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Understanding Knowledge Effects on Attitude-Behavior Consistency : The Role of Relevance, Complexity, and Amount of Knowledge

Leandre R Fabrigar, *Queen's University - Kingston, Ontario*
Richard E Petty, *Ohio State University - Main Campus*
Steven M Smith
Stephen L Crites, *University of Texas at El Paso*

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Leandre R. Fabrigar
Queen's University

Richard E. Petty
Ohio State University

Steven M. Smith
Saint Mary's University

Stephen L. Crites, Jr.
University of Texas at El Paso

The role of properties of attitude-relevant knowledge in attitude–behavior consistency was explored in 3 experiments. In Experiment 1, attitudes based on behaviorally relevant knowledge predicted behavior better than attitudes based on low-relevance knowledge, especially when people had time to deliberate. Relevance, complexity, and amount of knowledge were investigated in Experiment 2. It was found that complexity increased attitude–behavior consistency when knowledge was of low-behavioral relevance. Under high-behavioral relevance, attitudes predicted behavior well regardless of complexity. Amount of knowledge had no effect on attitude–behavior consistency. In Experiment 3, the findings of Experiment 2 were replicated, and the complexity effect was extended to behaviors of ambiguous relevance. Together, these experiments support an attitude inference perspective, which holds that under high deliberation conditions, people consider the behavioral relevance and dimensional complexity of knowledge underlying their attitudes before deciding to act on them.

Keywords: attitudes, attitude–behavior consistency, attitude-relevant knowledge, attitude complexity

Social psychologists have long been interested in understanding the conditions under which attitudes influence behaviors, decisions, and information processing. Although a number of approaches to this issue have been explored, much of the recent research has focused on identifying properties of attitudes that moderate attitude–behavior consistency.[1]

Researchers increasingly have come to recognize that some attitudes are strong, that is, enduring and consequential, whereas other attitudes are weak in that they lack these features. Furthermore, researchers have established a number of attitudinal properties that determine the strength of an attitude (see Petty & Krosnick, 1995).

Knowledge and Attitude–Behavior Consistency

Of the attitudinal properties that have been investigated, one of the first to be discussed (e.g., Converse, 1970; Rosenberg & Abelson, 1960) and extensively researched is the construct of *attitude-relevant knowledge.* Attitude-relevant knowledge (also called issue-relevant knowledge or working knowledge) has typically been defined as the number of attitude-relevant beliefs and experiences that come to mind when encountering an attitude object (e.g., Davidson, 1995; Wood, Rhodes, & Biek, 1995). Thus, knowledge is a structural property of attitudes that is a function of the number of beliefs and experiences linked to the attitude in memory and the strength of the associative links between the beliefs or experiences and the attitude (Krosnick & Petty, 1995). Typically, knowledge has been assessed by counting the number of attitude-relevant beliefs and experiences people can recall in open-ended listing tasks (e.g., Davidson, Yantis, Norwood, & Montano, 1985; Kallgren & Wood, 1986; Wood, 1982). Although knowledge is sometimes assessed by asking people to provide subjective reports of how knowledgeable they are about the attitude object (Davidson et al., 1985; Wood, 1982), because such reports have modest correlations with actual knowledge listings, this measure is

[1] In this article, we use the term *behavior* in a broad sense to encompass behavioral intentions, decisions to act, as well as actual behaviors. We do so for purposes of brevity and compatibility with usage in the literature. In addition, the psychological mechanisms and predictions we discuss are applicable to understanding attitudinal impact on all of these constructs. Furthermore, behavioral intentions and decisions to act are the proximal determinants of behavior, at least when people are deliberating (Fishbein & Ajzen, 1975), as is the case in the current research.

typically considered to be a separate metacognitive assessment (e.g., Bassili, 1996).

One reason researchers have been interested in knowledge is that it has long been assumed that increases in knowledge are associated with greater influence of attitudes on behavior. Several studies have supported this assumption. For example, Kallgren and Wood (1986) assessed attitudes toward protecting the environment and measured attitude-relevant knowledge using an open-ended knowledge listing task. They found that attitudes based on high amounts of knowledge were more predictive of environment-related behavior than were attitudes based on low amounts of knowledge. Similarly, Davidson et al. (1985) found that intentions were better predictors of behavior when they were based on high amounts of knowledge than when they were based on little knowledge.

Limitations of Research on Knowledge and Attitude–Behavior Consistency

Despite support for the notion that amount of knowledge is associated with attitude–behavior consistency, there are some limitations in the available research. One limitation is that in attitude–behavior consistency research, knowledge has always been measured rather than experimentally manipulated. Thus, it is difficult to decompose knowledge effects from other variables with which this construct is correlated, such as attitude certainty, extremity, and accessibility (e.g., Bassili, 1996; Krosnick, Boninger, Chuang, Berent, & Carnot, 1993). Therefore, there is no definitive evidence that knowledge per se exerts a causal influence on attitude–behavior consistency.

Another important limitation is that the mechanisms underlying the association of knowledge with attitude-behavior consistency are poorly understood (see Davidson et al., 1985; Eagly & Chaiken, 1993; Kallgren & Wood, 1986). To date, three explanations have been proposed. One explanation is that increased knowledge is likely to lead to attitudes that are more stable and resistant to change (Davidson et al., 1985; Eagly & Chaiken, 1993; Wilson, Kraft, & Dunn, 1989). Thus, an assessment of an attitude based on little knowledge might be a poor predictor of subsequent behavior, because the attitude might no longer be the same at the time of the behavior. In contrast, high-knowledge attitudes are more likely to be stable between the time of assessment and the time of the behavior.

A second explanation for the impact of knowledge is that knowledge is related to attitude accessibility (Davidson et al., 1985; Eagly & Chaiken, 1993; Kallgren & Wood, 1986). Studies have established that increased attitude accessibility (i.e., the extent to which an attitude is spontaneously activated on encountering the attitude object) leads to greater impact of attitudes on behaviors (see Fazio, 1995). Given the positive association between knowledge and accessibility (e.g., Krosnick et al., 1993), increased knowledge might be related to enhanced attitude–behavior consistency because of greater likelihood of attitude activation at the time of the behavior.

Third, attitude-relevant knowledge is associated with various subjective (metacognitive) attitude strength-related beliefs, such as certainty and perceived knowledge (e.g., Krosnick et al., 1993). Because these beliefs—especially certainty—have been found to be related to attitude–behavior consistency (e.g., Fazio & Zanna, 1978; Rucker & Petty, 2004), it is possible that these beliefs rather than actual attitude-relevant knowledge were responsible for past effects.

Although these explanations are plausible, direct tests of them have yet to be conducted. Furthermore, if any of these explanations are true, it would imply that knowledge has little direct role in attitude–behavior consistency. For instance, the stability explanation suggests that knowledge does not actually regulate the impact of attitudes on behaviors per se. Instead, high-knowledge attitudes are better predictors than low-knowledge attitudes, because the former are an accurate reflection of the attitude at the time of behavior, whereas the latter are not. Were one to measure attitudes immediately prior to the behavior, one would expect no difference in the impact of high- versus low-knowledge attitudes. Similarly, the accessibility explanation postulates that knowledge effects are due to a greater likelihood of activation for high- than for low-knowledge attitudes. This explanation implies that accessibility plays the direct causal role in attitude–behavior consistency and that knowledge is only one of several distal determinants of attitude–behavior consistency that exerts its influence via accessibility. Finally, to the extent that knowledge leads to perceptions of attitude certainty or perceptions of knowledge, it may be these metacognitive beliefs rather than knowledge that are responsible for people's willingness to act on their attitudes.

