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## ATTITUDE IMPORTANCE AND ATTITUDE-RELEVANT KNOWLEDGE

### Motivator and Enabler<sup>1</sup>

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Public health officials have increasingly come to recognize that many of the leading causes of death in the United States can be traced to the everyday behavioral choices that people make. In fact, an investigation published in the *Journal of the American Medical Association* in 2004 concluded that approximately half of the deaths in the U.S. can be attributed to a small number of preventable behaviors, such as smoking, inactivity, poor diet, and alcohol consumption (Mokdad, Marks, Stroup, & Gerberding, 2004). Consequently, public health advocates have increasingly turned to the social and behavioral sciences for insights into behavior modification.

Changing behavior sometimes requires changes in relevant attitudes. But in many cases, people already possess positive attitudes toward healthy behaviors and negative attitudes toward unhealthy behaviors, yet those health-promoting attitudes do not inspire appropriate health behaviors (see, e.g., Fisher & Fisher, 1992). The challenge for public health advocates, then, is to strengthen existing attitudes so that they motivate and guide behavior, shape the way new information is processed, resist change in the face of challenges, and persist over time (Krosnick & Petty, 1995).

Public health officials' efforts to strengthen attitudes have usually focused on increasing people's knowledge about various threats to their health, a strategy that appears eminently sensible in light of evidence from the attitude strength literature. A large store of attitude-supportive knowledge is a well-established correlate of attitude strength. More attitude-relevant knowledge is associated with greater consistency between attitudes and behavior, greater resistance to attitude change, and greater attitude stability (e.g., Biek, Wood, & Chaiken, 1996; Davidson, 1995; Wilson, Dunn, Kraft, & Lisle, 1989; Wood, 1982; Wood

& Kallgren, 1988; Wood, Kallgren, & Preisler, 1985; Wood, Rhodes, & Biek, 1995). And yet interventions that have successfully increased the public's attitude-relevant knowledge have often failed to bring about increases in attitude-behavior correspondence.

The case of AIDS in the United States provides an excellent illustration. Initially, public health officials assumed that if they could educate people about the disease and how to avoid it, the appropriate behaviors would follow (Helweg-Larsen & Collins, 1997). So the government launched a massive public education campaign to increase people's knowledge about the disease (for review, see Fisher & Fisher, 1992). This effort was tremendously successful—virtually all U.S. adults soon knew what AIDS is, had a basic understanding of how it is transmitted, and knew what steps can be taken to avoid exposure (DiClemente, Forrest, Mickler, & Principal Site Investigators, 1990; Rogers, Singer, & Imperio, 1993). Yet such educational campaigns have most often yielded no reliable effects on behavior (e.g., Mann, Tarantola, & Netter, 1992). Knowledge, in and of itself, seems not to have been sufficient to instigate attitude-congruent behavior.

Similar large-scale efforts to increase the public's knowledge about the health consequences of obesity have been initiated during the last decades. For example, the U.S. Department of Health and Human Services launched a webpage to be a "source of credible, accurate information to help Americans choose to live healthier lives," arguing that "accurate scientific information on nutrition and dietary guidance is critical to the public's ability to make the right choices in the effort to curb obesity and other food related diseases" ([www.healthierus.gov](http://www.healthierus.gov)). Unfortunately, however, as with AIDS awareness, such information campaigns seem not to be having their intended effect—data from the National Center for Health Statistics indicate that the proportion of U.S. adults who are overweight or obese has risen steadily, reaching a startling 66% in the early 2000s (Hedley et al., 2004).

Why have these well-funded, apparently sound interventions had so little success in enhancing the correspondence between people's attitudes toward healthy living and their relevant behaviors? We propose that these failures are due in part to insufficient attention, not only among public health officials but also in the attitude literature more generally, to the basic processes through which various strength-related attitude features exert their impact. More specifically, we propose that some strength-related features exert their influence by conferring particular abilities—the ability, for example, to effectively plan and execute attitude-congruent behaviors. In our view, attitude-relevant knowledge is the quintessential example of this type of strength-related feature. Other features exert their influence through motivational processes, providing the impetus, for example, to initiate, persist in, and successfully carry out attitude-congruent behavior. We nominate personal importance as an exemplar of this

type of strength-related attitude feature. Furthermore, we propose that both of these elements are essential for promoting attitude-congruent behavior. Without adequate motivation, increases in ability may have modest impact on behavior. Similarly, if relevant abilities are lacking, even dramatic increases in motivation may be unlikely to lead to attitude-appropriate behavior. Our claim, therefore, is that both ability and motivation—conferred, for example, by the co-presence of attitude-relevant knowledge and personal importance—may be necessary for maximal attitude-behavior correspondence.

## Overview

This proposition rests on the assumption that various strength-related attitude features, including attitude importance and attitude-relevant knowledge, are distinct psychological constructs rather than redundant reflections of a common underlying construct. We begin, therefore, by briefly reviewing evidence suggesting that strength-related attitude features are indeed multidimensional (e.g., Bizer & Krosnick, 2001; Visser, Bizer, & Krosnick, 2006; Visser & Krosnick, 1998; Visser, Krosnick, & Simmons, 2003). We then extend this work by building the case that not only are various strength-related attitude features distinct, but also they may have effects on thought and behavior through fundamentally different psychological mechanisms. Specifically, we advocate distinguishing between strength-related features that operate by conferring abilities and those that operate through motivational processes, and we present four studies examining attitude-relevant knowledge and personal importance to illustrate the utility of this distinction. We then consider the implications of this distinction for understanding the disparate array of findings that have emerged in the attitude strength literature. Finally, we return to the issue with which we began and consider how this new conceptualization of attitude strength may account for the disappointing results of many public health information campaigns and may provide the bases for theoretically derived interventions that are more likely to be effective.

## Attitude Strength

Psychologists have long recognized that some attitudes are durable and consequential, whereas others are not. The term “attitude strength” is often used to capture this distinction. More specifically, strong attitudes are those that: (1) resist change; (2) persist over time; (3) guide information processing; and (4) motivate and direct behavior (Krosnick & Petty, 1995). Over the last few decades, roughly a dozen attitude features have been identified that are associated with the strength of an attitude. Among these are: *knowledge*, the volume of information people have about the object (e.g., Wood, 1982); *attitude importance*, the amount of psychological significance people attach to an attitude object (e.g., Krosnick,

1988a, 1988b); *certainty*, the degree to which people are sure of their attitudes (e.g., Budd, 1986); *elaboration*, the amount of thinking people have done about the attitude object (e.g., Petty & Cacioppo, 1986); *extremity*, how far from the midpoint the attitude is on a negative-positive continuum (e.g., Osgood, Suci, & Tannenbaum, 1957); *accessibility*, the speed and ease with which the attitude comes to mind (e.g., Fazio, 1990); *ambivalence*, how conflicted people feel about the attitude object (e.g., Kaplan, 1972); *intensity*, the strength of the emotional reaction provoked by the attitude object (Cantril, 1944, 1946; Stouffer et al., 1950); and a handful of others. In separate programs of research, each of these features has been shown to correlate with one or more of the four defining properties of attitude strength (see Petty & Krosnick, 1995).

### ***Relations Among Strength-Related Attitude Features***

Because these various features all relate in similar ways to the defining properties of strong attitudes, many researchers have assumed that they are largely overlapping reflections of a small number of underlying latent constructs. And in a number of studies, exploratory factor analyses or related techniques have yielded evidence consistent with the notion that the various strength-related attitude features do in fact reflect a small number of underlying psychological constructs (for a review, see Visser, Bizer, & Krosnick, 2006). On the basis of these findings, many investigators have combined measures of different strength-related features into composite indices of attitude strength (e.g., Bassili, 1996; Bassili & Roy, 1998; Eagly et al., 2000; Hodson, Maio, & Esses, 2001; Holland et al., 2001; Pomerantz et al., 1995; Prislin, 1996; Theodorakis, 1994; Thompson & Zanna, 1995; Verplanken, 1989, 1991). Of course, if various strength-related features reflect a common underlying construct, distinguishing among them is unnecessary—interventions that bring about increases in one of the features will necessarily bring about changes in the others.

### ***Distinct Constructs?***

The results of the exploratory factor analyses are quite surprising in light of what seem to be sharp differences in the conceptual nature of the various strength-related features. Take the case of attitude importance and attitude-relevant knowledge. Nineteen published exploratory factor analyses included measures of both features, and they loaded on the same factor in 14 (74%) of these studies (Visser et al., 2006). And yet attaching a great deal of personal importance to an attitude seems to be quite different from simply possessing a large store of knowledge about the attitude object. To attach great importance to an attitude is to care tremendously about it and to be deeply concerned about it. In contrast, knowledge is simply a cache of information stored in memory. Differences of

this sort in the psychological nature of the various strength-related attitude features have led some scholars to question the wisdom of treating them as interchangeable indices of attitude strength.

And indeed, investigations using confirmatory rather than exploratory factor analyses have posed a strong challenge to the notion that various strength-related attitude features reflect a few underlying constructs (e.g. Krosnick et al., 1993; Krosnick, Jarvis, Strathman, & Petty, 1994; Lavine, Huff, Wagner, & Sweeney, 1998; Visser, 1998). These studies have consistently found that although a few pairs of features are quite strongly correlated, most are weakly or not at all correlated. And explicit tests of the notion that a common underlying construct could account for covariation among pairs or sets of strength-related features have consistently contradicted this view. Specifically, models that treat the various strength-related features as distinct (albeit correlated) constructs routinely yield better fit to data than models that treat pairs or sets of the features as reflections of a single underlying construct.

