitudes. In doing so, they drew an analogy between strong attitudes and people who are physically strong. Strong people are difficult to move and have a relatively easy time moving others. Likewise, strong attitudes can be thought of as those that resist change, which leads them to be especially stable over time. Strong attitudes are also influential, in that they powerfully direct information processing and have a substantial impact on behavior. Thus, the strength of an attitude is *defined* in terms of four dimensions—resistance to change, persistence over time, strength of impact on thinking, and strength of impact on behavior.

When defined in this way, it is immediately obvious that, like attitudes, many other constructs of broad interest to social scientists are likely to vary in strength. Behavioral intentions and a range of beliefs, including attributions, stereotypes, self-concepts, and much more, can all be conceived as varying in their imperviousness and in their consequentiality. Therefore, understanding the nature, origins, and consequences of attitude strength can in principle help us understand the workings of these other psychological phenomena as well.

Many other attributes of attitudes have been shown to be positively correlated with the four defining features of attitude strength (see e.g., Krosnick and Abelson 1992). We refer to these other properties as “strength-related attitude attributes.” They include attitude importance, knowledge, elaboration, certainty, ambivalence, accessibility, intensity, extremity, structural consistency, and others. As Krosnick and Petty (1995) outlined, some of these attributes are features of the attitude itself (e.g., extremity), others

are aspects of attitude structure (e.g., accessibility, knowledge, structural consistency), others are subjective beliefs about attitudes or attitude objects (e.g., importance and certainty), and others refer to processes through which attitudes are formed, changed, and maintained (e.g., elaboration).

Because these attributes are positively correlated with one another and with the four defining features of strength (Krosnick and Abelson 1992; Krosnick et al. 1993), the temptation of parsimony has led some investigators to presume that multiple attributes reflect a single underlying construct. That is, the origins and consequences of multiple attributes have been presumed to be identical, an assumption that has many convenient implications. Most important, theory building can be accomplished efficiently. Rather than trying to understand the unique causes and effects of twelve or more attributes, we need only account for a small handful of latent constructs. Furthermore, on a practical level, averaging together measures of multiple attributes would presumably yield a reliable measure of the construct they reflect, thus facilitating the assessment process.

Because parsimony is appealing in principle, it makes little sense to develop theories of attitude strength that are unnecessarily complex or differentiated. However, we will argue here that complexity and differentiation are the reality of the psychology of attitudes and must therefore be represented in our theories of their functioning. In particular, we will advocate a view of attitude attributes that requires individual theory building for each, paying careful attention to each attribute's inherent nature and identifying antecedents and consequences in ways faithful to that nature.

We begin by reviewing the bulk of work to date on the structure of strength-related attitude features, which has employed factor analytic methods. We show that the results of such work has been conflicting and ultimately uninformative on the matter of latent structure. We then describe new studies taking a different approach to identifying structure, examining whether two strength-related attitude properties have the same causes and the same effects. The focus of the studies described here has been on the relations of attitude importance to the volume of attitude-relevant knowledge and to attitude accessibility.

#### FACTOR ANALYTIC STUDIES

The largest segment of the literature suggesting commonalities among strength-related attributes reported factor analyses. In some studies, exploratory factor analyses or principal components analyses were implemented to identify underlying dimensions based on covariances among attributes (e.g., Abelson 1988; Bassili 1996a). For example, Pomerantz, Chaiken,

and Tordesillas (1995) reported factor analyses suggesting the one set of strength-related attributes (including extremity and certainty) reflects an individual's commitment to an attitude, and a second set of attributes (including knowledge volume and attitude importance) reflects the degree to which the attitude is embedded within a large, interconnected cognitive structure.

However, the results of such exploratory factor analyses have varied considerably across studies and sometimes even within studies. Some investigations have yielded support for the notion that many strength-related features reflect a single underlying construct (Verplanken 1989, 1991), whereas other studies suggest that there are two (e.g., Bassili 1996a) or three (Abelson 1988) underlying factors. And different studies have reached different conclusions about which attributes reflect the same underlying construct and which reflect different constructs.

In an effort to get past the ambiguities inherent in exploratory factor analysis, Krosnick et al. (1993) explicitly tested the plausibility of a number of different latent factor models, beginning with one proposing that a single underlying factor could account for covariation among some or all of thirteen attributes. Specifically, these investigators tested the goodness-of-fit of various structural equation models positing pairs, trios, or larger sets of attributes loading on a single underlying factor, each possibility derived from existing theories and research. Across three studies, Krosnick et al. (1993) found almost no consistent evidence suggesting that a group of attributes reflected a common underlying strength factor. And all three studies yielded evidence rejecting the claim that a single latent factor could account for all the covariation among all dimensions. Lavine et al. (1998) also conducted similar confirmatory factor analyses, which supported the same conclusion.

This factor analysis approach employs just one of many possible ways to diagnose latent structure. In essence, a factor analysis will support the conclusion that two measures reflect a single underlying construct if correlations of the two measures with other measures in the model show similar patterns. But in past studies, the only "criterion" dimensions used to gauge similarity have been other strength-related attitude attributes thought to possibly reflect the same underlying constructs. In the research described in this chapter, we took a different, complementary approach, expanding the scope of criterion variables, and focused on the causes and consequences of attributes. If two attributes are in fact simply surface manifestations of a single underlying construct, then they should have the same origins, and they should have the same effects. So if two attributes turn out to be distinct in terms of causes and consequences, this would suggest that they are not surface manifestations of a single latent factor.

We have been employing this approach to gauge the relations between various pairs of strength-related attitude attributes. In this chapter, we describe two lines of work done thus far, the first examining the relation of attitude importance to the volume of attitude-relevant knowledge, and the second exploring the relation of importance to accessibility.