Another inadequacy of current conceptual views is that they have focused almost exclusively on the amount of knowledge. Although there are sound reasons to expect that the mere amount of attitude-relevant information might play a role in attitude–behavior consistency, other features of attitude-relevant knowledge may also be important. For example, as will be explained shortly, the specific content of the knowledge and its complexity could influence the impact of attitudes on behavior. To date, the role of these properties of knowledge has been underappreciated.

Finally, current conceptualizations of knowledge imply that greater knowledge inevitably leads to enhanced attitude–behavior consistency. These perspectives fail to specify moderating conditions under which one might expect to see a greater or lesser role of knowledge in attitude–behavior consistency.

An Attitude Inference Explanation for Knowledge Effects

The central premise of the present research is that current theories of the role of knowledge in attitude–behavior consistency are incomplete in that other psychological mechanisms, not previously recognized in the literature, also contribute to the impact of knowledge on attitude–behavior consistency. Specifically, we propose that when considering the role of knowledge, it is useful to conceptualize attitude–behavior consistency as often a result of a type of inference process. One long established but underappreciated finding in the attitudes literature is that even when a person has a well-developed attitude that is activated at the time of behavior, that attitude may not always translate into behavior. A person must also clearly perceive that the attitude is a relevant guide to the behavior in question (Snyder, 1982; Snyder & Kendzierski, 1982). Thus, when confronted with a behavior related to an attitude object, a person often must consider how informative his or her attitude is to the specific behavior in question. This inference process of judging the relevance of attitudes to behaviors is likely to be influenced by the content and structure of the knowledge underlying the attitude (see Fabrigar, MacDonald, & Wegener, 2005). There are two properties of attitude-relevant knowledge in particular that we suggest are important in determin-

ing the extent to which people judge an attitude to be an informative guide to behavior.

Behavioral Relevance of Knowledge

One property that may drive this inference process is the degree to which the content of knowledge on which the attitude is based is directly relevant to the goal of the behavior. Researchers have long recognized that attitudes can be based on distinct dimensions of information. Some theorists have distinguished among affective, cognitive, and behavioral dimensions of information (e.g., Katz & Stotland, 1959; Rosenberg & Hovland, 1960). Others have noted that attitudes have different functional bases such as utilitarian, value-expressive, and social-adjustive bases (e.g., Katz, 1960; Smith, Bruner, & White, 1956).[2]

Moreover, just as attitudes can differ in the nature of their underlying dimensions of knowledge, so too might the goal(s) of a particular behavior vary in its direct relevance to different dimensions of knowledge underlying an attitude (e.g., see Millar & Tesser, 1986b, 1989). When at least one dimension of knowledge underlying the attitude is directly relevant to the goal of a behavior, and that dimension of knowledge is evaluatively consistent with the overall attitude, a person is likely to judge that his or her attitude is a valid guide for the behavior.

For example, imagine that one forms a positive attitude toward a person on the basis of the fact that the person was pleasant at a party. Later, when presented with a social invitation from this person, the positive attitude could serve as a useful guide for how the individual should react (i.e., the attitude may serve as a compelling argument for a particular course of action). In contrast, when the attitude is derived from knowledge that has little direct relevance to the goals of a behavior, the attitude is less likely to be perceived as an informative guide even if it is equivalently positive (i.e., the attitude might be seen as a relatively weak argument for a specific course of action). For example, if instead of making a social decision regarding that person, one had to make a decision regarding whether to hire the person to manage one's financial investments, one's attitude would not be informative.

Consistent with these speculations regarding knowledge–behavior matching processes, Millar and Tesser (1986b, 1989) reported evidence suggesting that attitudes based mostly on affect are more likely to influence behaviors that are affective in nature than behaviors that are cognitive in nature. Likewise, cognitively based attitudes are more likely to influence behaviors that are cognitive in nature than behaviors that are affective in nature. It is important to note that although past research has suggested that knowledge–behavior matching effects occur, a number of issues regarding these effects remain unaddressed. First, prior research has focused on affective–cognitive bases of attitudes. It is unclear whether such matching effects can occur at a more specific level. That is, even within the cognitive or affective dimensions of attitudes or within a given function, it is possible that (mis)matching on the basis of the relevance of the knowledge to the behavior could occur and influence attitude–behavior consistency. Second, this process of considering the relevance of knowledge seems especially likely to occur when people are motivated and able to deliberate about their behaviors and thus can undertake the thoughtful process of judging the appropriateness of an attitude as a guide to action (see Fazio, 1990; Sanbonmatsu & Fazio, 1990).

However, people are not always able or motivated to engage in deliberative consideration (e.g., see Chaiken, Liberman, & Eagly, 1989; Fazio, 1990; Petty & Cacioppo, 1986a, 1986b). In these cases, people might fail to consider how appropriate their attitudes are as guides to behavior and thus might use their attitudes regardless of their relevancy to the goals of behaviors. That is, consistent with the Elaboration Likelihood Model's notion of multiple roles for variables (Petty & Wegener, 1998), the attitude might serve as a nonthoughtful cue to behavior rather than as an argument whose merits for a particular course of action are carefully considered (see Fabrigar et al., 2005). To date, research has not explored whether knowledge–behavior matching effects are moderated by level of deliberation.

Complexity of Knowledge

A second property of knowledge that may be important in this inference process of judging whether an attitude is an informative guide to behavior is the complexity of the knowledge underlying the attitude. Given that attitudes can vary in the distinct dimensions of knowledge on which they are based, it follows that attitudes may also vary in the number of distinct dimensions of information underlying them (see Scott, 1969). Some attitudes may be simple in that they are based on a single dimension of knowledge, whereas others may be complex in that they are based on multiple distinct dimensions of knowledge. Indeed, knowledge complexity has received considerable attention in social psychology. Of particular interest to researchers has been the relation between complexity and extremity of attitudes (e.g., Judd & Lusk, 1984; Linville, 1982; Millar & Tesser, 1986a). Researchers have largely ignored any role that complexity might play in attitude–behavior consistency. However, complexity could influence the degree to which the attitude is judged as an informative guide to behavior.[3]

For instance, when a person has an attitude based on a single dimension of knowledge and that dimension has little direct relevance to the goal of the behavior, a person might conclude that the attitude

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[2] Although the tripartite and the attitude functions distinctions are the best known taxonomies for categories of information underlying attitudes, other meaningful distinctions can be made. For example, within any of these categories, one might make further distinctions (e.g., within the affect dimension one could distinguish among specific emotional states such as anger, fear, excitement, or happiness).

[3] In this article, we use the term *complexity* to refer to the number of distinct dimensions of knowledge underlying an attitude. This property has sometimes also been referred to as differentiation (e.g., Scott, 1969). Differentiation has frequently been used as the definition of complexity (e.g., Linville, 1982; Linville & Jones, 1987) and has been a central component in virtually all definitions of complexity. However, others (e.g., Judd & Lusk, 1984; Millar & Tesser, 1986a) have conceptualized complexity as having two components: differentiation and integration. Integration reflects the extent to which separable dimensions are seen as related to each other. Thus, it is possible to have complex attitudes based on multiple orthogonal dimensions or complex attitudes based on multiple related dimensions. In this article, we primarily focus on the differentiation component because it is the most central feature of complexity. Attitudes cannot be complex unless they are differentiated, but attitudes that are differentiated can be integrated or not integrated. Indeed, in order for attitudes to be complex, integration cannot be so extreme that dimensions are seen as redundant (Linville & Jones, 1987). However, the integration component does have

is not a very informative guide (as in our example earlier). However, if the attitude is based on multiple distinct dimensions of knowledge that are evaluatively consistent with one another, a person might assume that other potential dimensions of knowledge for which the person has no information are likely to be evaluatively similar to the dimensions from which the attitude is derived. That is, the person might be willing to extrapolate to and make inferences about other dimensions of attitude-relevant information for which the person has no current knowledge. Thus, people might conclude that an attitude based on multiple consistent dimensions of knowledge is an informative guide even when none of the existing dimensions of knowledge has direct relevance to the goal of the behavior.[4]