Corroborating these findings, investigations have isolated pairs of strength-related attitude features and documented divergences in their antecedents and consequences, reinforcing the notion that the features are distinct psychological constructs. For example, Bizer and Krosnick (2001) explored the potential overlap between attitude accessibility and attitude importance. Some scholars have suggested that accessibility and importance are redundant, the latter being simply a vague subjective judgment derived from the former. This would require that accessibility and importance share common antecedents—factors that increase accessibility must necessarily increase importance as well. In fact, in two studies, Bizer and Krosnick (2001) demonstrated that repeated attitude expression increases the accessibility of people's attitudes but does not increase the importance they attach to these attitudes. They also found that material self-interest in an issue caused importance to increase but did not affect accessibility, whereas exposure to issue-relevant information increased accessibility but not importance.

Visser, Krosnick, and Simmons (2003) explored the ways in which attitude importance and attitude certainty regulated the cognitive and behavioral consequences of attitudes. Although importance and certainty have loaded together on the same factor in many previous exploratory factor analyses, Visser et al. (2003) found many divergences in consequences. For example, people who attached more importance to their policy attitudes were more likely to try to convince other people how to vote, whereas people who held their policy attitudes with more certainty were no more likely to do so. The amount of importance people attached to their policy attitudes was unrelated to the degree to which they found one of their non-preferred Presidential candidates acceptable, but people higher in attitude certainty were much less likely to find any of their non-preferred candidates acceptable. And whereas importance and certainty were both related to pre-election intentions to vote, only importance predicted whether people actually voted.

### *Distinct Processes*

Findings of this sort reinforce the notion that various strength-related features are separate constructs with distinct consequences for thought and behavior. In so doing, these findings raise interesting new questions about the processes by which these constructs regulate cognition and action. Although these various strength-related attributes may all lead to many of the same cognitive and behavioral consequences, they may do so through different psychological processes. In our view, this represents the next challenge for attitude researchers: clarifying precisely how the various strength-related attitude features exert their influence. A fruitful first step toward that end may therefore be to explore the distinction between motivation and ability.

### **Motivation and Ability**

The performance of virtually any deliberate behavior requires sufficient levels of both ability and motivation. In the public health domain, for example, the simple act of using of a condom to prevent exposure to a sexually transmitted disease requires a range of specific abilities. At a minimum, an individual must recognize the link between condom use and disease prevention, know how to go about procuring a condom and have the means to do so, be able to anticipate situations where a condom might be needed and have one on hand, be able to successfully negotiate condom use with one's partner, and be able to use a condom effectively. But of course, the presence of each of these abilities does not ensure that condom use will occur. Individuals must also be sufficiently motivated to engage in this health-promoting behavior. Acute fear of contracting a sexually transmitted disease, for example, may provide a powerful impetus to use condoms during all sexual encounters. Motives of this sort exert an energizing influence, instigating, directing, and sustaining actions aimed at achieving currently salient goals.

As this illustration makes clear, the combination of motivation and ability is critical to the performance of deliberate behaviors. The absence of any one of a number of relevant abilities renders condom use unlikely, even among people who are highly motivated to protect themselves against disease. Similarly, individuals who lack the motivation to protect themselves are unlikely to use condoms, even if they possess all of the relevant abilities for doing so. Interventions that increase one but not both of these factors, then, are likely to have modest effects on behavior.

### ***Enablers of Attitude-Congruent Behavior***

The claim that knowledge operates by conferring various abilities is hardly controversial. A wealth of existing evidence attests to this notion. For example, prior knowledge on a particular topic has been shown to enhance people's ability to store new information on that topic and retrieve the information later (e.g., Cooke, Atlas, Lane, & Berger, 1993; Fiske, Lau, & Smith, 1990; Hambrick, 2003; McGraw & Pinney, 1990; Recht & Leslie, 1988; Schneider, Gruber, Gold, & Opwis, 1993). Prior knowledge also improves comprehension of new information, enabling people to extract the central elements of a passage and draw appropriate inferences (Eckhardt, Wood, & Jacobvitz, 1991; Recht & Leslie, 1988). And knowledge increases the speed of relevant judgments (e.g., Fiske et al., 1990; Paull & Glencross, 1997) and improves cue utilization in decision tasks (Paull & Glencross, 1997).

With regard to attitudes in particular, knowledge has been shown to enhance recall of the arguments contained in a persuasive appeal (Wood, Rhodes, & Biek, 1995). Knowledge also improves people's ability to critically evaluate the cogency of persuasive messages (Ratneshwar & Chaiken, 1991; Wood, Kallgren, & Preisler, 1985), and it enables them to generate effective counter-arguments to a persuasive appeal, presumably yielding resistance to attitude change (Wood, 1982; Wood, Rhodes, & Biek, 1995).

Evidence also indicates that knowledge equips people with the requisite information to plan and execute effective behavioral strategies, enabling them to efficiently engage in attitude-expressive behaviors. For example, political scientists have demonstrated people are much more likely to perform behaviors expressive of their political views if they have gained procedural knowledge for doing so through previous participation in non-political organizations (e.g., Ayala, 2000; Brady, Verba, & Schlozman, 1995; Verba, Schlozman, & Brady, 1995). Knowledge about politics enables people to make political decisions that are in line with their attitudes and core values (e.g., Delli Carpini & Keeter, 1996). Knowledge about environmental conservation has been shown to enable people with pro-environmental attitudes to successfully plan and execute attitude-congruent behaviors (e.g., Meinhold & Malkus, 2005). And knowledge about child development enables young mothers to engage in stimulating play with their infants (e.g., Fry, 1985). Taken together, a large and diverse body of evidence suggests that knowledge confers cognitive and behavioral abilities.

### ***Motivators of Attitude-Congruent Behavior***

Other strength-related attitude features seem likely to enhance attitude-behavior correspondence not by increasing people's ability to act in accordance with their attitudes but by boosting their motivation to do so. And attitude importance may

operate in precisely this way. Attitude importance is defined as the subjective sense of concern, caring, and significance that an individual attaches to an attitude (e.g., Krosnick, 1988a). To attach great personal importance to an attitude is to care passionately 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 invested in an attitude, and they know just as well when they have no special investment in one. In short, attitude importance is a belief (see Fishbein & Ajzen, 1975) linking an attitude to an attribute (i.e., high, moderate, or low psychological significance or investment).

Perceiving an attitude to be personally important may motivate people in four ways: (1) to nurture the attitude by bolstering it with relevant information; (2) to protect the attitude from change; (3) to use the attitude in processing information and making decisions; and (4) to express the attitude to others. These outcomes are most likely to be apparent when people are in consequential situations that demand they plan out their courses of thought and action carefully. This could include situations ranging from choosing a spouse to choosing which presidential candidate to support to deciding whether to experiment with cigarette smoking. In this sense, attitude importance is most likely to be helpful for understanding situations that entail what Fazio (1990) called “deliberative processing.” Importance may also have automatic motivational effects on information processing and behavior as well, outside of awareness, but these effects are likely to evolve over time as the result of deliberate choices that people make based upon how much personal importance they attach to an attitude (see Boninger, Krosnick, Berent, & Fabrigar, 1995).

Thus, to attach personal importance to an attitude is to commit oneself to think about the object, to gather information about it, to use that information as well as one’s attitude in making relevant decisions, and to design one’s actions in accord with the attitude. In this sense, attaching personal importance to an attitude represents a substantial motivational commitment, in some ways analogous to making a long-term commitment to an interpersonal relationship. Consequently, we suspect, people are not likely to attach personal importance to an attitude lightly, in response to relatively trivial events. Just as people are “misers” with regard to cognitive processing (e.g., Fiske & Taylor, 1991), they are probably also miserly with their attachments of psychological significance and value to attitudes: Only clear and compelling reasons seem likely to motivate such a psychological investment. Because of this, high levels of importance are unlikely to emerge unnoticed over time. Rather, deep and lasting concern is likely to be instigated by significant events of which people are well aware.

In particular, past research points to three general classes of factors that inspire attitude importance (Boninger, Krosnick, & Berent, 1995). First, an attitude may become important to individuals who perceive it to be linked to their material self-interest. Self-interest based importance develops when one perceives an

attitude to be instrumental to one's tangible rights, privileges, or lifestyle (or what Johnson & Eagly, 1989, referred to as relevant "outcomes"). That is, attitudes that are related to the attainment of desired material goods or behavioral opportunities are likely to be perceived as relevant to an individual's self-interest.

A second basis for an attitude to become personally important is social identification with reference groups or reference individuals. This may occur in a number of ways. First, identification with a social group may lead an attitude to become important to a person if the group's rights or privileges are perceived to be at stake (Key, 1961; Modigliani & Gamson, 1979). Strong identification with a group that consensually considers an attitude to be important can also serve as an impetus for importance, independent of whether tangible rewards or punishments for the group are in question (Sherif & Hovland, 1961). Similarly, attitude importance may develop as a result of identification with reference individuals whose interests are perceived to be at stake or who are perceived to care deeply about a particular attitude.

Third, an attitude may become personally important to an individual if he or she comes to view the object as relevant to his or her basic social or personal values (which are abstract beliefs "about how [people] ought or ought not to behave, or about some end-state of existence worth or not worth attaining" Rokeach, 1968, p. 124). The stronger the perceived linkage between an attitude object and an individual's values and the more important the values, the more important the attitude is likely to be to him or her (Campbell, Converse, Miller, & Stokes, 1960; Johnson & Eagly, 1989; Katz, 1960; Rosenberg, 1956). All three of these classes of causes of importance seem motivational in character, and we believe importance itself is motivational as well.