#### ATTITUDE IMPORTANCE AND KNOWLEDGE

##### *One Construct?*

The amount of importance that people attach to an attitude and the volume of knowledge they have stored in memory about it are two of the most widely studied strength-related attitude attributes. Past exploratory factor analyses have generally found these two attributes to load on a single factor. And in the literature on importance and knowledge, no evidence shows that a cause of importance is not a cause of knowledge, that a cause of knowledge is not a cause of importance, that an effect of importance is not an effect of knowledge, or that an effect of knowledge is not an effect of importance. All this is therefore consistent with the claim that these two attributes are manifestations of one single underlying construct.

Three causes of attitude importance documented thus far are (1) acknowledgment that the attitude object impinges on one's material self-interest, (2) identification with reference groups or individuals who attach importance to the attitude object or whose material interests are linked to the object, and (3) recognition of a link between the attitude and one's core values (Boninger, Krosnick, and Berent 1995). In addition, Roese and Olson (1994) suggested that attitude accessibility may be a cause of attitude importance, and Haddock, Rothman, and Schwarz (1996) and Haddock et al. (1999) suggested that people's perceptions of the accessibility of attitude-supportive and attitude-challenging information in memory may cause importance. Finally, Pelham's evidence (1991) indicates that attitude importance may be adjusted in order to promote a person's self-esteem. No evidence to date has tested whether any of these factors cause knowledge, so it is conceivable that these are all causes of knowledge as well (as the single latent factor perspective would suggest).

The primary origins of knowledge documented thus far are (1) direct experiences with an attitude object (Fazio and Zanna 1981) and (2) exposure and attention to information about the object provided by other people, through conversations or mass media (McGuire 1986; Roberts and MacCoby 1985). Knowledge about social and political issues is especially likely to be acquired through the latter route: exposure and attention to information about the attitude object conveyed by the news media (Clarke and

Fredin 1978; Perse 1990). To date, no studies have tested whether importance is enhanced by direct experience or exposure to information from informants; it is conceivable that these causal processes do indeed occur (again as the single latent factor perspective assumes).

Quantity of attitude-relevant knowledge has been shown to be associated with stronger consistency between attitudes and behavior, greater ability to encode new information about an object, reduced reliance on peripheral cues in evaluating persuasive messages, more extensive thinking about attitude-relevant information, greater sensitivity to the quality of arguments in evaluating a persuasive message, and greater resistance to attitude change (Biek, Wood, and Chaiken 1996; Davidson 1995; Wilson et al. 1989; Wood 1982; Wood and Kallgren 1988; Wood, Rhodes, and Biek 1995). In line with three of these findings, attitude importance has also been shown to be associated with greater attitude-behavior consistency (e.g., Budd 1986; Parker, Perry, and Gillespie 1974; Rokeach and Kliejunas 1972), more extensive thinking about attitude-relevant information (Berent and Krosnick 1993; Celsi and Olson 1988; Howard-Pitney, Borgida, and Omoto 1986), and greater resistance to attitude change (Fine 1957; Gorn 1975; Zuwerink and Devine 1996). However, the other documented correlates of knowledge have not yet been investigated with regard to importance, so it is conceivable that importance has these consequences as well. In addition, various documented effects of importance (e.g., the motivation to acquire information about the attitude object [Berent and Krosnick 1993]; consistency between attitudes and core values [Jackman 1977; Judd and Krosnick 1989]) have not yet been investigated with regard to knowledge, so it is conceivable that they follow from high knowledge as well.

##### *Distinct Effects?*

However, when considered less mechanically and more conceptually, it seems likely that the causes and effects of importance and knowledge will be different. Attitude importance is a subjective judgment—a person's sense of the concern, caring, and significance he or she attaches to an attitude. To attach great importance to an attitude is to care tremendously about it and to be deeply concerned about it. There is nothing subtle about attitude importance, particularly at its highest levels: people know very well when they are deeply concerned about an attitude, and they know just as well when they have no special concern about one.

In our view, attitude importance is consequential precisely because of its status as a belief: perceiving an attitude to be personally important leads people to use it in processing information, making decisions, and taking action. Consistent with this reasoning, attitude importance has been

shown to motivate people to seek attitude-relevant information (Berent and Krosnick 1993; Zaichkowsky 1985) and to think carefully about that information (Berent 1990). Importance also motivates people to use an attitude: more important attitudes have more impact on judgments of liking for other people (Byrne, London, and Griffitt 1968; Clore and Baldridge 1968; Granberg and Holmberg 1986; Krosnick 1988; McGraw, Lodge, and Stroh 1990), on voting behavior in elections (Krosnick 1988; Schuman and Presser 1981), and on trait inferences (Judd and Johnson 1981). Thus, importance appears primarily to be a motivator.

In contrast, knowledge is not in and of itself motivational—it is simply a store of information in memory. As such, its effects seem most likely to be ability based in character. Knowledge has been shown to enhance recall (e.g., Cooke et al. 1993; Fiske, Lau, and Smith 1990; McGraw and Pinney 1990; Schneider et al. 1993), improve comprehension (Eckhardt, Wood, and Jacobvitz 1991; Engle, Nations, and Cantor 1990), increase the speed of judgments (e.g., Fiske, Lau and Smith 1990; Paull and Glencross 1997), improve cue utilization in decision tasks (Paull and Glencross 1997), enable appropriate inferences (Pearson, Hansen, and Gordon 1979), facilitate the learning of new topic-relevant information (Hansen 1984; Kyllonen, Tirre, and Christal 1991; Willoughby et al. 1993), and enable the generation of effective counterarguments to a persuasive appeal (Wood 1982; Wood, Rhodes, and Biek 1995). Thus, although knowledge seems to enable people to perform various relevant cognitive tasks more effectively, there is no reason why it should, in and of itself, *motivate* people to engage in any behavior.

These characterizations suggest that importance and knowledge are likely to have distinct effects on thought and behavior. For example, importance, but not knowledge, may induce selective affiliation: people who care passionately about an issue may be motivated to associate with others who share their views on the issue. In contrast, people who simply happen to know a great deal about the issue may not be especially likely to use the issue as a criterion for deciding with whom to affiliate. On the other hand, knowledge, but not importance, may lead to better memory for relevant information: possessing a large network of information about a topic may enhance one's ability to integrate and store new attitude-congruent information, thereby facilitating retrieval later.