Inference Processes as an Explanation for Knowledge Effects

This inference process explanation has a number of interesting implications that can be contrasted with earlier perspectives on the role of knowledge in attitude–behavior consistency. One implication is that it suggests that the mere amount of attitude-relevant information may not be the sole property or even the most critical property responsible for knowledge effects on attitude–behavior consistency. For example, it seems possible that the total amount of knowledge associated with an attitude might be strongly related to the complexity of knowledge underlying the attitude. That is, the greater the number of total beliefs linked to an attitude, the more likely these beliefs will reflect multiple distinct dimensions of information (see Linville, 1982; Linville & Jones, 1987). Of course, this association is not a necessary one. A person could have numerous beliefs that reflect a single underlying dimension. Likewise, one could have only a few attitude-relevant beliefs in which each belief reflects a different underlying dimension of knowledge. Nonetheless, in general, it seems likely that there would typically be a positive association between total amount of knowledge and number of distinct dimensions of knowledge.

Assuming this positive association does exist and people do engage in the inference processes we have outlined, this suggests two reasons why amount of knowledge has been found to be related to attitude–behavior consistency. Because increased amounts of knowledge are likely to result in greater complexity, the likelihood that high-knowledge attitudes (which have many dimensions of knowledge) will be derived from a dimension directly relevant to the goal of any given behavior is higher than for low-knowledge attitudes (which have few dimensions of knowledge). Thus, across the range of behaviors that a person might perform related to an attitude object, one would expect high-knowledge (complex) attitudes to generally exert more influence than would low-knowledge (simple) attitudes because of knowledge-behavior goal matching. That is, with more complex attitudes, one of the dimensions of knowledge is likely to be relevant to the behavior. However, even when there is no direct match of the goals of a behavior to a high-knowledge (complex)

attitude, people may still use their attitudes because of their willingness to extrapolate beyond what is known and assume the attitude is generally informative for a wide range of behaviors. In contrast, simple attitudes may be perceived as informative only for a narrow range of behaviors with goals directly related to the dimension of knowledge underlying that attitude. Thus, previous attitude–behavior consistency effects attributed to amount of knowledge might actually have been because of complexity and behavioral relevance of knowledge underlying the attitude.

Several other implications of this new perspective are also worth noting. In contrast to earlier explanations for knowledge effects, this perspective clearly assigns an important causal role to attitude-relevant knowledge. Thus, this perspective suggests that even when attitudes are of equivalent accessibility and stability, and attitude confidence is taken into account, one might expect properties of attitude-relevant knowledge to play an important role in attitude–behavior consistency. Likewise, this new perspective implies that greater knowledge will not always be associated with enhanced attitude–behavior consistency. For example, this perspective suggests that even low-knowledge attitudes could be highly predictive of behavior if the content of this knowledge is directly relevant to the goals of the behavior.

Overview of Experiments

The goal of the present set of experiments was to provide initial tests of our speculations on the roles of behavioral relevance, complexity, and amount of attitude-relevant knowledge in attitude–behavior consistency. As such, these experiments were designed to go beyond past research by providing the first exploration of psychological mechanisms underlying the impact of knowledge on attitude–behavior consistency. At the methodological level, these experiments were also the first studies to experimentally manipulate knowledge and to control for the role of other properties of attitudes known to be related to attitude strength.

In Experiment 1, we explored whether attitude–behavior consistency was greater when attitude-relevant knowledge was of high relevance versus low relevance to the goals of behavior. Further, to demonstrate the generality of knowledge–behavior matching effects, we examined this matching effect in a context that held constant the affective or cognitive and functional bases of the attitude. This experiment also tested whether this matching effect was moderated by level of deliberation. In Experiment 2, we attempted to replicate the knowledge–behavior matching effect. More interesting to note, this experiment was also designed to examine whether increasing the complexity and amount of knowledge underlying attitudes resulted in attitudes that exert a strong impact on behavior even when knowledge was of little direct relevance to the goals of the behavior.

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implications for attitude–behavior consistency. Specifically, people may be more likely to assume that the attitude is a generally informative guide when it is derived from dimensions of knowledge that are quite distinct. Knowledge based on very distinct dimensions may be seen as having greater breadth than knowledge based on highly related dimensions.

[4] This attitude extrapolation process may be similar to the category-based induction principle of premise monotonicity that has been documented in cognitive psychology for nonevaluative judgments (see Osherson, Smith, Wilkie, Lopez, & Shafir, 1990). This principle holds that the more inclusive a set of premises, the more likely a conclusion based on those premises is to be accepted. Considering our attitude example, the principle of premise monotonicity suggests that we would be more likely to conclude that a person was positive on all dimensions if we knew about three positive dimensions of that person than if we only knew about one positive dimension of that person.

Finally, Experiment 3 was designed to replicate the effects of Experiment 2, to explore the role of complexity of knowledge when the relevance of behaviors to knowledge was ambiguous, and to examine the extent to which prior effects were a result of reliance on general attitudes toward the attitude object or attitudes toward specific dimensions of the attitude object.

Experiment 1

Goals and Overview

The primary goal of Experiment 1 was to provide an initial test of our speculations regarding the impact of attitude-relevant knowledge on inference processes in attitude–behavior consistency. To examine these ideas, we created attitudes toward two novel attitude objects by providing evaluative information about one cognitive dimension related to the two objects. Participants were then presented with a behavioral task in which they were required to choose between the attitude objects. The nature of the behavior was manipulated to be of either high or low relevance to the knowledge underlying the attitudes. The role of level of deliberation was examined by having half of the participants make their behavioral choice under high levels of distraction and time pressure (i.e., low deliberation) and having the other half make their choice without distraction and time pressure (i.e., high deliberation). To control for the possible effects of stability on attitude–behavior consistency, attitudes were measured immediately prior to the behavioral decision so as to eliminate the possibility of differential change across conditions. To control for the effects of attitude accessibility, all participants were asked to report their attitudes multiple times so as to guarantee that attitudes in all conditions were high in accessibility (Powell & Fazio, 1984).

These procedures were modeled on an attitude–behavior consistency research paradigm originally developed by Sanbonmatsu and Fazio (1990). This paradigm has several methodological features that are well suited to the present research questions. First, because the paradigm involves the creation of attitudes toward novel objects via presentation of information, it permits precise experimental manipulations of different properties of attitude-relevant knowledge. Thus, it is possible to vary the content or structure of knowledge at the time of attitude formation while holding constant other factors that are frequently confounded with knowledge in naturally occurring attitudes. Second, the present research questions required attitude objects for which people naturally see distinct dimensions of information. The use of department stores in this paradigm provided just such attitude objects (i.e., individual departments provide distinct cognitive dimensions of knowledge). Finally, this paradigm also allowed for an easy method for manipulating the relevance of behaviors to the dimensions of knowledge underlying the attitude. Specifically, by varying the target item to be purchased, behaviors could be made to be of high or low relevance to the dimensions of knowledge underlying attitudes toward the stores.

Method

Participants

Participants were 550 undergraduate students enrolled in an introductory psychology course. Participants received extra credit in return for their involvement in the experiment.

Design and Procedure

The experiment was a 2 (behavioral relevance of knowledge: low vs. high) × 2 (level of deliberation: low vs. high) factorial design. Participants were told that they were taking part in a study on consumer decisions.