Some published evidence appears to be consistent with this assertion. For example, higher attitude importance appears to inspire people to devote careful thought to attitude-relevant information (Berent, 1990; Berent & Krosnick, 1993; Celsi & Olson, 1988; Holbrook, Berent, Krosnick, Visser, & Bonninger, 2005; Howard-Pitney, Borgida, & Omoto, 1986). More important attitudes are also more consequential in determining people's liking or disliking of other people (Byrne, London, & Griffitt, 1968; Clore & Baldrige, 1968; Granberg & Holmberg, 1986; Krosnick, 1988b; McGraw, Lodge, & Stroh, 1990), perhaps reflecting increased motivation to form attitude-congruent judgments of others. And higher attitude importance is associated with more frequent performance of some behaviors: seeking attitude-relevant information (Berent & Krosnick, 1993; Holbrook et al., 2005; Zaichkowsky, 1985) and expressing one's attitudes to others via letter-writing or telephone calls to newspapers or congressional representatives (Krosnick & Telhami, 1995; Schuman & Presser, 1981). All of these correlations could reflect the fact that importance is motivational in character, inspiring people to think and act in these ways. But no direct evidence yet exists confirming this motivational quality of importance.

## The Current Research

The goals of the current research are therefore two-fold. First, we set out to directly test the notion that attitude importance operates through motivational channels, inspiring people to use and protect their cherished attitudes. These tests employed a diverse set of paradigms in an effort to provide a broad base of empirical evidence on this point.

Second, we explored the possibility that knowledge, too, may operate through motivational channels. As our review of the literature illustrated, it is fairly well established that knowledge confers a host of cognitive and behavioral abilities. And we see no strong theoretical basis for believing that sheer knowledge volume will inspire action. To date, however, no research has directly explored the possibility that having a large cache of knowledge stored in memory motivates particular cognitive and behavioral outcomes. Evidence of this sort would challenge the utility of distinguishing between ability-based and motivationally based determinants of attitude strength.

To pursue these two goals, we examined the relation of attitude importance with a range of outcomes known to reflect motivational processes. And simultaneously, we examined the relation of attitude-relevant knowledge with the same outcomes, permitting us to explore potential dissociations between importance and knowledge. We predicted that importance would be related to these various motivational outcomes, whereas knowledge would not.

Our first study used a modified version of the Wason selection task (Wason, 1966, 1968) to test the hypothesis that people who attach more importance to their attitudes are more motivated to disconfirm counter-attitudinal assertions, whereas people who simply possess a great deal of attitude-relevant information have no particular motivation to do so. Our second study explored the relations of importance and knowledge with one of the hallmarks of motivation: the experience of negative affect when one's goals are blocked by impediments in the environment. Study 3 expanded the scope of our investigation, examining the relations of importance and knowledge with a broad set of outcomes reflecting motivational processes and explored the joint impact of motivation and ability on attitude-expressive behavior, explicitly testing whether the co-presence of importance and knowledge leads to a pronounced surge of attitude-congruent action. Finally, our fourth study replicated this latter finding with a representative sample of U.S. adults.

### Study 1

The Wason selection task was originally designed to explore confirmatory biases in people's reasoning processes. In this study, we used a modified version of the task to assess people's motivation to disconfirm assertions that challenge their attitudes.

### ***The Original Wason Selection Task***

In the original version of the Wason task, participants are presented with four cards, each with a letter printed on one side and a number printed on the other side. The cards are arrayed in front of participants so they can see one side of each card. Participants are asked to use the cards to test a conditional assertion presented to them, such as “If a card has a vowel on one side, it has an even number on the other side.” The participants’ task is to select those cards (and only those cards) that must be turned over (revealing the number or letter on the reverse side) to determine whether or not the assertion is true. For example, the cards in front of a participant may display an “A,” a “T,” a “4,” and a “9.” To correctly test the assertion above, participants must select “A” (to determine if it has an even number on the reverse side) and “9” (to make sure that it does not have a vowel on the reverse side).

Although the task appears quite simple, participants do surprisingly poorly at it. In most studies, only about 20% of participants select the correct cards. The most common mistakes (using the current example as an illustration) involve selecting the “4” and failing to select the “9.” Wason argued that these errors reflect a confirmatory bias, or the tendency to seek evidence that confirms the hypothesis one has set out to test and neglect information that could disconfirm the hypothesis (e.g., Wason & Johnson-Laird, 1972). Specifically, participants often select the “4” because it could yield evidence that would seem to confirm the assertion (if it reveals a vowel on the reverse side). In fact, however, the card is entirely nondiagnostic regarding the validity of the assertion: the discovery of a vowel on the reverse side would not prove that the assertion is true (because the presence of one card with a vowel on one side and an even number on the other side does not prove that *all* cards with vowels on one side have even numbers on the reverse), nor would the discovery of a consonant prove that the assertion is false (because the assertion does not require that *only* cards with vowels on one side have even numbers on the reverse). In addition, a tendency to neglect information that could disconfirm the hypothesis renders participants unlikely to select the “9” card, despite the fact that this card *must* not have a vowel on the reverse for the assertion to be true.

### ***Modifications to the Wason Selection Task***

Follow-up studies have reinforced the notion that poor performance on the Wason selection task is due to a confirmatory bias. For example, a number of studies have demonstrated that performance on the task can be improved by explicitly instructing participants to adopt a falsification strategy when testing the hypothesis (e.g., Fiedler & Hertel, 1994; Griggs, 1984; Valentine, 1985; Yachanin, 1986; Yachanin & Tweney, 1982). When they are motivated to

disconfirm the hypothesis, participants are significantly less likely to neglect the card that could enable them to do so.

Dawson, Gilovich, and Regan (2002) demonstrated that such motivation can spring from internal as well as external sources. That is, even without being explicitly instructed to do so, participants often spontaneously strive to falsify hypotheses that they find personally disagreeable. For example, Dawson et al. (2002) found that participants performed substantially better on the task when the hypothesis to be tested implied that they were at risk of an early death, a hypothesis that participants were clearly motivated to refute. Similarly, participants performed substantially better when the hypothesis to be tested involved a negative stereotype about their own group that participants were motivated to falsify.

In the current study, we adapted the procedures developed by Dawson et al. (2002) to test the hypothesis that attitude importance is an inherently motivational construct, inspiring people to defend their attitudes. Specifically, participants performed the Wason selection task to test a counter-attitudinal assertion. We expected that participants who attached importance to the target attitude would be especially motivated to refute the assertion, and this motivation would cause them to perform better on the task than participants who attached less importance to the attitude. We did not expect one's volume of attitude-relevant knowledge to determine performance on the task because the cognitive abilities that it confers are irrelevant to participants' performance on this particular task.

## **Method**

### *Overview*

Participants completed a brief questionnaire that measured their attitudes toward capital punishment and several other policies. They also reported how important each issue was to them personally and how knowledgeable they were on each issue. In an ostensibly unrelated study, participants then completed a modified version of the Wason selection task that required them to test a counter-attitudinal assertion.

### *Participants*

Forty-eight undergraduate students at the University of Chicago participated in this study in exchange for extra credit in a psychology course or for payment. These participants were selected from a larger set of undergraduates on the basis of their responses to items in the initial questionnaire regarding capital punishment: only people who expressed opposition to capital punishment were

selected for inclusion, rendering the assertion to be tested counter-attitudinal for all participants.

### *Measures*

#### ATTITUDES

Embedded in a set of items about other political issues, participants reported their attitudes toward the target issue of capital punishment on a fully labeled 7-point bipolar scale.

#### IMPORTANCE

Participants indicated how important the issue of capital punishment was to them personally on a fully labeled 5-point unipolar scale. Responses were coded to range from 0 to 1 (with higher numbers reflecting more importance).

#### KNOWLEDGE

Participants indicated how knowledgeable they were about capital punishment on a fully labeled 5-point unipolar scale. Responses were coded to range from 0 to 1 (with higher numbers reflecting more knowledge).

#### WASON SELECTION TASK

Participants were told that a separate study would explore how individuals solve problems. They were told that they would be asked to test one of several different statements about social issues, and that the evidence they would use to test these statements would be presented on double-sided cards. Participants were told that each card represented one observation (e.g., one state in the U.S., or one country in the world, or one high school in the U.S.), and that each side of the card would provide information about that observation. They were told that they would first view one side of each of four cards and then select the two cards that they would need to turn over in order to test the statement.<sup>2</sup> To make sure that they understood the instructions, participants were then presented with an example of the Wason selection task and were guided through a step-by-step explanation of what the task involved.

Participants then proceeded to the card selection task. They were presented with the following statement to test: "All states that allow capital punishment have lower murder rates than the national average." They were presented with four cards, which ostensibly contained information about particular states. The cards were labeled "State A," "State B," "State C," and "State D," and the front

of each card contained information about whether or not that particular state allows the death penalty, whereas the back of each card contained information about whether the state's murder rate is *lower* than the national average or *higher* than the national average. The cards were arrayed such that two of the cards presented information about the states' death penalty laws (one state allowed capital punishment and one state did not) and two of the cards presented information about the states' murder rates (one state had a murder rate above the national average, and the other had a murder rate below the national average). Participants indicated which two of the four cards they would need to turn over to test the assertion. Overall task performance was coded 1 for participants who selected the correct cards and 0 for participants who failed to do so.

## **Results**

### *Relation Between Importance and Knowledge*

Importance and knowledge were moderately positively associated,  $r = .48$ ,  $N = 48$ ,  $p < .001$ .

### *Overall Task Performance*

Consistent with past findings, participants performed quite poorly on the task: only 31% of participants selected the correct cards. And as in past studies, the most common mistakes involved selecting the card indicating that the state had a lower murder rate than the national average (51% of participants selected this card) and failing to select the card indicating that the state had a higher-than-average murder rate (55% of participants failed to select this card).