In addition, importance and knowledge may interact with one another. For example, having both the motivation to behave in accordance with one's attitude and the ability to identify and carry out the appropriate behavior may lead to greater attitude-behavior correspondence than either motivation or ability alone.

### *Distinct Causes?*

In addition to being distinct in terms of their consequences, importance and knowledge seem likely to be distinct in terms of their origins as well. As we outlined previously, knowledge seems to accumulate simply as the result of exposure to information about an object, either through direct behavioral experience with it or through indirect learning from other people. But simply being exposed to information is only likely to lead a person to attach importance to an attitude if that information makes a compelling case of a linkage between the object and a person's self-interest, reference groups or individuals, or values. Thus, knowledge acquisition is unlikely to have a uniform direct effect on importance.

Information acquisition sometimes occurs intentionally, because a person seeks out new knowledge. And people who attach great personal importance to an object are likely to be motivated to gather information about it. Thus, importance seems likely to be a cause of knowledge accumulation.

### TESTING THESE HYPOTHESES

Having laid out these hypotheses regarding distinctions between importance and knowledge in terms of their causes and effects, we turn now to reviewing the recent work of Visser, Krosnick, and Simmons (2002) to test them. These investigators began by replicating previous exploratory factor analyses. Using data collected from 159 undergraduate respondents, Visser, Krosnick, and Simmons factor analyzed strength-related attitude attributes for two separate attitudes (toward capital punishment and legalized abortion). Both sets of data revealed a similar latent factor structure to the one that has emerged in previous research: importance and knowledge loaded on a common factor, along with elaboration; certainty, extremity, and affective-cognitive consistency loaded together on a second factor. But then Visser, Krosnick, and Simmons proceeded to demonstrate that the causes and effects of these two constructs are anything but identical.

### ORIGINS OF IMPORTANCE AND KNOWLEDGE

To gauge the origins of attitude importance and knowledge regarding the issue of legalized abortion, ordinary least squares regressions were conducted predicting importance and knowledge with four potential antecedents: self-interest; the importance of the issue to reference groups and individuals; value-relevance; and news media use. Consistent with previous research (Boninger, Krosnick, and Berent 1995), self-interest, the importance of

the issue to reference groups and individuals, and value-relevance were all significant predictors of attitude importance. Media use, on the other hand, was unrelated to importance. Media use was a significant predictor of knowledge, however, as were self-interest and value-relevance. The importance of the issue to reference groups and individuals was not a significant predictor of knowledge.

These associations may reflect direct effects of each of the antecedents. That is, self-interest, perceptions of the links between an issue and reference groups or individuals, and value-relevance may have led directly to increases in attitude importance. Similarly, media use, self-interest, and value-relevance may have led directly to the accumulation of knowledge about legalized abortion. Alternatively, some of these associations may have been mediated by others.

For example, the impact of self-interest on knowledge may have been mediated by its impact on importance: recognizing that one's material interests are at stake in an issue may lead people to attach importance to an attitude, which in turn may motivate them to seek out relevant information about it (Berent and Krosnick 1993). If this is so, the relation between self-interest and knowledge may have been mediated by importance.

However, another causal account is possible as well. Perhaps recognizing that an attitude object impinges on a person's material interests directly inspires him or her to gather information about the attitude object. Having accumulated a great deal of such information, people may then come to decide that the attitude is important to them. Such a process could occur if people were motivated to rationalize why they invested the effort in information gathering, or if people infer importance based on how much knowledge they have about objects (e.g., "if I know this much about an object, then it must be personally important to me"). If this account is correct, the association between self-interest and importance would be mediated by knowledge.

When Visser, Krosnick, and Simmons tested these mediational hypotheses, clear evidence emerged: controlling for importance eliminated both the associations between self-interest and knowledge and between value-relevance and knowledge. This suggests that self-interest and value-relevance each increased the importance people attached to their attitudes, which in turn led them to accumulate attitude-relevant information.

However, controlling for knowledge did not alter the associations between self-interest and importance, between the views of significant others and importance, or between value-relevance and importance. This suggests that knowledge did not mediate any of these relations. Instead, increases in each led directly to increases in attitude importance.

Taken together, these results suggest the causal model presented in Figure 7.1, which Visser, Krosnick, and Simmons estimated using covariance

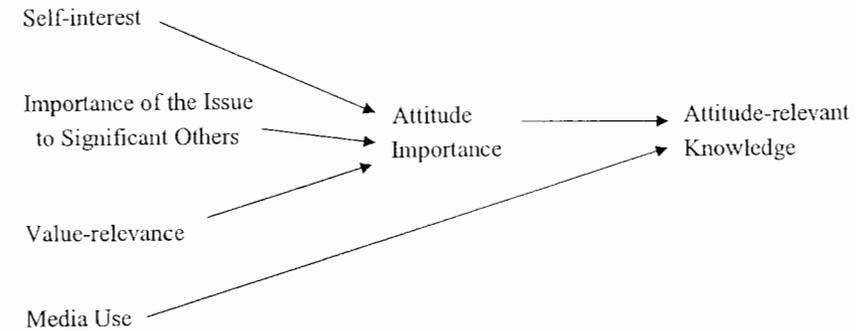


Figure 7.1 The causes of attitude importance and knowledge.

structure modeling techniques and found it fit the data quite well. Self-interest, the importance of the issue to significant others, and value-relevance each led to increased attitude importance, and increases in attitude importance led to increased knowledge about the issue. Knowledge increased as a function of media use, but media use had no impact on attitude importance. These results suggest that importance and knowledge spring from largely distinct sources.