Attitude formation procedure. In the first phase of the experiment, attitudes toward two novel attitude objects were created. Participants were presented with two sets of information describing two department stores: "Smith's Department Store" and "Brown's Department Store." For the first department store, participants received materials including a paragraph with a general description of the store that contained relatively nonevaluative information (e.g., the location of the store, the date it was established) and a second paragraph containing evaluative information that provided a detailed description of either the store's camera department (six pieces of information) or its sporting goods department (six pieces of information). The description of the specific department included information regarding customer service (e.g., "the camera department has specially trained staff who attend seminars in order to familiarize themselves with the products they sell"), product pricing (e.g., "they will beat any price on cameras and accessories from any store"), and product selection (e.g., "they have the most advanced camcorders available") in the target department. For the second department store, participants also received materials containing a paragraph with a general description of the store that was nonevaluative in nature and a second paragraph of evaluative information regarding either its camera department or the sporting goods department. Thus, all participants' attitudes toward the two stores were derived from a single dimension of knowledge with the same amount of information.

Because this experiment examined the impact of attitudes on behavioral decisions, it was necessary to ensure variance in attitudes toward the stores. Thus, the information about the camera or sporting goods departments was developed such that the description of the department was more positive for one of the stores than the other. For half of the participants, the more positive department was attributed to Smith's, whereas for the other half, it was attributed to Brown's. This procedure guaranteed that half of the participants had more favorable attitudes toward Smith's than Brown's and that the other half of participants had more favorable attitudes toward Brown's than Smith's. To control for order effects in presentation of information, the order of materials describing the two stores was counterbalanced such that half of the participants received all of the information about Smith's first, and the other half of participants received all of the information about Brown's first.[5]

Behavioral decision phase. Following the information about the stores, participants completed attitude measures for each store in the same order they received the passages about the stores. Participants then completed the behavioral intention task. Participants randomly assigned to the high-behavior relevance condition indicated which store they would choose if they needed to buy a product directly related to the department for which they had received information. Thus, participants in this condition who had read about the camera departments were asked about purchasing cameras (camera–camera match), and participants who had read about the sporting goods departments were asked about purchasing sporting goods (sporting goods–sporting goods match). Participants randomly assigned to the low-behavior relevance condition indicated which store they would choose if they needed to buy a product directly related to the department for which

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[5] Although there was no reason to expect attitude–behavior consistency effects to vary as a function of order of presentation of information, initial attitude–behavior consistency analyses included order as an independent variable in this and subsequent experiments. All key effects remained significant with the inclusion of order and no attitude effects involving order were significant for the experiments. Thus, for simplicity of presentation, analyses reported in Experiment 1 and subsequent experiments do not include order as an independent variable.

they had not received information (i.e., camera–sporting or sporting goods–camera mismatches).[6]

Level of deliberation manipulation. To manipulate the level of deliberation during decision making, participants randomly assigned to the low-deliberation condition were told that one goal of the experiment was to examine how people simultaneously perform multiple tasks. Thus, while completing the decision task, these participants were instructed to listen to an audiotape of a sequence of numbers and letters being read aloud. Participants were informed that their second task was to count the number of letters in the list and that they needed to complete the decision task before the audio recording of the list finished. Thus, these participants were under conditions of high distraction and time pressure while reaching decisions. Past research has suggested that inclusion of a distraction task decreases the extent to which people can carefully think about information (e.g., Petty, Wells, & Brock, 1976) and that inclusion of time pressure also reduces people's ability to engage in careful deliberation (e.g., Sanbonmatsu & Fazio, 1990). In contrast, participants randomly assigned to the high-deliberation condition were neither distracted nor put under time pressure. On completion of the decision task, all participants received a written debriefing outlining the true objectives of the experiment and the fictitious nature of the stores. The experimenter also answered participants' questions regarding the experiment.

Measures

Attitudes. Attitudes toward the stores were assessed using an eight-item scale for each store based on a measure developed by Crites, Fabrigar, and Petty (1994). The scale included four adjectives that reflected general positive evaluations (e.g., good) and four adjectives that reflected general negative evaluations (e.g., dislike). Participants indicated the extent to which each adjective described their evaluation of the store on a 7-point scale, ranging from 1 (*not at all*) to 7 (*definitely*). Responses to negative items were reverse coded, and then all responses were averaged to create a score for each store ranging from 1 to 7, with higher numbers reflecting greater positivity. Because this experiment involved a behavioral choice between two alternatives, using attitudes toward one of the stores did not provide sufficient information to accurately predict behavior (see Jaccard, 1981; Petty & Cacioppo, 1981). Proper prediction of behaviors in such competing choice decisions requires construction of an attitudinal index that takes into account the relative evaluations of the two stores. Hence, a difference score was computed by subtracting each person's attitude score for Smith's Department Store from his or her attitude score for Brown's Department Store. This produced a score ranging from −6 to 6, with negative numbers reflecting more favorable attitudes toward Smith's than Brown's and positive numbers reflecting more favorable attitudes toward Brown's than Smith's.

Behavior. Behavior was assessed using a single 7-point behavioral intention question that asked respondents to indicate which store they would shop at for a given type of product. This measure was based on a 4-point question used by Sanbonmatsu and Fazio (1990). Each point of the scale was verbally labeled with the options reflecting relatively equal intervals in perceived probability, with 1 indicating high certainty of shopping at Smith's and 7 indicating high certainty of shopping at Brown's. For the high-relevance condition, the type of product specified in the question matched the department for which participants had received information. For the low-relevance condition, the type of product to be purchased mismatched the department for which participants had received information.

Results

Analyses of Attitude Formation Procedures

Before undertaking the attitude–behavior consistency analyses, it was useful to examine whether the attitude formation procedures created attitudes toward the stores with their intended properties. Two properties of attitudes were manipulated at formation. The first was the dimension of knowledge on which attitudes were based. The intent of this manipulation was to create attitudes that were derived from different dimensions of evaluative knowledge (i.e., the camera department vs. the sporting goods department) but were similar in terms of their valence and extremity.

The second property of knowledge manipulated at formation was the positivity of attitudes. This manipulation was necessary because to meaningfully examine the impact of attitudes on choices between alternatives, it is necessary for attitudes toward the choice alternatives to be different. Thus, we manipulated information in the present experiment such that half of the participants received extremely positive information about the target department of Smith's and only mildly positive information about the target department of Brown's. The other half of the participants received the reverse information. This manipulation was designed to create more positive attitudes toward one of the stores than toward the other. Similarly, because the information was either mildly positive or extremely positive, one would also expect attitudes toward the individual stores to differ in their extremity across the two conditions. However, one would not expect the differential attitude index to produce different levels of extremity across conditions.

To test these expectations, a series of 2 (dimension of knowledge: camera vs. sporting goods) × 2 (positivity of information: Smith's more positive vs. Brown's more positive) analyses of variance (ANOVAs) were conducted on attitudes toward the individual stores, the differential attitude index, extremity of attitudes toward the individual stores, and extremity of the differential attitude index. Extremity scores were created by computing the absolute value of the deviation of each attitude score from its conceptual midpoint. None of these analyses produced a significant two-way interaction.