### *Attitude Importance, Attitude-Relevant Knowledge, and Task Performance*

We conducted a series of logistic regressions using attitude importance and attitude-relevant knowledge to predict whether participants chose the correct cards. As predicted, importance was positively associated with task performance,  $b = 2.75$ ,  $SE = 1.14$ ,  $p < .02$ . Fifty-three percent of people who said capital punishment was extremely or very important to them selected the correct cards, whereas only 19% of the remaining participants did so. And as expected, the biggest performance gap involved selection of the card that could potentially disconfirm the counter-attitudinal assertion—whereas 37% of the low importance participants correctly selected this card, nearly 60% of the high importance participants did so.

Also as predicted, knowledge was unrelated to task performance, suggesting that participants high in knowledge were not more motivated than those low in knowledge to disconfirm the counter-attitudinal assertion,  $b = -1.77$ ,  $SE = 1.15$ , n.s. The proportion of participants who selected the correct cards was virtually identical among participants who said that they were extremely or highly knowledgeable about capital punishment and those who said they were not at all, slightly, or quite knowledgeable about this issue: 31% and 32%, respectively. No significant differences emerged in selection rates for any of the four cards.

Knowledge and importance did not interact to predict performance,  $b = -.19$ ,  $SE = .41$ , n.s., indicating that the relation between importance and task performance did not vary across levels of knowledge.

### **Discussion**

A great deal of evidence attests to the pervasiveness of confirmation bias, the tendency to seek out evidence that would confirm a hypothesis being tested and to neglect evidence that may disconfirm it (for a review, see Klayman & Ha, 1987). This tendency causes people to perform poorly on the Wason selection task, which requires the pursuit of disconfirming evidence. But performance is improved when people are intrinsically motivated to disconfirm the hypothesis to be tested, such as when the hypothesis runs counter to one's preferred beliefs or attitudes (Dawson et al., 2002). This internal motivation appears to override the confirmation bias, leading people to actively seek out evidence that would discredit the hypothesis under consideration.

Study 1's results indicate that people are not always motivated to disconfirm counter-attitudinal assertions. Instead, this motivation depends on the degree to which an attitude is deemed personally important. The participants all opposed capital punishment, so the assertion to be tested was counter-attitudinal for all of them. But only when the attitude was personally important were participants motivated to actively seek out evidence that would debunk a counter-attitudinal assertion. In contrast, participants who attached no special significance to their attitudes seem not to have been particularly motivated to defend them. Presented with an opportunity to test a counter-attitudinal assertion, people low in attitude importance exhibited the typical confirmatory bias.

Possessing a large store of information about an attitude object seems not to have engendered the motivation to defend the attitude: people who were highly knowledgeable about capital punishment were no more likely than those who possessed relatively little knowledge on this issue to seek out evidence that could disconfirm the counter-attitudinal assertion. These findings are consistent with the notion that importance and knowledge operate through distinct psychological processes—whereas importance appears to arouse the motivation to protect an attitude, knowledge seems not to do so.

## Study 2

One of the hallmarks of striving is the experience of negative affect when one's goals are blocked by impediments in the environment. If importance motivates people to use and protect their attitudes, they should experience negative affect when these goals are thwarted. For example, people who attach importance to a particular political attitude should feel upset if the government enacts laws that are contrary to their position. In contrast, if attitude-relevant knowledge confers abilities but does not ignite any particular motives, people who simply possess a great deal of information about an issue should be less likely to experience a negative affective reaction of this sort. We tested these ideas in our second study.

### *Method*

#### *Participants*

Fifty-six undergraduates enrolled in a psychology course participated in this study in partial fulfillment of a course requirement.

#### *Measures*

##### ATTITUDES

Embedded in a set of items about other political issues, participants reported their attitudes toward abortion being legal on a fully labeled 7-point bipolar scale and three 7-point bipolar semantic differential scales. Responses were coded to range from 0 to 1, with higher numbers reflecting more favorable attitudes, and were averaged together (Cronbach's  $\alpha = .95$ ).

##### IMPORTANCE

Participants indicated how important the issue of legalized abortion was to them personally, how much they personally cared about the issue, and how much they cared about this issue relative to other issues on fully labeled 5-point unipolar scales. Responses were coded to range from 0 to 1 (with higher numbers reflecting greater importance) and averaged (Cronbach's  $\alpha = .89$ ).

##### KNOWLEDGE

Participants indicated how knowledgeable they were about the issue of abortion, how much information they had on this issue, and the extent to which they considered themselves experts on this issue on fully labeled 5-point unipolar

scales. Responses were coded to range from 0 to 1 (with higher numbers reflecting greater knowledge) and averaged (Cronbach's alpha = .82).

#### AFFECTIVE REACTIONS TO COUNTER-ATTITUDINAL LAWS

Participants reported the degree to which they would be upset if the government enacted a new law on the issue of abortion that was contradictory to their own views on the issue using a fully labeled five point unipolar scale. Responses were coded to range from 0 to 1 (with higher numbers reflecting greater distress).

#### AFFECTIVE REACTIONS TO COUNTER-ATTITUDINAL SPEECH

Participants were asked to imagine that they were listening to a speech on the issue of abortion containing a number of very compelling arguments. They were asked to imagine how they would feel if they found it difficult to refute these counter-attitudinal arguments. Participants were asked to report the degree to which they would experience each of a series of negative emotional states (anxious, frustrated, angry, uncomfortable, upset) on a fully labeled 5-point unipolar scale. Responses were coded to range from 0 to 1 (with higher numbers reflecting more intense experiences of each emotion) and averaged (Cronbach's alpha = .82).

#### MOTIVATION TO OBTAIN ADDITIONAL INFORMATION

Participants indicated how interested they were in obtaining additional information on each of a series of contemporary social and political issues (e.g., legalized abortion, the Arab–Israeli conflict, global warming, legalization of marijuana) using a fully labeled 5-point unipolar scale. Responses were coded to range from 0 to 1 (with higher numbers reflecting greater interest).

## **Results**

### *Relation Between Importance and Knowledge*

As in Study 1, importance and knowledge were moderately positively associated,  $r = .55$ ,  $N = 56$ ,  $p < .001$ .

### *Affective Reactions to Counter-Attitudinal Law*

We conducted a series of ordinary least squares regressions predicting participants' affective reactions to the enactment of a law that runs contrary to their own views on abortion. As expected, people who attached more importance to the

issue of abortion reported greater levels of distress,  $b = .56$ ,  $SE = .15$ ,  $p = .001$ .<sup>3</sup> In contrast, knowledge explained no variance in negative affect,  $b = .01$ ,  $SE = .16$ , n.s. Importance and knowledge did not interact to predict distress,  $b = -.20$ ,  $SE = .66$ , n.s.

### *Affective Reactions to Counter-Attitudinal Speech*

As expected, people who attached greater importance to the issue of abortion anticipated more negative affect when they encountered a compelling counter-attitudinal speech that they found difficult to refute,  $b = .33$ ,  $SE = .13$ ,  $p < .02$ . Knowledge volume was unrelated to negative affect,  $b = -.14$ ,  $SE = .14$ , n.s. Once again, importance and knowledge did not interact to predict negative affect,  $b = -.60$ ,  $SE = .56$ , n.s.

### *Motivation to Obtain Additional Information*

As expected, importance was a significant predictor of participants' motivation to gain additional information on this topic,  $b = .67$ ,  $SE = .19$ ,  $p = .001$ , whereas knowledge was unrelated to this motivation, and  $b = .02$ ,  $SE = .21$ , n.s.<sup>4</sup> Importance and knowledge did not interact to predict this motivation,  $b = -.57$ ,  $SE = .86$ , n.s.

## **Discussion**

Reinforcing the results of Study 1, people who attached a great deal of importance to the issue of abortion reported that they would be very upset if the government enacted a law that contradicted their position on this issue, that they would experience a range of negative emotions if they encountered a counter-attitudinal speech that they found difficult to dispute, and that they were highly motivated to learn more about the issue of legalized abortion. Each of these findings suggests that attaching importance to an attitude motivates people to express, defend, and bolster their position. In contrast, more knowledgeable people were no more likely to exhibit this motivation. These findings are consistent with the notion that importance and knowledge operate through distinct psychological mechanisms.

## **Study 3**

In Study 3, we expanded the scope of our investigation in two ways. First, we tested some of the hypotheses explored in Study 1 using different measures. Second, we assessed the degree to which importance and knowledge predict several new strength-related outcomes. And third, we introduced a gap of several weeks between the measurement of attitude importance and knowledge and the collection of several of the outcome measures.

### ***Information Gathering***

In Study 2, we examined a meta-attitudinal measure of interest in attitude-relevant information. Here, we examined the same phenomenon, but using an operative measure of effort to gather attitude-relevant information for use in a subsequent judgment instead. When given access to a diverse array of information, we expected that people who attached more importance to their attitudes would be motivated to selectively gather information that would enable them to make attitude-congruent judgments in an upcoming task. And we expected that possessing a large store of attitude-congruent information would be unrelated to this sort of selective information seeking.

### ***Attitude-Expressive Behavior***

Second, we tested the hypothesis that the performance of attitude-expressive behavior may be facilitated by the co-presence of ability and motivation. We expected both importance and knowledge to predict the frequency of attitude-expressive behavior, but we also anticipated that attitude-expressive behavior would be especially frequent among people who attach importance to an issue *and* possess a large cache of issue-relevant knowledge.

### ***Resistance to Attitude Change***

To explore whether importance and knowledge confer resistance to attitude change, we employed an experimental paradigm developed by Lord, Ross, and Lepper (1979). In this procedure, participants are shown descriptions of a set of scientific studies on a controversial political issue, some of which claim to support the efficacy of a policy and others of which refute it. As a result, the counter-attitudinal findings cause people's attitudes to become more moderate (see Miller, McHoskey, Bane, & Dowd, 1993). Empirical evidence contradicting people's own views is apparently effective at inducing attitude change in this context.