#### CONSEQUENCES OF IMPORTANCE AND KNOWLEDGE

To the extent that importance and knowledge are manifestations of a single underlying construct, they should regulate the impact of attitudes on thought and behavior in the same ways. To test this possibility, Visser, Krosnick, and Simmons conducted a series of studies examining the effects of importance and knowledge on (1) selective information gathering, (2) attitude-expressive behavior, and (3) perceived social support for one's views.

##### *Information Gathering*

As we suggested earlier, people seem likely to be motivated to acquire information relevant to attitudes to which they attach importance, as Berent and Krosnick (1993) found. If we perceive an attitude to be important, we are indeed likely to selectively expose ourselves to information regarding that attitude object. On the other hand, knowledge, when characterized simply as a store of information in memory, seems unlikely to motivate such information gathering.

To test these hypotheses, undergraduate respondents were told that they would receive information about twelve different political candidates, each of whom they would be asked to evaluate. Respondents were told

that for each candidate, they could choose three out of six possible issues and would learn the candidate's positions on those issues. As expected, people who attached more importance to an issue requested candidates' positions on the issue significantly more often. However, for both issues, possessing more knowledge had no impact on respondents' information selection, nor was the interaction between importance and knowledge significant in either case. Attaching importance to an issue apparently motivated respondents to seek information that enabled them to use their attitudes when evaluating candidates, but possessing knowledge did not.

#### *Attitude-Expressive Behavior*

In a similar manner, the independence of importance and knowledge can be tested by analyzing whether they both regulate attitude-behavior consistency to the same degree. Performing an attitude-expressive behavior requires sufficient motivation to do so, but it also requires sufficient knowledge to plan appropriate behavioral strategies and to execute them effectively. If importance and knowledge provide such motivation and ability, respectively, we might expect them both to regulate the impact of attitudes on behavior. This hypothesis was tested in two studies.

In a study of abortion activism, undergraduates reported whether they had ever performed seven specific behaviors expressing their attitudes toward legalized abortion (e.g., contacting a public official to express their views on the issue, giving money to an organization concerned with the issue). Similar measures were included in a telephone survey of a representative national sample of American adults, focusing on the issue of global warming.

As predicted, importance and knowledge were associated with increases in attitude-expressive behavior in both studies. Respondents who attached more importance to their attitudes performed more behaviors. Likewise, respondents who possessed more attitude-relevant knowledge performed more behaviors. Furthermore, a significant interaction between importance and knowledge showed that the combination of high importance and high knowledge was associated with a particularly pronounced surge in attitude-expressive behavior. This is consistent with the notion that importance conferred the motivation to behave in attitude-expressive ways and that knowledge conferred the ability to do so, both of which were necessary for maximal attitude-congruent behavior.

#### *Social Support*

The false consensus effect offers another opportunity to explore differential effects of importance and knowledge. People are often influenced by their own attitudes toward an object when estimating others' attitudes

toward the object, leading to exaggeration of the degree of social support for one's views. A number of explanations for this "false consensus" effect have been posited, some of which have implications for the moderating roles that importance and knowledge might play.

One explanation holds that the false consensus effect is the result of the relative salience of one's own attitude when estimating the views of others (e.g., Marks and Miller 1985). People may use their own attitudes as a starting point from which to adjust their final estimates of others' attitudes. But because such adjustments are rarely sufficient (Tversky and Kahneman 1974), final estimates may be unduly influenced by a person's own attitude. Because important attitudes are brought to mind frequently, they are more accessible and more salient in memory than unimportant attitudes (e.g., Krosnick 1989). As a result, important attitudes may be especially likely to serve as powerful anchors when estimating others' views on a topic, producing a positive association between attitude importance and the magnitude of the false consensus effect.

If this account of the false consensus effect is correct, possessing much knowledge about an attitude object seems unlikely to exacerbate the phenomenon. In fact, the more knowledge one has about an object, perhaps the less salient one's attitude toward it becomes, because activation of the attitude in consciousness may be accompanied by activation of this other relevant information as well. Therefore, knowledge may be unrelated to the magnitude of the false consensus effect and may even be negatively related to it.

Other theoretical accounts of the false consensus effect have also been proposed, including motivations such as self-esteem maintenance, need for social support, and social interaction goals (Marks and Miller 1987). For example, perceiving that one's attitudes are widely shared by other people is likely to enhance a person's sense that his or her views are correct, which may contribute to positive self-esteem. Thus, to the extent that people are especially concerned about the correctness of attitudes that are personally important, they may be more strongly motivated to perceive widespread support for their more important attitudes. In contrast, possessing a great deal of knowledge about an attitude may itself contribute to an increased sense of the correctness of one's views, perhaps reducing the motivational drive to look to social support for the attitude as evidence of its correctness. This perspective, too, suggests that importance may be positively associated with the magnitude of the false consensus effect, whereas knowledge may be unrelated or negatively related.

Finally, the motivation to affiliate with others with whom one agrees, particularly with regard to important attitudes, may further contribute to a positive association between importance and perceived social support. In general, people prefer to affiliate with others with whom they agree in

terms of their attitudes; this preference leads people to be surrounded by like-minded others (Byrne, London, and Griffitt 1968). And doing so is especially likely in terms of important attitudes. In contrast, the abilities associated with holding a large store of knowledge seem irrelevant to attitude-based friend selection, so more knowledge may not be associated with having more like-minded friends. If people generalize from the biased sample of people with whom they interact when estimating the proportion of others who share their views (Marks and Miller 1987), importance (but not knowledge) may regulate the magnitude of the false consensus effect.

To explore these hypotheses, undergraduate respondents were asked to estimate the proportion of others who shared their views on the issue of capital punishment. They also rated the degree to which they perceived themselves to be in the minority in their views on this issue. On both measures, significant effects of attitude importance were evident: people who attached more importance to their attitudes generated higher estimates of social support for their views, and they perceived themselves to be in the minority on this issue significantly less often. Knowledge, on the other hand, had no impact on either measure, nor did knowledge and importance interact.