Table 1 provides a summary of the results of these analyses for the dimension of knowledge independent variable. As can be seen in the first three rows of Table 1, attitudes toward the individual stores as well as the differential attitude index were in fact the same across the two dimensions of knowledge. Similarly, the next three rows of Table 1 confirm that extremity of attitudes was comparable across dimensions of knowledge. Table 2 provides the summary of results for the positivity of information manipulation. As can be seen in the first three rows of this table, the manipulation was successful in creating more favorable attitudes toward the intended store. In addition, as predicted, the extremity of attitudes toward individual stores was greater for the store for which people received extremely positive information. However, also as predicted, because the manipulations of positivity were comparable across the stores, there was no difference in extremity for the

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[6] Because there was no theoretical reason to expect the two types of matches (camera–camera, sporting goods–sporting goods) to differ from one another or the two types of mismatches to differ from one another in how they influenced attitude–behavior consistency, we collapsed across these types of matches and mismatches in our analyses. Furthermore, when an additional independent variable was included representing type of match or mismatch in attitude–behavior consistency analyses, it produced no significant effects. Moreover, all key effects remained significant with the inclusion of this additional variable.

differential attitude index. Taken together, these analyses confirm the success of our formation procedures.

Analyses of Attitude–Behavior Consistency Effects

The primary objective of Experiment 1 was to examine the impact of behavioral relevance of knowledge and level of deliberation on attitude–behavior consistency. There are a number of ways in which to quantify attitude–behavior consistency. However, the most common method is to examine either a correlation coefficient or regression coefficient between attitude scores and the measure of behavior: the greater this association, the higher level of attitude–behavior consistency. Moderators of attitude–behavior consistency are then examined by exploring the extent to which the magnitude of the correlation or regression coefficient differs across levels of the proposed moderator. Thus, in the present analyses, we conducted regression analyses in which our differential attitude index was used to predict responses to the behavioral intention measure. To test whether attitude–behavior consistency varied across experimental conditions, we examined whether the ability of the differential attitude index to predict behavior (i.e., the magnitude of the differential attitude index regression coefficient) was statistically different across experimental conditions.

This analytic strategy was implemented by specifying a multiple regression model that included the differential attitude index, a dummy variable representing behavioral relevance condition, and a dummy variable representing level of deliberation condition as predictor variables. The model also included all possible two-way interactions and the three-way interaction.[7]

Of the seven predictor variables in the model, only variables involving the differential attitude index were of theoretical interest, and none of the effects in the model that did not involve the attitude index reached significance. The dependent variable was the behavioral intention response.

As expected, this regression model produced a significant attitude effect on behavior, $F(1, 542) = 312.80$, $p < .01$. To better characterize this overall effect of attitudes, we examined a simple regression with attitudes predicting behavior (collapsed across all experimental conditions). Thus, this regression coefficient represented the overall level of attitude–behavior consistency when combining participants across conditions. The unstandardized regression coefficient of the differential attitude index in this analysis indicated a substantial positive impact of attitudes on behavior

Table 1

Experiment 1: Attitude and Extremity Scores as a Function of Dimension of Knowledge

| | Dimension of knowledge | | | |
Dependent variable	Camera	Sporting goods	F	p
Attitude—Smith's	5.48	5.48	0.01	.91
Attitude—Brown's	5.52	5.48	0.26	.61
Differential attitude	0.05	−0.01	0.24	.63
Extremity—Smith's	1.71	1.75	0.62	.43
Extremity—Brown's	1.72	1.72	<0.01	.99
Differential extremity	1.59	1.68	0.82	.36

Table 2

Experiment 1: Attitudes and Extremity Scores as a Function of Positivity of Knowledge

| | Positivity of knowledge | | | |
Dependent variable	Smith's more positive	Brown's more positive	F	p
Attitude—Smith's	6.28	4.68	355.83	<.01
Attitude—Brown's	4.76	6.23	309.02	<.01
Differential attitude	−1.51	1.55	739.35	<.01
Extremity—Smith's	2.29	1.17	340.47	<.01
Extremity—Brown's	1.19	2.25	301.18	<.01
Differential extremity	1.61	1.65	0.18	.67

($b = .62$, $p < .01$). Thus, the more favorable attitudes toward Brown's were relative to attitudes toward Smith's, the more likely participants were to choose to shop at Brown's rather than Smith's.

More interestingly and as predicted, a significant attitude by behavioral relevance interaction effect was obtained, $F(1, 542) = 42.16$, $p < .01$. This interaction indicated that the ability of attitudes to predict behavior was not the same across the two behavioral relevance conditions. To clarify the meaning of this interaction, it was necessary to decompose the interaction effect by calculating the attitude regression coefficient separately for the two behavioral-relevance conditions. This was done by conducting separate regression analyses that used differential attitudes to predict behavior within each level of behavioral relevance. These analyses indicated that attitudes had more influence on behavior when the knowledge underlying the attitude was of high relevance to the behavior ($b = .86$, $p < .01$) than when the knowledge underlying the attitude was of low relevance to the behavior ($b = .40$, $p < .01$). As expected, there was no interaction between attitudes and level of deliberation, $F(1, 542) = 0.23$, $p = .63$. Thus, attitudes exerted a comparable impact on behavior under low and high deliberation.

The three-way interaction was also of interest in our analyses. If our speculations are correct, the moderating role of behavioral relevance on attitude–behavior consistency should be greater under high deliberation than low deliberation. This should occur because participants who are unable to carefully deliberate about their behaviors should be less able to engage in the inference processes necessary to judge how informative their attitudes are for the decision (i.e., whether the attitude is based on knowledge that suggests the attitude is a useful guide for a particular course of action). As predicted, the interaction among attitudes, behavioral relevance, and level of deliberation was significant, $F(1, 542) = 4.39$, $p = .04$.

This interaction indicated that the two-way interaction between attitudes and behavioral relevance was not the same across levels of deliberation. To clarify this three-way interaction, it was nec-

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[7] As recommended by Aiken and West (1991) for regression models with interaction terms, we centered the differential attitude score variable prior to conducting the analysis. Because the attitude difference score was the only continuous predictor variable in our analysis, this was the only predictor variable that was centered. Also consistent with recommendations by Aiken and West (1991), all predictors and their interactions were entered into the model simultaneously. Comparable data analysis strategies were used in Experiments 2 and 3.

essary to decompose this effect by examining the attitude regression coefficient for each combination of behavioral relevance and deliberation conditions. This was done by conducting regression analyses by using attitudes to predict behavioral intentions within each of the four experimental conditions. These analyses are presented in Table 3. Row 1 of Table 3 presents the attitude by behavioral relevance interaction under conditions of high deliberation. As can be seen, there was a large difference in the impact of attitudes based on knowledge of high relevance to the behavior compared with attitudes based on knowledge of low-relevance to behavior ($Z = 6.70$, $p < .01$). In contrast, as can be seen in row 2 of Table 3, under conditions of low deliberation, the Attitude × Behavioral Relevance interaction was weaker. Specifically, attitudes based on highly relevant knowledge exerted only a moderately greater impact on behavior than did attitudes based on low-relevance knowledge ($Z = 2.82$, $p = .01$).[8]

Discussion

Experiment 1 provided initial evidence that when confronted with a behavioral choice, people sometimes engage in inference processes regarding how informative their attitudes are for the behavior in question; this inferential process is influenced by properties of attitude-relevant knowledge. This speculation was supported by the fact that attitudes exerted a stronger impact on behavioral intentions when knowledge underlying attitudes was of high-behavioral relevance than when it was of low-behavioral relevance. This finding parallels earlier attitude–behavior matching effects reported by Millar and Tesser (1986b, 1989), but the present study extends this earlier work in two important ways. First, Millar and Tesser's experiments suggested that people might judge their attitudes to be inappropriate guides when they were based on affect and a behavior was cognitive in nature or when the attitudes were based on cognition and a behavior was affective in nature. We suggest in the present experiment that even when the affective or cognitive nature of the attitude and behavior match, people may sometimes judge their attitude to be an uninformative guide to behavior. That is, it may also be necessary for the attitude and behavior to match at the specific dimensions of affect and cognition underlying the attitude and behavior rather than just at the general level. Thus, the present experiment suggests that attitude–behavior matching may occur at a much more specific level than previously recognized. Experiment 1 also provided evidence supporting our prediction that knowledge–behavior matching effects are more likely to occur under deliberative versus nondeliberative conditions.