Previous studies have shown that more important attitudes change less in response to a persuasive message (e.g., Fine, 1957; Gorn, 1975), presumably because importance motivates people to defend their attitudes. So we expected that attitude change to be more prevalent among people who attached less importance to their attitudes. We posited that knowledge would enable people to identify flaws in the attitude-challenging studies, but would also enable them to recognize compelling aspects of those studies. These tendencies might cancel each other out, leaving no net effect of knowledge on real change. So we were uncertain about how knowledge volume might moderate attitude change.

### ***Perceived attitude change***

When asked to resport the impact of the empirical evidence on their attitude, participants in Lord et al.'s (1979) study claimed that those attitudes had become more extreme in response to the mixed evidence. This presumably occurred because the conflicting empirical evidence was threatening to people, motivating them to minimize or dismiss its impact on their views. In doing so, people apparently overcorrected, coming to see themselves as even more staunchly committed to their original views.

Based on the results of our Study 2, we expected that people who attached more importance to their attitudes would find the attitude-challenging evidence more distressing and would therefore be especially motivated to defend and protect their attitudes. When these people were asked about the impact of the empirical evidence on their own views, we expected them to be especially likely to overcorrect, reporting particularly strong attitude polarization. Knowledge would not be helpful in critiquing this evidence, because Lord, Ross, and Lepper's (1979) procedure entailed providing participants' with explicit criticisms of each study and rebuttals of those criticisms. So we did not expect knowledge to moderate perceived attitude change.

### ***Temporal Delay***

We introduced a three-week delay between the time when attitude importance and knowledge were measured and the time when three of the four dependent measures were collected. This delay was intended to reduce the likelihood that the heightened salience of participants' attitudes on the target issues induced by the lengthy process of completing the battery of attitude-related measures during the first session would influence the measures collected during the second session. The delay also minimized the likelihood that rationalization of the importance and knowledge ratings could account for any observed relations of these measures with the dependent measures. And because importance and knowledge were measured three weeks before participants were given the opportunity to selectively gather information about the issues, an observed relation between attitude importance and selective information gathering cannot plausibly be attributed to the impact of information gathering on the attitude importance reports.

## ***Method***

### ***Participants***

Undergraduates enrolled in an introductory psychology course participated in this study in partial fulfillment of a course requirement. Participants visited the

laboratory on two occasions separated by three weeks. One hundred fifty-nine students participated in the first session, and 138 returned for the second.

### *Procedure and Measures*

In the first session, participants completed a questionnaire that measured their attitudes on two target issues, abortion and capital punishment, as well as attitude importance, knowledge volume, and frequency of attitude-expressive behaviors. During the second session, participants completed tasks that enabled us to assess efforts to gather attitude-relevant information and to assess actual and perceived attitude change in response to conflicting empirical evidence. Each construct was assessed with multiple questions of differing formats and scale lengths. Responses to all questions were coded to range from 0 to 1 (with higher numbers reflecting higher levels of each construct), and responses to the constituent items were averaged to yield composite indices of each construct.

#### ATTITUDES

Attitudes on each issue were assessed via five bipolar rating scales. These scales were of differing length (ranging from seven to eleven scale points) and were differentially labeled (for one scale, all scale points were verbally labeled and for four scales, only the endpoints were labeled; Cronbach's  $\alpha = .95$  and  $.93$  for abortion and capital punishment, respectively).

#### IMPORTANCE

Participants reported how important each issue was to them personally, how much they personally cared about the issue, and how important they considered the issue compared to other issues on unipolar scales of differing length (ranging from five to eleven scale points) that were differentially labeled (for one scale, all scale points were verbally labeled and for the remaining scales, only the endpoints were labeled; Cronbach's  $\alpha = .85$  and  $.83$  for abortion and capital punishment, respectively).

#### KNOWLEDGE

Participants indicated how knowledgeable they were on each issue, how much information they had on the issues, and the extent to which they considered themselves experts on each issue on unipolar scales of differing length (ranging from five to eleven scale points) that were differentially labeled (for one scale, all scale points were verbally labeled and for the remaining scales, only the endpoints were labeled; Cronbach's  $\alpha = .77$  and  $.79$  for abortion and capital punishment, respectively).

#### SELECTIVE INFORMATION-GATHERING

During the second session, we assessed participants' motivation to use their attitudes in a subsequent judgment using a procedure developed by Holbrook et al. (2005). Participants were told that they would receive information about 12 different political candidates and would be asked to evaluate each one. Participants were told that for each candidate, they could choose to learn about his or her position on three of six political issues. The six available issues differed across candidates, requiring participants to consider each candidate individually and choose three issues from the six that were available for that particular candidate. The issue of abortion was available for six of the 12 candidates, and the issue of capital punishment was available for a different set of six candidates. Thus, the number of times participants requested a candidate's position on legalized abortion and capital punishment could be used as an index of participants' drive to use their attitudes on these issues to evaluate the candidates.

#### ATTITUDE-EXPRESSIVE BEHAVIOR

During the first session, participants reported whether they had ever performed seven specific behaviors expressing their attitudes toward legalized abortion (e.g., contacting a public official about the issue, giving money to an organization concerned with the issue, wearing a button or t-shirt indicating their views on the issue). Participants also reported their overall level of involvement in activities related to the issue of legalized abortion on an 11-point unipolar scale with verbally labeled endpoints.

#### SELECTIVE JUDGMENT

During the second session, participants engaged in a task designed to assess their reactions to a set of balanced and self-critical information on abortion. Following Lord, Ross, and Lepper's (1979) procedures, participants evaluated two scientific studies, one that yielded evidence of negative psychological consequences for women who obtained an abortion, and the other offering evidence of positive psychological consequences. Each study's description outlined its methodology, findings (including a graphic presentation of the data), criticisms from other researchers, and a rebuttal of the criticism. The order of presentation of the two studies (negative vs. positive consequences) was randomly counterbalanced across participants. The methodologies of the two studies were also counterbalanced, so that each methodology suggested negative consequences for approximately half of the participants and positive consequences for the other half of the participants.

After reading about each study, participants summarized its conclusions and evaluated how well conducted the study was, and how convincing it was. In each case, participants made these ratings on bipolar scales ranging from -8 to +8 with endpoints labeled “very poorly conducted”/“very well-conducted” and “completely unconvincing”/“completely convincing.” These measures were highly correlated for each study (correlations ranging from .74 to .85) and were combined to create indices of participants’ evaluations of each study. An index of selective judgment was computed by subtracting the perceived convincingness of the studies reporting negative consequences of abortion from the perceived convincingness of the studies reporting positive consequences.

#### ACTUAL AND PERCEIVED ATTITUDE CHANGE

After they had read about all of the studies, participants reported their attitudes toward legalized abortion on the same rating scales they had used during the first session. Attitude change was assessed by comparing the two sets of attitudes. Also, following Lord et al.’s (1979) procedure, participants reported their perceptions of how their attitudes toward abortion had changed, if at all, since the beginning of the study (on a 17-point bipolar rating scale, ranging from “much more opposed” to “much more in favor”).

### Results

#### *Relation Between Importance and Knowledge*

The correlations between importance and knowledge were comparable to those observed in Studies 1 and 2:  $r = .46, p < .01$  and  $r = .57, p < .01$  for abortion and capital punishment, respectively.

#### *Selective Information Gathering*

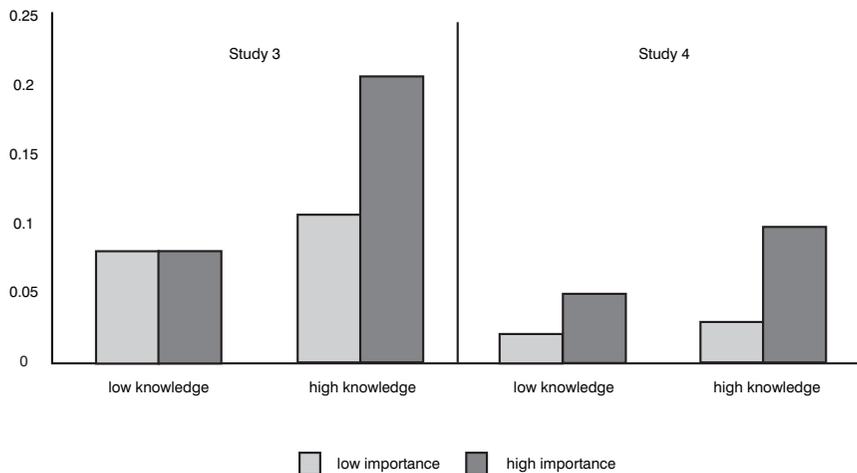
As expected, people who attached more importance to an issue requested candidates’ positions on the issue significantly more often,  $b = .55, SE = .16, p = .001$ , and  $b = .48, SE = .15, p = .002$  for abortion and capital punishment, respectively. However, possessing more knowledge was not related to information selection on either issue,  $b = .05, SE = .16, n.s.$ , and  $b = -.20, SE = .16, n.s.$  Attaching importance to an issue apparently motivated participants to seek information that enabled them to use their attitudes when evaluating candidates, but possessing knowledge did not. Importance and knowledge did not interact to predict selective information gathering for either issue,  $b = .09, SE = .61, n.s.$  and  $b = .11, SE = .60, n.s.$ , for abortion and capital punishment, respectively.

### Attitude-Expressive Behavior

As expected, importance and knowledge were both positively associated with increases in attitude-expressive behavior,  $b = .16$ ,  $SE = .06$ ,  $p < .01$  and  $b = .22$ ,  $SE = .06$ ,  $p < .001$ , respectively. And importance and knowledge interacted significantly,  $b = .46$ ,  $SE = .22$ ,  $p < .05$ . As the left panel in Figure 8.1 illustrates, participants who were above the median in importance for abortion *and* were above the median in their knowledge volume on this issue performed an especially large number of attitude-expressive behaviors.