This investigation of the causes of the false consensus effect therefore bolsters the notion that importance and knowledge should not be conceptualized as manifestations of a single construct. The fact that importance moderated the false consensus effect while knowledge did not suggests that the two strength-related attributes are—at least to some degree—independent of each other. If the single-construct conceptualization were correct, either, both, or neither of the two attributes would have moderated the effect.

#### CHANGES IN IMPORTANCE AND KNOWLEDGE OVER TIME

If importance and knowledge are surface manifestations of a single underlying construct, they must rise and fall in parallel over time in the course of daily life, as the underlying construct they reflect rises and falls. If people come to attach more importance to an attitude object over the course of weeks or months, they must also manifest comparable increases in the amount of knowledge they possess about it. If importance and knowledge are discrete constructs, on the other hand, they may rise and fall independently. People may come to attach more importance to an attitude but not gain any new knowledge about it. They may also gain information about an object but not perceive the attitude to be any more important to them. Importance and knowledge may even change in opposite directions: as

people learn more about an attitude object, for example, they may come to attach less importance to it.

To explore this possibility, Visser, Krosnick, and Simmons took advantage of a unique real-world opportunity provided by the White House Conference on Global Climate Change, held on October 6, 1997, drawing national attention and sparking a vigorous national debate about global warming. During the subsequent months, hundreds of stories on this issue appeared on television, in newspapers, on the radio, and in news magazines. Advertisements paid for by industry organizations and other advocacy groups further expanded the national discussion.

The impact of this flood of information was explored by conducting telephone interviews with two nationally representative samples of American adults. The first sample was interviewed just before media attention to global warming surged, and the second sample was interviewed several months later, after the media had turned their attention elsewhere.

The deluge of media attention led to a marginally significant increase in the personal importance the American public attached to this issue. Meditational analyses indicated that the public debate increased Americans' perceptions of links between global warming and their core values, leading them to attach greater importance to the issue. Interestingly, the public debate did not alter the amount of knowledge American citizens said they possessed about global warming. Thus, importance and knowledge exhibited different trajectories over time, suggesting that they reflect not one but two underlying constructs that rise and fall independently.

#### CONCLUSIONS

The effects of importance and knowledge documented in this research are summarized in Figure 7.2. Importance and knowledge were both related to the degree of attitude impact, but these relations were not identical. Importance was a cause of selective exposure to attitude-relevant information and of the false consensus effect, whereas knowledge volume influenced neither of these outcomes. And importance and knowledge interacted to inspire attitude-expressive behavior. These findings therefore resonate with the evidence summarized in Figure 7.1 that importance and knowledge have different causes.

The portrait that emerges from this research stands in contrast to the image of these two strength-related attitude features suggested by exploratory factor analyses. These two constructs are clearly positively associated. But rather than being manifestations of a single underlying construct, importance and knowledge seem better described as discrete constructs possessing

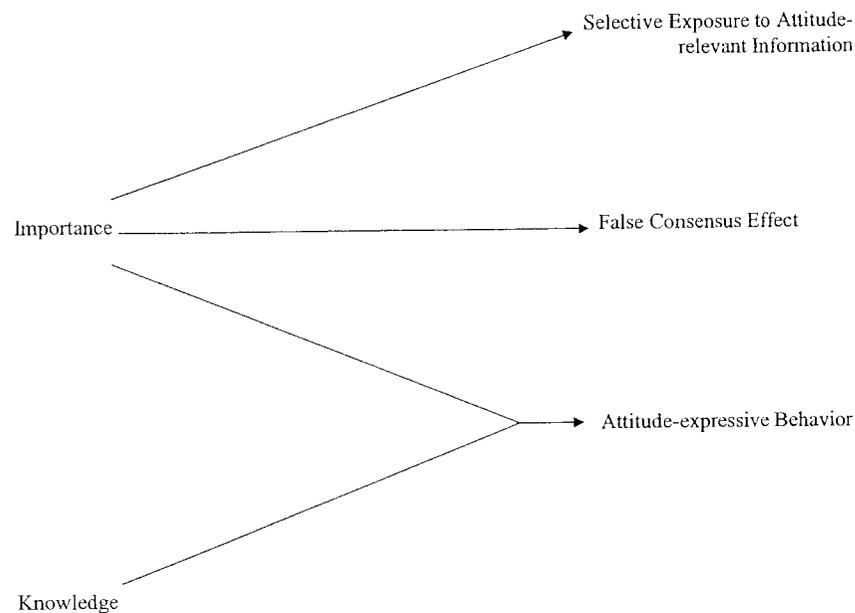


Figure 7.2 The effects of importance and knowledge.

distinct psychological properties, arising from different origins, producing disparate outcomes, and operating via separate causal processes. The findings reported here are consistent with our suspicion that attitude importance motivates people to protect and use their attitudes, whereas knowledge amounts to a stock of information that confers the ability to use an attitude successfully.

#### ATTITUDE IMPORTANCE AND ACCESSIBILITY

##### Theory

The next set of evidence we review focuses on the relation of attitude importance to attitude accessibility. Past research has shown that importance and accessibility are positively correlated (e.g., Krosnick 1989). One possible reason for this relation is causal impact of one on another, a notion consistent with some existing research. For example, thinking about an attitude object has been shown to increase attitude extremity (Millar and Tesser 1986; Sadler and Tesser 1973; Tesser and Conlee 1973; Tesser and Cowan 1975), and attaching importance to an object inspires thinking about relevant information (Berent and Krosnick 1993). Roese and Olson (1994) and Bizer and Krosnick (2001) explored the possibility of mutual impact with regard to importance and accessibility, and we review their findings here.

The approach taken in their research presumes that if two strength-related attributes do indeed reflect a single underlying construct, then this can be documented by studying changes in them induced by experimental manipulation or real-world events. After observing or causing a change in one attribute, researchers can explore whether other strength-related attributes changed in parallel. According to the single-construct view, if an increase in one attribute is observed, *all other* manifestations of the construct should also increase. But if these attributes are independent, they may not necessarily change in parallel. And even if parallel changes do occur, they may be due to an effect of one variable on the other, which would also challenge the single-construct view.