Table 3
Experiment 1: Unstandardized Regression Coefficients for Attitudes Predicting Behavior as a Function of Level of Deliberation and Behavioral Relevance of Knowledge

Level of deliberation	Behavioral relevance of knowledge	
	High	Low
High	0.95**	0.34**
Low	0.77**	0.46**

** $p < .01$.

Although the role of deliberation in knowledge–behavior matching effects has never been specifically addressed, this finding is consistent with earlier research reported by Sanbonmatsu and Fazio (1990). They demonstrated that under conditions of low deliberation, people made use of their global attitudes even when these attitudes provided inappropriate guidance regarding a behavioral task (i.e., the global attitude implied one action, but the cognitive dimension most relevant to the behavior implied a different action). In contrast, under conditions of high deliberation, people did not rely on their global attitudes. Thus, the present findings fit with this earlier research in that people are more sensitive to the appropriateness of their attitudes as guides to behavior under high, rather than low, deliberation. However, the present experiment differs from this earlier work in notable ways. First, in the Sanbonmatsu and Fazio (1990) experiments, attitudes were based on multiple cognitive dimensions with one target dimension contradicting the other dimensions. Thus, the target

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[8] Although the present comparisons among coefficients most directly assess our predictions, as with any interaction, it is possible to examine the results in several ways. One could alternatively compare the regression coefficients across levels of deliberation within each condition of behavioral relevance. These comparisons indicate that when attitudes were based on knowledge of high-behavioral relevance, attitudes were better predictors of behavior in the high-deliberation condition than the low-deliberation condition ($Z = 2.00$, $p = .04$). In contrast, when attitudes were based on knowledge of low-behavioral relevance, there was a nonsignificant tendency for attitudes to be better predictors under low deliberation than high deliberation ($Z = 1.09$, $p = .28$). Within the present data set, there are several other ways in which attitude–behavior consistency could be assessed. First, one could use attitudes toward the individual stores to predict behavior and look at the variations in these regression coefficients across experimental conditions. As discussed in the methods section, this approach seems less compelling than the differential attitude index, because accurate prediction of choices between competing alternatives requires knowledge of the relative differences in attitudes towards the alternatives. Use of attitude scores toward only one of the alternatives does not include this relative information. Not surprisingly, although patterns are similar to our differential attitude index analyses when attitudes toward one of the stores is used to predict behavior, some effects are weaker with the loss of this relative information. Specifically, the attitude main effect and the attitude by behavioral relevance interaction effect remain significant for both individual attitude analyses. However, only attitudes toward Brown's produced a significant attitude by behavioral relevance by deliberation interaction (although the basic pattern of the three-way interaction was similar for Smith's). A second alternative approach to exploring attitude–behavior consistency in the present data is to use the assignment to the positivity of information condition as a proxy variable for the differential attitude index. That is, one could treat the magnitude of the mean difference in behavior scores for the Smith's more positive versus Brown's more positive conditions as an index of attitude–behavior consistency. The extent to which these between condition differences are moderated by behavioral relevance and deliberation could then be explored. Once again, this approach seems less optimal than the differential attitude index approach. Simple categorical representation of the differences in attitudes fails to take into account that participants varied somewhat in their reactions to the information. The differential attitude index captures such variations in reactions, whereas collapsing differential attitudes into a dichotomous representation loses this potentially valuable information (see MacCallum, Zhang, Preacher, & Rucker, 2002). Not surprisingly, use of the categorical index produces similar patterns, but some effects were weaker (i.e., the three-way interaction was no longer significant).

dimension contradicted the overall attitude toward the object. The present experiment involved attitudes based on a single cognitive dimension that was always consistent with the global attitude. Second, the relevance of the behavior to the knowledge underlying the attitudes was not manipulated in the Sanbonmatsu and Fazio experiments. Instead, the behavior was always directly relevant to the target attitude dimension of knowledge that contradicted the overall attitude. Hence, this earlier work did not examine knowledge–behavior matching effects. Given these differences, our experiment and the earlier Sanbonmatsu and Fazio experiments can be thought of as demonstrations of two different situations in which an attitude might be judged an inappropriate guide. In the Sanbonmatsu and Fazio work, the attitude is judged as inappropriate, because it is inconsistent with the dimension of knowledge most relevant to the goal of the decision. In our case, an attitude is consistent with its specific dimension of knowledge but is judged as inappropriate, because the dimension of knowledge is of little relevance to the goal of the behavior. Thus, under high-deliberation conditions, people appear to be quite contingent in their use of their attitudes. Under low-deliberation conditions, people are less sensitive to the diagnosticity of the attitude.

Experiment 2

Goals and Overview

Experiment 2 was designed to build on the findings of Experiment 1 in several ways. First, Experiment 2 provided an opportunity to replicate the basic knowledge–behavior matching effect. Second, it allowed a further examination of our attitude inference explanation for the impact of knowledge on attitude–behavior consistency by testing another novel prediction implied by this perspective. Our attitude inference explanation suggests that knowledge–behavior matching effects should be weaker in situations in which attitudes are derived from multiple distinct dimensions of attitude-relevant knowledge (i.e., when attitudes are complex). Knowledge–behavior matching effects should be weaker, because extrapolation processes should lead people to see complex attitudes as generally informative guides even when their knowledge has little direct relevance to the goals of the behavior. Thus, in contrast to the simple single-dimension attitudes explored in Experiment 1, one might expect complex attitudes to be influential on both high- and low-relevance behaviors.

Experiment 2 was also designed to address some more general methodological limitations in past research. As noted earlier, it has never been clear in previous attitude–behavior studies whether knowledge effects were a result of variations in amount of attitude-relevant knowledge (as has typically been assumed) or complexity of knowledge. Our attitude inference perspective suggests that complexity might be the more critical property. Thus, to address this issue, we unconfounded these properties of knowledge in Experiment 2 by manipulating both of them in a full factorial design. We also went beyond past research in Experiment 2 by controlling for other strength-related properties of attitudes that may influence attitude–behavior consistency.

Method

Participants

Participants were 456 undergraduate students enrolled in an introductory psychology course. Participants received extra credit in return for their involvement in the experiment.

Design and Procedure

The experiment was a 2 (complexity of knowledge: low vs. high) $\times$ 2 (amount of knowledge: low vs. high) $\times$ 2 (behavioral relevance of knowledge: high vs. low) factorial design. The procedure was generally similar to that of Experiment 1; however, in contrast to the prior experiment, this experiment manipulated the number of departments for which participants received information about the stores and the total amount of information describing both stores.

Complexity and amount of knowledge manipulations. As before, participants received two sets of information describing two department stores. For the first store, those randomly assigned to the low-complexity–low-amount-of-knowledge condition received a two-paragraph passage containing a paragraph with a general description of the store and a paragraph with a description of the store's camera department. There was a total of six pieces of evaluative information about the camera department (i.e., a single dimension of knowledge) in the second paragraph. Participants then received a two-paragraph passage for the second store. This passage also contained a paragraph with a general description of the store and a paragraph with six pieces of evaluative information about the camera department. Participants randomly assigned to the low-complexity–high-amount-of-knowledge condition received a paragraph with a general description of the first store and a paragraph with a description of its camera department (i.e., a single dimension). However, in this condition, the paragraph about the camera department contained a total of 18 pieces of evaluative information. Likewise, for the second store, participants received a passage with a paragraph providing a general description of the store and a second paragraph with 18 pieces of evaluative information about the camera department.