### Selective Judgment

Consistent with past findings, the valence of participants' initial attitudes was strongly associated with selective judgment,  $b = .24$ ,  $SE = .09$ ,  $p < .01$ . Thus, participants who initially favored legalized abortion were inclined to find more convincing those studies that revealed positive consequences of abortion, whereas participants who initially opposed legalized abortion were inclined to find more convincing those studies that revealed negative consequences of abortion. And as expected, this relation was moderated by attitude importance. When attitude importance was added to the regression equation, along with a term reflecting the interaction between importance and participants' initial attitudes, both were significant predictors of selective judgment,  $b = -.54$ ,  $SE = .27$ ,  $p < .05$ ,  $b = .87$ ,  $SE = .39$ ,  $p < .05$ , respectively. Thus, people who attached great importance to the issue of abortion were especially likely to selectively interpret the mixed evidence.



**FIGURE 8.1** Performance of attitude-expressive behaviors as a function of attitude importance and attitude-relevant knowledge (Studies 3 and 4)

In contrast, the relation between participants' initial attitudes and selective judgment was not moderated by attitude-relevant knowledge. When knowledge and the product of knowledge and initial attitudes were added to the regression equation, neither significantly predicted selective judgment,  $b = -.05$ ,  $SE = .28$ , n.s.,  $b = .41$ ,  $SE = .40$ , n.s., respectively. Thus, participants with a large store of attitude-relevant knowledge were no more likely than their less knowledgeable counterparts to selectively evaluate the studies in attitude-congruent ways. The three-way interaction between knowledge, importance, and initial attitudes was also not significant,  $b = 1.48$ ,  $SE = 1.25$ , n.s.

### *Actual Attitude Change*

Replicating previous findings (e.g., Miller, McHoskey, Bane, & Dowd, 1993), the mixed scientific evidence caused attitude moderation. People who were initially favorable toward legalized abortion became less so after reading the material,  $t(56) = 2.24$ ,  $p < .03$ , and people who were initially unfavorable toward abortion became less so as well,  $t(60) = 2.68$ ,  $p = .01$ .

As expected, participants who attached more importance to their attitudes changed less,  $b = -.17$ ,  $SE = .07$ ,  $p = .02$ . Knowledge volume was positively but non-significantly associated with attitude change: people who were more knowledgeable about the issue of legalized abortion exhibited slightly more attitude moderation in response to the mixed evidence,  $b = .12$ ,  $SE = .07$ ,  $p = .10$ . If reliable, this trend would be consistent with some prior research (for a review, see Wood, Rhodes, & Biek, 1995) suggesting that knowledge equipped people to see flaws in the study that supported their own views and to recognize the validity of the study that contradicted their views, making them more likely to adopt a more moderate stance. Importance and knowledge did not interact when predicting attitude change,  $b = .03$ ,  $SE = .03$ , n.s.

### *Perceived Attitude Change*

Replicating Lord, Ross, and Lepper (1979), participants perceived their attitudes to have polarized. Participants who were initially favorable toward legalized abortion perceived themselves to have become more favorable after reading the mixed evidence,  $t(55) = 5.02$ ,  $p < .001$ , and participants who were initially unfavorable toward legalized abortion perceived themselves to have become less favorable toward it,  $t(60) = 3.71$ ,  $p < .001$ . And as expected, participants who attached more importance to the issue perceived marginally significantly more polarization,  $b = .29$ ,  $SE = .17$ ,  $p < .10$ . Knowledge was unrelated to perceived attitude change,  $b = -.09$ ,  $SE = .17$ , n.s., and importance and knowledge did not interact in predicting perceived attitude change,  $b = .07$ ,  $SE = .65$ , n.s.

### **Mediation**

The findings for selective judgment parallel the findings regarding perceived polarization: people who attached more importance to their attitudes were especially likely show attitude-congruent biases in their evaluations of the studies, but people who possessed a great deal of knowledge were no more likely than those who possessed little knowledge to exhibit this bias. This raises the possibility that selective judgment may mediate the relation between attitude importance and perceived attitude polarization. That is, attitude importance may have increased the attitude-congruent bias in participants' assessments of the studies, and on the basis of these biased judgments, participants with important attitudes may have inferred that their attitudes had become more extreme. Surprisingly, however, this appears not to be the case. The degree to which participants evaluated the studies in attitude-congruent ways was unrelated to perceptions that their attitudes had polarized in response to the mixed evidence,  $b = -.02$ ,  $SE = .03$ , n.s.

### **Discussion**

These results provide further evidence that importance and knowledge operate in fundamentally different ways—the former by motivating and the latter by enabling. Importance motivated people to selectively seek out attitude-relevant information for us in an upcoming judgment, but knowledge volume was unrelated to selective information seeking. Both importance and knowledge were associated with greater attitude-expressive behavior, but as expected, the co-presence of importance and knowledge was associated with an especially pronounced increase in attitude-expressive behavior. This is consistent with the notion that knowledge provides the ability to plan and execute attitude-expressive behavior, whereas importance provides the motivation to do so.

Differential motivation to bolster and defend their views was also evident in participants' responses to a set of mixed empirical evidence. People who attached a great deal of importance to their attitudes exhibited greater commitment to their original views and were less prone to adopt more moderate attitudes. In contrast, people who possessed more attitude-relevant knowledge might have been more likely to adopt more moderate attitudes (though this effect was not significant), perhaps because knowledge enabled them to recognize the validity of the attitude-incongruent evidence.

In response to the mixed empirical evidence, people who attached more importance to their attitudes also perceived their attitudes to have become more extreme, presumably the result of a strong motivation among these participants to express their resoluteness in the face of conflicting evidence. And they were more likely to selectively evaluate the quality of the evidence, judging attitude-

congruent studies to be of higher quality than attitude-challenging studies. People who possessed more attitude-relevant knowledge were no more likely to perceive their attitudes to have polarized, suggesting that knowledge did not motivate people to present themselves as especially resolute in the face of conflicting evidence. Nor were knowledgeable participants especially motivated to discredit attitude-challenging studies and endorse attitude-congruent studies.

Interestingly, selective judgment did not mediate the relation between attitude importance and perceived polarization. That is, people who attached great importance to their abortion attitudes were especially likely to selectively judge the studies they read about, and they perceived especially strong attitude polarization, but selective judgment and perceived polarization were unrelated. Thus, in the current investigation importance appears to have inspired two independent motivational processes.

The observed independence of these two outcomes may seem surprising—selective judgment has often been presumed to be causally responsible for perceived attitude polarization in the Lord, Ross, and Lepper (1979) paradigm. In fact, however, there is little direct evidence for this mechanism. In their own investigation, Lord et al. (1979) relied on correlations between selective judgment and perceived polarization to make the case that the former was the driving force behind the latter. Subsequent investigations have often replicated those correlations (e.g., Miller et al., 1993), but they have not directly tested for mediation. And the magnitude of these investigations has often been quite modest (in the range of .2 – .3 in Miller et al.'s [1993] studies).

Further, other investigations have documented the independence of these outcomes. For example, people have sometimes been shown to exhibit strong attitude-driven biases in their evaluations of studies and yet not perceive their attitudes to have polarized in response to the studies (Miller et al., 1993, Study 3). Thus, together with some past findings, the current results suggest that selective judgment is not necessary for perceived polarization in the Lord, Ross, and Lepper (1979) paradigm, nor is it always sufficient to produce perceived polarization.

Across all of these diverse outcomes, importance appears to have motivated people to protect and express their views, whereas knowledge appears to have enabled them to do so. Because importance and knowledge were measured several weeks before most of the dependent measures were collected, we can be confident that these relations do not reflect rationalization of those initial ratings.

## Study 4

### Overview

In our final study, we sought to replicate one of the findings from Study 3, this time with a representative sample of adults. In particular, we tested the notion

that the combination of ability and motivation leads to a particularly pronounced surge in attitude-behavior correspondence. We did so by interviewing a large, representative sample of American adults about the issue of global warming.

## **Method**

### *Participants*

A representative national sample of 688 English-speaking adults living in private households in the U.S. were interviewed by telephone by the Ohio State University Center for Survey Research during September and the first six days of October in 1997. The sample was generated via random digit dialing (see, e.g., Waksberg, 1978), and the cooperation rate was 67.3%. To assure representativeness of the sample, within household sampling was done by asking the adult resident with the most recent birthday to participate, a convenient quasi-random selection device (Salmon and Nichols 1983). And the sample did in fact appear to be representative of the nation: the demographic characteristics of the sample closely matched the distributions of race, education, age, gender, and region of residence, as gauged by the March 1997 Current Population Survey, done by the U.S. Census Bureau. To offset the small demographic discrepancies that did emerge, the data from each sample were weighted to match current census statistics for race, education, age, gender, and region of the country (for description of procedures, see Lavrakas, 1993).

### *Measures*

#### ATTITUDE IMPORTANCE

Participants reported the degree to which they attached personal importance to the issue of global warming using a fully labeled 5-point scale. Responses were coded to range from 0 to 1 (with higher numbers reflecting greater importance).

#### KNOWLEDGE

Participants reported how knowledgeable they were about this issue on a fully labeled 4-point scale. Responses were coded to range from 0 to 1 (with higher numbers reflecting greater knowledge).

#### ATTITUDE-EXPRESSIVE BEHAVIOR

Participants reported whether they had performed three behaviors expressing their views about global warming during the prior four months: writing a letter

to a public official about global warming or air pollution, giving money to an organization concerned with this issue, and attending a meeting to discuss the issue. Each participant was assigned a score reflecting the total number of activities performed, which was then rescaled to range from 0 to 1.