With regard to importance and accessibility, two contradictory causal hypotheses have been advanced about their reciprocal impact. Krosnick (1989) suggested that attitude importance is likely to be a cause of attitude accessibility. Once a person decides to attach personal significance to an attitude, he or she is likely to seek out information relevant to it and to think deeply about that information. As a result, the attitude is likely to become more accessible over time. Thus, the effect of importance on accessibility would be mediated by selective exposure and selective elaboration.

As we mentioned earlier, Roese and Olson (1994) asserted the opposite. These investigators suggested that people's internal cues regarding the personal importance of their attitudes may often be weak and ambiguous, forcing people to make inferences through self-perception. These investigators suggested one useful cue in such situations may be the speed with which one's attitude comes to mind. If an attitude comes to mind quickly, people may infer that it must be important to them, whereas if an attitude comes to mind slowly, people may infer that it must not be very important to them.

To test these latter hypotheses, Roese and Olson (1994) manipulated the accessibility of attitudes and then measured the importance of those attitudes. Specifically, these investigators induced some people to express some attitudes repeatedly while not expressing other attitudes at all. Consistent with previous research (e.g., Fazio et al. 1982), this manipulation increased the accessibility of the repeatedly expressed attitudes. Roese and Olson also found that the manipulation increased the degree of personal importance people said they attached to those attitudes. The fact that importance and accessibility both increased as a result of repeated expression is consistent with the notion that both attributes are simple derivatives of one single latent construct.

Roese and Olson attempted to test more directly the notion that attitude accessibility caused attitude importance reports. They reasoned that if attitude importance judgments are in fact derived from attitude accessibility, then accessibility should have mediated the impact of their repeated

expression manipulation on importance reports. That is, repeated expression should have caused increased accessibility, which in turn caused increased importance ratings.

However, the partial correlations that Roese and Olson estimated to conduct their critical mediational analyses were accidentally not computed properly (Roese, personal communication, 1995). The experimental design entailed computing repeated-measures within-subjects associations of the manipulation with importance and accessibility across attitude objects, so the partial correlation analysis needed to be computed using within-subjects repeated-measures as well. But accidentally, only between-subject differences were controlled for (Roese, personal communication, 1995). Consequently, the reported mediational analyses do not shed light on the causal effects accessibility and importance may have on one another. All we can infer from this study is that repeated expression can cause increases in both accessibility and importance.

Bizer and Krosnick (2001) replicated Roese and Olson's (1994) study twice in order to compute the proper partial correlations. Bizer and Krosnick's (2001) third study manipulated importance in an effort to assess whether it might cause accessibility. Finally, their fourth investigation examined naturally occurring changes in importance and accessibility via a panel survey to see whether one variable could predict subsequent changes in the other.

In the first three of these studies, Bizer and Krosnick observed the impact of a change in one attribute on the other. If both of these attributes reflect a single underlying construct, then any manipulation that influences one should influence the other. But if the two attributes represent distinct constructs, then a cause of one will not necessarily influence the other. Finally, if both are influenced simultaneously by a manipulation, then the impact of the manipulation on one attribute may be mediated by the other. Consequently, these studies offered opportunities to explore the latent structure of these attributes in a novel way.

#### *Experimental Manipulation of Accessibility*

In Studies 1 and 2, accessibility was manipulated by inducing repeated attitude expression. The effect of the manipulation on accessibility and importance could then be assessed, as could mediation. Respondents first reported their attitudes on four target issues on written questionnaires. For each respondent, two attitudes were expressed five times each, while the other two attitudes were expressed only once. Respondents then reported their attitudes on each issue and the personal importance of each attitude on a computer. To measure attitude accessibility, the computer recorded the time it took respondents to report that they supported or op-

posed a policy on a dichotomous measure (Study 1) or on a five-point rating scale (Study 2). Attitude importance was measured on a nine-point scale with only the endpoints verbally labeled in the first study; importance was measured more reliably (on a five-point scale with all points verbally labeled) in the second study.

The results of these two studies were consistent. First, repeatedly expressed attitudes were reported significantly more quickly than were attitudes not repeatedly expressed in both studies. However, repeated expression did not increase importance ratings in either experiment. Because importance did not increase, there was no need to examine whether importance mediated the effect of the manipulation on accessibility in either study. The fact that accessibility increased without a parallel increase in importance suggests that both attributes are not simply surface manifestations of the same underlying construct, challenging the singular-construct models of attitude strength.

#### *Experimental Manipulation of Importance*

Bizer and Krosnick (2001) next conducted a study looking for an effect of importance on accessibility. To do so, they drew on the findings of Boninger, Krosnick, and Berent (1995), which showed that attitude importance is caused by self-interest. Bizer and Krosnick therefore thought that manipulating respondents' self-interest in an issue would alter the importance they attached to it, so they could see whether accessibility changes as a result as well.

During this study, respondents read news articles from a "computerized bulletin board service." Two articles discussed policies that were to be instituted at their own university (e.g., "Ohio State to give all students free lunches"), whereas the other two had been rejected at a faraway university (e.g., "University of Southern Wales will not give all students free lunches"). This was the manipulation of self-interest, with respondents presumably having more interest in the former issues than in the latter.

Because the impact of importance on accessibility would presumably be mediated by selective exposure or selective elaboration, respondents were given the opportunity to be selective in either their exposure to or their thinking about the articles. Respondents were shown the headlines of the articles and were able to choose which of the corresponding articles they wished to read. Bizer and Krosnick expected that people would choose to read or think about the articles relevant to their self-interest more than to the articles irrelevant to their self-interest.