Participants randomly assigned to the high-complexity–low-amount-of-knowledge condition received a passage with a general introductory paragraph about the first store and a second paragraph containing two pieces of evaluative information about its camera department. This passage also contained two additional paragraphs for the store describing the sporting goods and gardening supplies departments, respectively. Each of these paragraphs provided two pieces of evaluative information about the department. For the second store, participants also received a passage with a general introductory paragraph and three additional paragraphs, each of which contained two pieces of evaluative information about one of the three departments. Therefore, the total amount of information for each store was the same as that of the low-complexity–low amount-of-knowledge condition (six pieces of information about specific departments), but this information was distributed across three, rather than a single, department.

Participants randomly assigned to the high-complexity–high-amount-of-knowledge condition received a passage with a paragraph of general introductory information and a paragraph with six pieces of evaluative information about the camera department for the first store. This passage also provided two paragraphs describing the sporting goods and gardening supplies departments. Each of these paragraphs provided six pieces of evaluative information about the department. Participants then received information for the second store. This passage included the general paragraph and three paragraphs about the departments, each of which contained six pieces of evaluative information for one of the departments. Thus, the total amount of information provided for each store was the same as that of the low-complexity–high-amount-of-knowledge condition (18 pieces of

information about specific departments), but these pieces of information were distributed across three rather than a single department.

As before, it was necessary to ensure variance in attitudes toward the two stores. Thus, for those in the low-complexity conditions, half of the participants received information about the camera departments favoring Smith's over Brown's, and the other half received information about the camera departments favoring Brown's over Smith's. For those in the high-complexity conditions, half of the participants received information about all three departments favoring Smith's over Brown's, and the other half received information about all three departments favoring Brown's over Smith's. The order of the passages describing the two stores was counterbalanced.

Following the information about the stores, participants reported their attitudes toward the stores using the same measures used in Experiment 1. The order of these measures was counterbalanced in a similar manner to Experiment 1. Participants then completed measures of perceived knowledge and attitude certainty for each store and completed open-ended questions that asked them to list all the information they could remember about each store.

Behavioral relevance of knowledge manipulation. Participants then completed the behavioral task. Participants randomly assigned to the high-behavioral relevance condition indicated which store they would choose if they needed to buy a camera (i.e., a dimension of knowledge from which both low- and high-complexity participants' attitudes were derived at least partially). Participants randomly assigned to the low-behavioral relevance condition indicated which store they would choose if they needed to buy jewelry. Because none of the participants received information about the stores' jewelry departments, this decision was of low relevance to the knowledge underlying the attitudes of all participants. Jewelry was used, because pretesting indicated that it was seen as less related to gardening supplies and sporting goods than it was to cameras. Therefore, any enhanced prediction of behaviors regarding jewelry by the inclusion of information about gardening supplies and sporting goods could not be a function of these dimensions of knowledge being seen as more related to the jewelry dimension than the dimension common to the low- and high-complexity conditions (i.e., cameras).

Finally, because behaviors often occur in contexts in which the situation may provide a basis for reaching a decision external to the attitude, the introduction to the decision task asked participants to imagine that at the time of their decision they happened to be 5 min closer to one store than to the other. The store specified as closer was always the store described in less favorable terms in the passages. Thus, participants were faced with a behavioral decision in which the situation and the attitude suggested different stores. Following completion of the decision task, participants received a written debriefing and had all questions regarding the study answered.

Measures

Attitudes. Attitudes toward the two stores were assessed and coded as in Experiment 1.

Amount and complexity of knowledge. To assess the effectiveness of the manipulations of amount and complexity of knowledge, participants were given two questions in which they were asked to list as much information as they could remember for each of the stores. The order of the questions for the stores was counterbalanced so that the questions were in the same order as the presentation of information about the stores. Responses were coded by two independent judges who were unaware of participants' experimental condition. Judges coded the amount of information remembered by counting the number of pieces of evaluative information relevant to the departments listed for each store. The totals for the two stores were averaged to create an index of amount of information. Because interrater reliability was high ($r = .95$), amount of knowledge indices from the judges were averaged to form a single measure. Judges coded complexity of knowledge by counting how many evaluative dimensions (i.e.,

departments) were mentioned in the information listing for each store. If at least one piece of information referred to a given department, that dimension was counted as being represented in the knowledge listing. Thus, this score could range from 0 (no departments mentioned) to 3 (three departments mentioned). The scores for the two stores were then averaged to form an index of complexity of knowledge. Because interrater reliability was high ($r = .95$), the complexity of knowledge from the judges was averaged to arrive at a single measure.

Attitude strength-related properties. Perceived knowledge for each store was measured using a 7-point scale that asked participants how much information they thought they had about the store (1 = *very little* and 7 = *a great deal*). Overall perceived knowledge was assessed by averaging the responses for the stores. Attitude certainty was measured using a 7-point scale that asked participants how certain they felt about their evaluation of the store (1 = *not certain* and 7 = *very certain*). Overall certainty was assessed by averaging the responses for the stores. Attitude extremity was assessed by creating an extremity score based on recoding the differential attitude score to reflect amount of deviation from the midpoint. The resulting score had a possible range of 0 (exactly at the midpoint) to 6 (the maximum extreme attitude irrespective of valence).[9]

Behavior. Behavior was measured and coded as in Experiment 1. However, for the present experiment, cameras were the target of purchase in the high-relevance condition, and jewelry was the target of purchase in the low-relevance condition.

Results

Analyses of Attitude-Formation Procedures

We first examined the impact of our attitude formation procedures by conducting a series of 2 (complexity of knowledge: low vs. high) × 2 (amount of knowledge: low vs. high) × 2 (positivity of knowledge: Smith's more positive vs. Brown's more positive) ANOVAs on the various properties of attitudes measured.

Complexity of knowledge. Table 4 provides a summary of the impact of the complexity manipulation on complexity and amount scores for the individual stores as well as averaged across the two stores.

The complexity manipulation had its intended effects on complexity of knowledge (see rows 1–3 of Table 4). More surprising was the weak effect of the complexity manipulation on amount of knowledge scores. Participants remembered slightly more information when it was high in complexity compared with low in complexity. Table 5 summarizes the influence of the complexity manipulation on attitudes, attitude extremity, perceived knowledge, and perceived certainty. Effects were generally as expected.

Complexity had a weak impact on actual attitudes; however, high-complexity attitudes were slightly more extreme than were low-complexity attitudes for the differential attitude index. Complexity had a weak positive effect on perceived knowledge and a somewhat stronger positive effect on attitude certainty. Thus, it is possible that attitude–behavior complexity effects observed in the present data could be a result of attitude extremity, perceived knowledge, or certainty. Hence, the role of these properties will be examined in subsequent analyses.

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[9] In addition to computing an extremity score based on the differential attitude score, we also computed an extremity score based on the separate attitude scores for the two stores. We computed the extremity of the attitude for each store (a value of 0–3) and then averaged these two extremity scores to produce a single index. This index produced results in this experiment and subsequent experiments that were generally similar to the differential extremity score.