## Results

### *Relation Between Importance and Knowledge*

Importance and knowledge were positively correlated:  $r = .26$ ,  $N = 688$ ,  $p < .001$ , though more weakly than we saw in the previous studies of student samples and well-known issues.

### *Attitude-Expressive Behavior*

Replicating the results of Study 3, importance and knowledge were both positively associated with attitude-expressive behavior,  $b = .29$ ,  $SE = .06$ ,  $p < .001$  and,  $b = .24$ ,  $SE = .06$ ,  $p < .001$ , respectively. And as in Study 3, these main effects were qualified by an interaction between importance and knowledge,  $b = .50$ ,  $SE = .19$ ,  $p = .01$ . Once again, participants who were above the median in both importance and knowledge were especially likely to have performed attitude-expressive behaviors (see the right side of Figure 8.1).

## Discussion

Replicating our earlier findings, Study 4 suggests that the combination of importance and knowledge is associated with a pronounced increase in attitude-expressive behavior in a representative sample of adults. These findings reinforce the notions that attitude importance provides the motivation and that knowledge confers the ability to plan and successfully execute attitude-expressive behaviors. Alone, each is associated with modest increases in attitude-congruent behavior, but acting in concert, these two factors appear to produce a surge in attitude-behavior correspondence.

## General Discussion

At the beginning of the twentieth century, attitude was considered by many to be the single most important construct in social psychology. Indeed, some went so far as to *define* social psychology as the scientific study of attitudes (e.g., Thomas & Znaniecki, 1918). In 1935, Gordon Allport famously described the attitude as “the most distinctive and indispensable concept in contemporary American social psychology” (Allport, 1935, p. 198). According to Allport,

attitudes provide order and structure to the social and physical environment, powerfully shaping virtually all aspects of thought and behavior.

And indeed, in the years since Allport's bold claim, a great deal of empirical evidence has accumulated suggesting that attitudes often do resemble the robust and powerful constructs that Allport described. Equally clear from this literature, however, is that attitudes do not always manifest these properties. In fact, although some attitudes powerfully motivate and guide behavior, others seem entirely unrelated to behavior. And whereas some attitudes are durable and unyielding, others are quite elastic, fluctuating greatly over time. In fact, by the late 1960s, the literature was so inconsistent that some prominent scholars questioned the very existence of attitudes, sending the field into a period of crisis.

Since then, social psychologists have made great progress toward identifying the conditions under which attitudes influence thoughts and behavior. It is now clear, for example, that attitudes are consequential for some types of people more than others, and in some situations more than others (for a review, see Eagly & Chaiken, 1993). More recently, social psychologists have also come to recognize that some attitudes are *inherently* more powerful than others. That is, even within the same individual and across situations, some attitudes exert a pronounced impact on thinking and on behavior, whereas others are largely inconsequential. Similarly, some attitudes are tremendously durable, resisting change in the face of strong challenges and remaining stable over long spans of time, whereas others are highly malleable and fluctuate greatly over time.

This distinction between strong and weak attitudes has provided scholars with tremendously useful conceptual leverage, bringing clarity and order to a seemingly incoherent literature. And this distinction has to a large extent set the agenda for attitude research in recent decades. A high priority has identifying factors that determine the strength and durability of an attitude. In this regard, attitude researchers have been tremendously successful, identifying and cataloguing a diverse set of attitude features that are each related to the hallmarks of attitude strength (e.g., resistance to change, attitude-behavior correspondence; for a review, see Petty & Krosnick, 1995).

More recently, attitude researchers have extended these initial advances by clarifying the relations among the various strength-related attitude features and the underlying latent structure governing these relations (for a review see Visser, Bizer, & Krosnick, 2006). Whereas scholars once assumed that the various strength-related features were largely interchangeable indicators of one or a few latent constructs, it is now fairly well-established that instead, the strength-related features each appear to represent distinct constructs in their own right, perhaps arising from different sets of antecedents and setting into motion at least partially distinct cognitive and behavioral consequences.

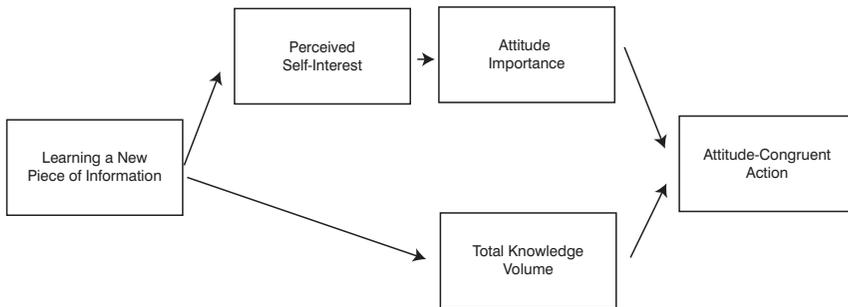
This recent advance has opened the door to an exciting new set of questions about the nature of attitude strength and the processes by which it functions.

Specifically, this “multidimensional” view of attitude strength encourages attitude researchers to explore the psychological processes by which these distinct features operate, clarifying their workings, alone and in combination. The work reported here represents an initial step in that direction. Whereas knowledge appears to operate by conferring particular cognitive and behavioral abilities, attitude importance appears to operate through motivational processes, inspiring people to protect and use their attitudes. And the combination of ability and motivation conferred by the co-presence of knowledge and importance leads uniquely to a pronounced rise in attitude-expressive behavior.

These findings represent an important advance, clearing a path for the development of much more refined predictions regarding attitude strength based on the psychological nature of particular strength-related attitude features. That is, rather than declaring an attitude “strong” and attributing to it all of the myriad qualities associated with strength, we may be able to anticipate the particular ways in which an attitude will influence thought and behavior by identifying the basis of its strength. If an attitude is strong because it is based on a great deal of knowledge, for example, we can anticipate specific cognitive and behavioral abilities, and we can make predictions about the precise implications of these abilities for particular outcomes. If an attitude is strong because it is deemed personally important, we can anticipate specific motivational processes, which suggest that particular cognitive and behavioral outcomes will be observed. And if an attitude is strong because of the co-presence of knowledge and importance, we can make other predictions based on the joint influence of ability and motivation. In this way, the current research leads us one step closer to the establishment of a more precise, integrative theory of attitude strength based on a full understanding of the psychological processes by which the various strength-related attitude features operate.

### ***Does Knowledge Sometimes Act as a Motivator?***

Although knowledge volume in general seems to have operated here by conferring abilities, gaining particular pieces of new information might seem likely to motivate people. For example, gaining the knowledge that unprotected sex can cause AIDS may seem to inspire people to take appropriate precautions. In fact, however, we believe that in such instances, new information enables people to recognize a link between the attitude object (i.e., unprotected sex) and their own material self-interest (i.e., preservation of their health and longevity). A wealth of existing evidence suggests that the recognition of such a link causes people to attach importance to the attitude (for a review, see Boninger et al., 1995), and the evidence we have presented here suggests that attaching importance to an attitude motivates action. Thus, it is the new ability to recognize a link between an attitude object and one’s self-interest, and not the new information itself, that inspires attitude-congruent behavior (see Figure 8.2).



**FIGURE 8.2** Model of the impact of learning on attitude-congruent action

Consider a man who places little value on maintaining his health and promoting his longevity. For this person, learning that unprotected sex can cause AIDS does not reveal a link between the attitude object and his material self-interest—unprotected sex has no implications for his valued outcomes. For such an individual, gaining this new piece of information is unlikely to motivate any particular action.

As this example illustrates, knowledge volume per se seems unlikely to motivate behavior. But knowledge may sometimes confer the ability to recognize links between an attitude object and one’s material self-interest, core values, or social identities. To the extent that new information leads to the recognition of such links, attitude importance is likely to increase, setting into motion a host of motivational processes.

### ***Measurement of Knowledge: Meta-attitudinal or Operative?***

Because attitude importance is defined as a “subjective sense of the concern, caring, and significance that [a person] attaches to an attitude” (Boninger, Krosnick, Berent, & Fabrigar, 1995, p. 160), its inherent nature suggests that assessment of it through self-report measures is optimal. In contrast, knowledge simply refers to the amount of attitude-relevant information people have stored in memory, and a number of different possible measures of this construct have been employed in past research, each justifiable.

Many researchers have used meta-attitudinal self-report measures similar to the ones we used (e.g., Davidson, Yantis, Norwood, & Montano, 1985; Krosnick et al., 1993; Pomerantz et al., 1995; Prislin, 1996). Others have asked people to list everything they know about an attitude object (e.g., Davidson et al., 1985; Krosnick et al., 1993; Prislin, 1996; Wood, 1982; Wood & Kallgren, 1988; Wood et al., 1985). And still others have assessed attitude-relevant knowledge via people’s performance on quizzes (e.g., Wilson, Kraft, & Dunn, 1989).

Each measure of attitude-relevant knowledge has advantages and disadvantages. Quizzes provide objective, standardized metrics for assessing the relative knowledge levels of a group of people. However, because items on a quiz will almost always represent only a small subset of the information available on any given topic, it is possible for people to possess large stores of knowledge and still score poorly. Furthermore, the use of quizzes hinges on the assumption that only factually correct information is legitimately considered knowledge. In keeping with the bulk of prior research on attitude-relevant knowledge (e.g., Davidson et al., 1985; Krosnick et al., 1993; Pomerantz et al., 1995; Prislin, 1996; Wood, 1982; Wood & Kallgren, 1988; Wood et al., 1985), we view knowledge as the quantity of information that people believe to be true about an attitude object, regardless of the accuracy of those beliefs. This makes quizzes less desirable measures.