Respondents then reported their attitudes on the four target issues; the computer measured response latencies of these reports. Finally, respondents completed a paper-and-pencil questionnaire that assessed their perceptions

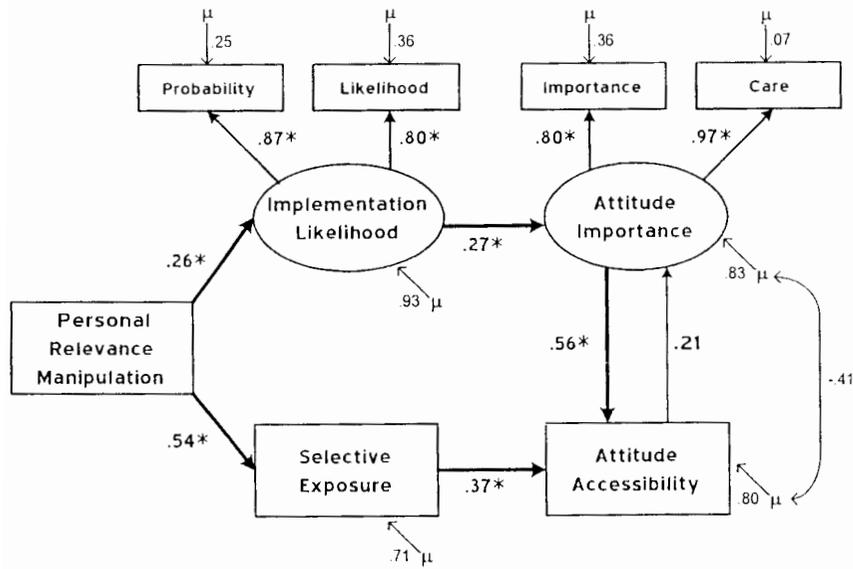


Figure 7.3 Documenting the impact of a manipulation of personal relevance on perceived likelihood of policy implementation, attitude importance, and accessibility. \* $p < .05$ .

of the likelihood that each of the four policies would be enacted at their university and the personal importance of each issue to them.

As expected, policies that were said to be personally relevant to respondents were indeed perceived to be more likely to be implemented at the respondents' own university than the remaining policies. Furthermore, attitudes on personally relevant issues were more personally important and reported more quickly than were attitudes on nonrelevant issues.

To assess the impact of importance and accessibility on each other, Bizer and Krosnick specified the causal model shown in Figure 7.3. This model allowed for the possibility that the manipulation of personal relevance may have enhanced the perceived likelihood of implementation and inspired selective exposure (by leading people to be more interested in reading articles on topics that might affect them). In turn, perceived likelihood of implementation was allowed to affect attitude importance (on the assumption that greater perceived likelihood of implementation would enhance perceptions of self-interest, which would in turn increase importance), while selective exposure was allowed to affect attitude accessibility (on the assumption that simply reading an article on a topic makes relevant knowledge in memory more accessible).

This model fit the data excellently. Enhancing the personal relevance of a policy did have the expected, positive direct effect on selective exposure

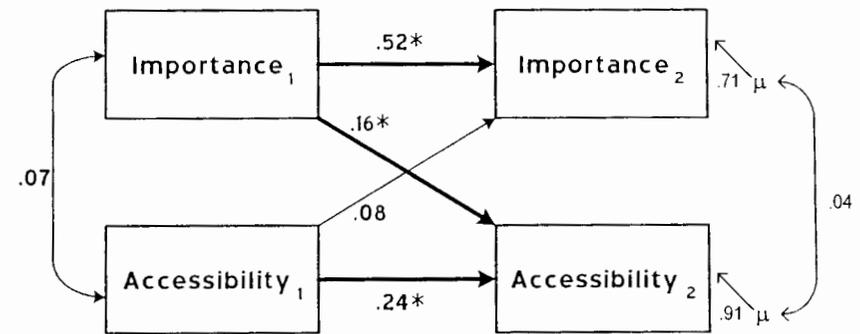


Figure 7.4 Documenting the impact of attitude importance and accessibility on one another. \* $p < .05$ .

and on perceptions of implementation likelihood. Perceived likelihood had a significant and positive effect on importance, and selective exposure had a significant and positive effect on accessibility. In contrast, the effect of accessibility on importance was not significant. Thus, there was no hint that people inferred the importance of their attitudes from the speed with which they came to mind.

#### TRACKING THE CAUSES OF NATURALLY OCCURRING CHANGES

In a final study, Bizer and Krosnick (2001) analyzed the data from the telephone survey study of public attitudes on global warming we described earlier. During each interview, respondents were asked to report how important the issue of global warming was to them personally and to report their attitudes toward global warming. Using a technique developed by Bassili (1996b), interviewers marked the length of time between the completion of asking the attitude question and the beginning of respondents' answers, which was treated as a measure of attitude accessibility.

The national debate about global warming that occurred between the two interviews offered Americans the opportunity to talk, think, and learn about the issue. During this time, people could have been selective in their exposure to and processing of this information based on their preexisting levels of the personal importance of the issue to them. Therefore, high initial levels of importance may have instigated increases in the accessibility of relevant attitudes.

To test this idea, Bizer and Krosnick estimated the parameters of the causal model in Figure 7.4, which fit the data perfectly, because the model is just-identified. Attitude importance manifested a moderately high level of stability over time, and accessibility manifested a somewhat lower but

nonetheless reliable amount of stability over time. Furthermore, initial attitude importance predicted subsequent changes in accessibility in the expected direction. That is, increased initial levels of personal importance were associated with increases in accessibility over time. This result is consistent with the notion that importance is a cause of accessibility. Initial levels of attitude accessibility did not predict subsequent changes in importance.

Taken together, Bizer and Krosnick's first three studies challenge the claim that people simply infer attitude importance from attitude accessibility, presuming that an object must be important to them if their attitude toward it came to mind quickly. In Study 1, a manipulation caused increases in attitude accessibility, but no changes in importance were observed. In Study 2, a manipulation caused increases in attitude accessibility and yielded a marginally significant *decrease* in importance. And in Study 3, increased accessibility did not cause increases in importance. All this suggests that attitude accessibility does not subsume attitude importance.