Both self-reports and knowledge-listing tasks offer the advantage of being able to assess all of the information stored in people's memories, not just factually correct information. But both are subject to limitations as well. In addition to random measurement error, perceived knowledge volume is subject to systematic measurement error, because some people may experience social desirability pressure to report or even to genuinely perceive that they are more knowledgeable than they truly are. Counting the number of responses to a knowledge-listing task may also provide a distorted portrait of relative knowledge levels because individual responses may differ in the richness of knowledge lying behind a single comment, and individuals may differ in the extent to which they "unpack" a given statement to explicate the beliefs embedded within it. People also differ in overall verbosity, so some of the between-person differences in the amount of information that people list may reflect differences in communication styles rather than actual differences in knowledge volumes. Therefore, people with a lot of knowledge may sometimes appear to possess relatively little knowledge on a knowledge-listing task, and those who are not particularly knowledgeable may appear to be.

We used measures of perceived amount of knowledge in part because doing so allowed us to use the same method to assess knowledge that we used to gauge importance (i.e., both are meta-attitudinal), thereby eliminating a potential confound when comparing the relations between the two strength-related attributes and the various attitude effects. And steps were taken to minimize the impact of random and systematic measurement error in our knowledge assessment. To reduce the effects of random error, knowledge was assessed with multiple indicators that were averaged to form a more reliable index. And in an effort to reduce social desirability pressures, the questions assessing knowledge volume were prefaced with a statement explicitly acknowledging that people often know quite a bit about some topics but not very much about other topics, to assure participants that it was perfectly acceptable to concede that they were not especially knowledgeable on this particular topic.

Furthermore, some existing evidence indicates that meta-attitudinal self-reports and knowledge-listing measures of attitude-relevant knowledge tap the same underlying construct (e.g., Krosnick et al., 1993). Nevertheless, it remains possible that measures of attitude-relevant knowledge derived from knowledge-listing tasks would have exhibited different associations with the various attitude effects than those observed in the current investigation. Future investigations exploring this possibility therefore seem warranted.

### ***Moving Beyond Attitude Importance and Attitude-relevant Knowledge***

Although the studies reported here focused on importance and knowledge, the implications of this work are much broader. Just as for attitude importance and attitude-relevant knowledge, the unique qualities of other strength-related attitude features may suggest the distinct causal mechanisms through which they operate.

This is not to suggest, of course, that every strength-related attitude feature operates via a unique set of psychological mechanisms. To the contrary, there is likely to be overlap in the mechanisms by which different strength-related features exert their effects. It may therefore be possible to identify clusters of strength-related features that lead to the same outcomes through the same processes, providing a parsimonious way of conceptualizing attitude strength and organizing the various strength-related attitude features.

The distinction between motivation and ability that we have explored may be a sensible starting point. Just as importance operates through motivational channels, so may other strength-related features (e.g., intensity). And just as knowledge operates by conferring abilities, so may other strength-related features (e.g., elaboration). This basic distinction, therefore, may provide one way of organizing sets of strength-related attitude features. The pursuit of other conceptual distinctions of this sort will surely yield new insights regarding the nature and functioning of attitude strength. In our view, this pursuit represents an important and promising challenge for attitude researchers.

### ***Practical Implications***

We began this paper with a question: Why have so many well-funded, apparently sound public health interventions had so little success in improving the correspondence between people's attitudes toward healthy living and their relevant behaviors? We suggested that the problem may lie in the fact that many public health interventions have focused primarily on increasing knowledge volume and have not directly targeted the importance that people attach to the attitude object. It seems worthwhile to return to this question in light of the current findings.

When one approaches this problem from the attitude strength perspective, it becomes apparent that an optimal strategy for improving health behavior

would involve three steps: (1) creating the needed attitudes through targeted persuasive efforts (e.g., negative attitudes toward unsafe sex); (2) making those attitudes personally important to people (and thus cementing them and inspiring motivation to express those attitudes behaviorally); and (3) educating people to give them the specific knowledge they need to be able to successfully express those attitudes behaviorally. Steps 1 and 3 are common components of public health education campaigns, but the middle step is not.

By following this strategy, interventionists would foster the co-presence of the desired attitude, attitude importance, and needed knowledge, which our results indicate will yield greater attitude-behavior correspondence than either the attitude or importance or knowledge in isolation. To be sure, we found that people who possessed lots of information about an issue were more likely to engage in attitude-expressive behaviors than were people who knew little about the issue. And people who cared deeply about an issue were more likely to take action than were people who attached little importance to it. But people who were highly knowledgeable and also attached great importance to the issue exhibited the surge of attitude-congruent behavior that interventionists want to see.

It is especially important to recognize that the three steps should be taken in the above order rather than in a different order. If importance or knowledge volume are increased before the necessary attitudes are in place, then one will have cemented just the attitudes one wants to change, making Step 1 even more difficult to accomplish. This sort of time sequence is also rare if ever a part of public attitude change campaigns.

The literature on attitude importance provides guidance regarding how to increase the degree of psychological significance people attach to an attitude. As we have noted already, one determinant of importance is the extent to which people recognize a link between the attitude object and their own material self-interest (Boninger et al., 1995). In this regard, current intervention practices may seem to be quite appropriate. For example, the website launched by the U.S. Department of Health and Human Services that we discussed earlier not only provides information about how to engage in healthier behavior, but it also lists a battery of benefits, including increased strength and aerobic fitness, stress relief, greater motivation, relaxation, improved sleep, and reduced risk of coronary heart disease, colon cancer, diabetes, and high blood pressure ([www.healthierus.gov](http://www.healthierus.gov)). These all appear to be outcomes that most Americans would deem desirable.

Nonetheless, the attitude literature suggests that a number of important improvements can be made in this approach. First, it is not clear that presenting people with a laundry list of potential benefits that may accrue is an effective way of leading individuals to draw a connection between a desired behavior and their own material interests. In fact, although this approach appears likely to increase knowledge levels, it may do little to increase the importance people attach to particular outcomes or behaviors. Instead, messages that prompt individuals to

affirm their desires for fitness, stress relief, relaxation, improved sleep, and so on may be more effective at leading people to recognize personal benefits that they value. Stimulating people to reflect upon the specific ways in which their *own* lives would be better may produce links between the target behavior and people's material interests, inspiring them to attach importance to the behavior.

Second, interventions often focus primarily or exclusively on the material benefits that people can expect if they behave in particular ways. Efforts to increase people's motivation to act in attitude-congruent ways may be more effective if they simultaneously address the other antecedents of attitude importance as well (see Boninger, Krosnick, & Berent, 1995). Drawing people's attention to the links between their personal values and an attitude object may lead them to increase the importance attached to the attitude, motivating them to act in accordance with it. And efforts to increase the value that people place on their own personal health may be effective in this regard as well (see, e.g., Krosnick et al., 2006). Messages that focus on the interests or identities of reference groups or individuals with whom they identify may also increase the importance people attach to their attitudes.

Third, it is clearly worth exploring the possibility that messages targeting other strength-related attitude features will further improve the correspondence between people's health-relevant attitudes and their behavior. For example, people who are knowledgeable about the issue of global warming and care deeply about it might be particularly likely to act in accordance with their attitude if they also hold the attitude with great certainty, or if the attitude is minimally ambivalent, or if it possesses other strength-related features. As with attitude importance, the antecedents of these and other strength-related features are fairly well documented, providing guidance for interventions geared toward increasing them (see Petty & Krosnick, 1995).

Acknowledging that the various strength-related attitude features are distinct constructs that operate through different mechanisms alerts us to the fact that there are multiple avenues by which attitudes can be strengthened, and it also suggests that there are many ways to *reduce* attitude strength. Surprisingly, public health advocates may sometimes be more effective in changing people's attitudes if they first devote effort to reducing strength-related features of those attitudes. For example, calling into question the links people perceive between a target attitude and their own material interests may reduce the importance people attach to the attitude. Challenging the factual validity of people's beliefs may reduce their confidence in their attitudes. Implementing these and other such techniques before attempting to change counter-productive attitudes may be a necessary first step in some cases if a public education campaign is to be effective. We therefore look forward to future research seeking to enhance our understanding of the psychological mechanisms by which strength-related attitude features can be reduced, thus weakening the attitude itself and opening it up to the possibility of subsequent change.

## Conclusion

Although psychologists have long recognized that some attitudes are strong and others are weak, only recently have we come to recognize that strength is multi-dimensional. With that recognition in hand, theory development must move ahead by documenting the independent, overlapping, and interactive causes and effects of the array of strength-related attitude features. The research reported here represents a step in that direction, focused on importance and knowledge volume. We look forward to more such work exploring other strength-related features in the quest for a general theory of attitude potency.

## Notes

- 1 This research is based in part on a doctoral dissertation submitted by the first author to the graduate school at Ohio State University and was conducted partly while the second author was a Fellow at the Center for Advanced Study in the Behavioral Sciences, supported by a grant from the National Science Foundation (SBR-9022192). The authors are grateful for thoughtful comments from Richard Petty and Philip Tetlock and from the members of the Group for Attitudes and Persuasion and the Political Psychology Research Team at Ohio State University. Study 4 was funded by the National Science Foundation (grant SBR-9731532), the U.S. Environmental Protection Agency, the National Oceanic and Atmospheric Administration, and the Ohio State University, and it was sponsored by Resources for the Future. Jon Krosnick is University Fellow at Resources for the Future. Correspondence regarding this manuscript should be addressed to Penny S. Visser, Department of Psychology, University of Chicago, 5848 S. University Avenue, Chicago, IL 60637; email: pvisser@uchicago.edu.
- 2 The original Wason selection task instructions did not constrain participants to select two cards. This constraint has often been used in subsequent studies, however, to help participants perform the task correctly.
- 3 Included in this and all subsequent regressions was a dummy variable contrasting participants who favored abortion and those who opposed abortion to account for potential differences between the two groups.
- 4 To control for individual differences in general political interest, we included the measures of participants' interest in receiving additional information about the other political issues as control variables.

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