These findings have clear implications regarding the structure of strength-related attitude attributes, complementing the existing literature that is dominated by factor analytic studies. If importance and accessibility were both simply surface manifestations of a single underlying factor, they would always change in parallel with one another. But in Studies 1 and 2, Bizer and Krosnick found that manipulations that increased one strength-related dimension did not always increase the other dimension, challenging the single latent construct hypothesis. Furthermore, Study 3 suggested that one variable (i.e., importance) mediated a manipulation's effect on another (i.e., accessibility). And in Study 4, importance guided subsequent changes in accessibility, but not vice versa. All this is inconsistent with the notion that both variables are manifestations of the same construct, inconsistent with the claim that accessibility subsumes importance.

## CONCLUSION

Throughout much of this century, psychologists conceptualized intelligence as one general dimension of ability along which people vary, as instantiated, for example, by Spearman's "*g*-factor" (1904, 1927). Not only is this notion intuitively plausible and appealing because of its simplicity, but various sorts of empirical evidence supported it as well. Most notably, factor analyses of ability measures pointed to a great deal of shared variance among these indicators, presumably attributable to a single underlying construct. Evidence consistent with this view dates back as early as Spearman's (1904, 1927) demonstrations that aptitudes as diverse as French, math, and music all loaded on *g* (see Jensen 1998).

Over the years following Spearman's argument for a *g* factor, a range of evidence has been uncovered challenging this relatively simple claim, leading other researchers to argue for the existence of a few general intelligence factors. For example, Cattell (1971) asserted that fluid ability ( $g_f$ ) and crystallized ability ( $g_c$ ) should be distinguished from one another. Likewise, Willis and Schaie (1986) argued for the existence of four principal factors: fluid reasoning, crystallized knowledge, memory span, and perceptual speed.

In recent years, however, it has become clear that even these intermediate-range theories of the structure of intelligence oversimplify matters (e.g., Gardner 1983; Sternberg 1984; Schank 1986; Snow 1986). This research, in various ways, shows that the conceptualizations of intelligence as one single factor or a few general factors is flawed: intelligence is too complex to be thought of in such simplistic terms. A wide range of techniques have been developed to assess a wide array of abilities, and nearly all of these many abilities demonstrate some empirical independence from the others. For example, one of the most widely used intelligence assessment tests, the Wechsler Adult Intelligence Scale, yields a four-factor intelligence score, providing intelligence scores on the dimensions of verbal comprehension, perceptual organization, freedom from distractibility, and processing speed (cf. Kaufman 1994).

As we have seen, the notion of attitude strength has had a similar history in the social sciences. As with intelligence, it is attractive to consider attitude strength as a global construct. Such a conceptualization is parsimonious, easy to understand, and even somewhat intuitive. However, the research we have reviewed here suggests that such a conceptualization compromises validity, a price that is not worth paying.

In their chapter in the *Handbook of Social Psychology* titled "Attitude Structure and Function," Eagly and Chaiken (1998) reviewed the existing literature on the latent structure of strength-related attitude properties and noted that factor analytic studies had suggested a distinction between cognitive and affective dimensions of attitude strength. But these authors noted as well that "although several findings have . . . suggested the utility of distinguishing cognitive from affective aspects of attitude strength, subsequent work may well yield other useful distinctions beyond, or within, these two broad dimensions" (291). Eagly and Chaiken called upon researchers to "go beyond the question of strength's dimensionality to the question of whether such distinctions matter. If all aspects of attitude strength produced the very same effects, the theoretical importance of distinguishing types of strength would be hollow" (291).

The research reviewed in this chapter was done in the spirit of Eagly and Chaiken's recommendation, confirming their expectations. We have indeed

uncovered further distinctions among strength-related dimensions than just the cognitive-affective one, and we have seen that different attributes have different origins and different effects. Although a common factors model would certainly be more parsimonious, the truth appears to be that strength-related properties are interrelated but distinct.

In the simplest evidence, correlations among the attributes, although typically significantly different from zero, are not so strong as to suggest that all are surface manifestations of the same latent construct (Krosnick and Abelson 1992). Confirmatory factor analyses suggest uniformly that pairs of these attributes do not reflect a single underlying factor. Manipulations that increased one attribute did not necessarily lead to increases in other attributes. And extensive research comparing importance with attitude-relevant knowledge and accessibility showed that treating these two constructs as isomorphic is ill-advised. Thus, though it is certainly more parsimonious to lump strength-related attitude attributes into one or several higher-order strength factors, it seems best to consider these attributes as related, yet not simple outgrowths of hypothetical higher-order factors.

The work we have described helps to fill in gaps in the portraits of various strength-related attributes. For example, attitude importance appears to be, at its core, a motivation to protect and use one's attitude, whereas knowledge constitutes a reservoir of ability, facilitating behavioral strategizing. We have also seen some illustrations of what a construct is *not*. For example, knowledge seems not to attenuate such cognitive biases as the false consensus effect. Lastly, we have seen evidence regarding the mechanisms by which effects occur. For example, self-interest and value-relevance affect knowledge only by inspiring increased importance. We hope that cataloging these sorts of findings along with others will eventually lead to a full and rich account of the origins and consequences of attitude strength.

Future research on this topic might borrow two of the approaches employed here and apply them anew. One design is that used by Bizer and Krosnick (2001): implement an experimental manipulation narrowly designed to alter just one strength-related attitude (e.g., importance), and observe the consequences that follow. Analogous manipulations can presumably be implemented to alter knowledge, certainty, and other features and obscure their consequences. Other studies might employ the technique used by Visser, Krosnick, and Simmons, whereby multiple dimensions are measured, and multivariate analysis is used to isolate their independent effects and interactions. When many studies employing these and other approaches document the full range of causes and effects of various attributes, we will be in a strong position to build a general, integrative theory.

## NOTES

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