Table 4

Experiment 2: Complexity and Amount Scores as a Function of Complexity of Knowledge

Dependent variable	Complexity of knowledge		*F*	*p*
	Low complexity	High complexity		
Complexity—Smith's	0.98	2.65	1,199.53	<.01
Complexity—Brown's	0.98	2.65	1,486.28	<.01
Complexity—average	0.98	2.65	1,545.69	<.01
Amount—Smith's	5.37	6.04	6.73	<.01
Amount—Brown's	5.29	6.08	10.75	<.01
Amount—average	5.33	6.06	9.74	<.01

Table 6

Experiment 2: Complexity and Amount Scores as a Function of Amount of Knowledge

Dependent variable	Amount of knowledge		*F*	*p*
	Low amount	High amount		
Complexity—Smith's	1.85	1.85	0.73	.39
Complexity—Brown's	1.85	1.86	0.56	.46
Complexity—average	1.85	1.85	0.75	.39
Amount—Smith's	4.42	7.05	126.64	<.01
Amount—Brown's	4.39	7.05	137.92	<.01
Amount—average	4.40	7.05	149.81	<.01

Amount of knowledge. Table 6 summarizes the effects of the amount of knowledge manipulation on complexity and amount scores. As predicted, this manipulation exerted no impact on complexity scores (see rows 1–3 of Table 6) but did influence amount scores (see rows 4–6 of Table 6). Table 7 presents the results for the impact of the amount of knowledge manipulation on attitudes, extremity, perceived knowledge, and certainty. As expected, there was no difference in actual attitudes or extremity as a function of amount of knowledge. However, increased amounts of knowledge were associated with increased perceived knowledge and certainty. These analyses suggest that any effects of amount of knowledge may be a result of perceived knowledge or certainty. Thus, the role of these constructs will be examined in later analyses.

Positivity of knowledge. Table 8 presents the results for the impact of the positivity of knowledge manipulation on complexity and amount of knowledge scores. As expected, this manipulation had little impact on these constructs. However, Table 9 shows that the manipulation did produce its intended effects on actual attitudes (see rows 1–3 of Table 9). Likewise, as expected, attitude extremity for the individual stores was influenced by this manipulation, but extremity for the differential attitude index was not. There was no reason to expect the positivity of knowledge manipulation to influence perceived knowledge and certainty, and this

expectation was generally confirmed (see rows 7–12 of Table 9). Taken as a whole then, the attitude formation procedures generally operated as intended. Next, we tested our central predictions regarding attitude–behavior consistency. This was accomplished using an analytic strategy similar to Experiment 1.

Analyses of Attitude–Behavior Consistency

A multiple regression model was specified that included the differential attitude index, a dummy variable representing complexity of knowledge condition, a dummy variable representing amount of knowledge condition, and a dummy variable representing behavioral relevance of knowledge condition as predictor variables. The model also included all possible interactions. Although 15 predictor variables were in the model, only variables involving the differential attitude scores were of theoretical interest, and none of the effects that did not involve attitudes reached significance. The dependent variable was the behavioral intention response. A significant attitude effect was obtained, $F(1, 439) = 203.38$, $p < .01$. The unstandardized regression coefficient for the differential attitude score predicting decisions (collapsed across conditions) indicated a substantial positive impact on decisions ($b = .65$, $p < .01$).

Table 5

Experiment 2: Attitude, Extremity, Knowledge, and Certainty Scores as a Function of Complexity of Knowledge

Dependent variable	Complexity of knowledge		*F*	*p*
	Low complexity	High complexity		
Attitude—Smith's	5.54	5.56	0.04	.84
Attitude—Brown's	5.63	5.44	5.11	.02
Differential attitude	0.10	−0.12	3.51	.06
Extremity—Smith's	1.68	1.79	2.72	.10
Extremity—Brown's	1.77	1.75	0.18	.67
Differential extremity	1.32	1.61	7.99	<.01
Knowledge—Smith's	4.59	4.83	3.63	.06
Knowledge—Brown's	4.54	4.75	2.74	.10
Knowledge—average	4.56	4.78	3.33	.07
Certainty—Smith's	4.47	4.89	11.92	<.01
Certainty—Brown's	4.51	4.81	6.10	.01
Certainty—average	4.49	4.85	10.37	.01

Table 7

Experiment 2: Attitude, Extremity, Knowledge, and Certainty Scores as a Function of Amount of Knowledge

Dependent variable	Amount of knowledge		*F*	*p*
	Low knowledge	High knowledge		
Attitude—Smith's	5.55	5.54	0.02	.89
Attitude—Brown's	5.47	5.59	1.84	.18
Differential—attitude	0.07	−0.05	1.18	.28
Extremity—Smith's	1.72	1.75	0.17	.69
Extremity—Brown's	1.73	1.80	1.32	.25
Differential—extremity	1.40	1.54	2.26	.13
Knowledge—Smith's	4.44	4.98	19.70	<.01
Knowledge—Brown's	4.41	4.88	15.66	<.01
Knowledge—average	4.42	4.93	19.68	<.01
Certainty—Smith's	4.45	4.92	15.12	<.01
Certainty—Brown's	4.44	4.89	14.07	<.01
Certainty—average	4.45	4.91	17.21	<.01

The analysis also revealed a significant interaction between attitudes and behavioral relevancy, $F(1, 439) = 22.86$, $p < .01$. To decompose this interaction, we separately examined the ability of differential attitudes to predict behavior within the two conditions of behavioral relevance. These analyses indicated that attitudes had more influence on behaviors that were of high relevance to the knowledge underlying attitudes ($b = .82$, $p < .01$) than of low relevance to the knowledge underlying attitudes ($b = .46$, $p < .01$). This result replicated the basic knowledge–behavior matching effect demonstrated in Experiment 1.

The attitudes by complexity interaction was not significant, $F(1, 439) = 2.57$, $p = .11$. The attitudes by amount of information was also not significant, $F(1, 439) = 0.42$, $p = .52$. Two three-way interaction effects were of particular importance. If our speculations about the critical role of complexity of knowledge in attitude inference processes are correct, a significant interaction involving attitudes, complexity of knowledge, and behavioral relevance should have been obtained.

However, if the traditional view that amount of knowledge is the critical feature in attitude–behavior consistency is correct, a significant interaction among attitudes, amount of knowledge, and behavioral relevance should have occurred. Analyses indicated the interaction among attitudes, amount of knowledge, and behavioral relevance was not significant, $F(1, 439) = 0.33$, $p = .57$. In contrast, the interaction involving attitudes, complexity of knowledge, and behavioral relevance was reliable, $F(1, 439) = 5.90$, $p = .02$. To decompose this interaction, we examined the unstandardized regression coefficients for differential attitude scores predicting decisions separately within the different combinations of complexity of knowledge and behavioral relevance. As can be seen in row 1 of Table 10, for attitudes of low complexity, there was a substantial difference in the impact of attitudes on high- versus low-relevance behaviors ($Z = 4.70$, $p < .01$). Thus, participants relied heavily on the behavioral relevance of their knowledge in determining the appropriateness of the attitude as a guide to behavior. However, for attitudes of high complexity, the effect of behavioral relevance was weaker ($Z = 1.86$, $p = .06$; see row 2 of Table 10). In other words, knowledge–behavior matching effects were stronger for simple attitudes than for complex attitudes. This decreased knowledge–behavior matching effect was primarily a result of the fact that people were still willing to rely on high-complexity attitudes even when the knowledge underlying the attitude had little direct relevance to the behavior.[10]

Table 8
Experiment 2: Complexity and Amount Scores as a Function of Positivity of Knowledge

| | Positivity of knowledge | | | |
Dependent variable	Smith's more positive	Brown's more positive	F	p
Complexity—Smith's	1.84	1.86	0.62	.43
Complexity—Brown's	1.82	1.88	3.52	.06
Complexity—average	1.83	1.87	1.97	.16
Amount—Smith's	5.90	5.54	2.38	.12
Amount—Brown's	5.53	5.88	2.58	.11
Amount—average	5.72	5.71	0.00	.99

Table 9
Experiment 2: Attitude, Extremity, Knowledge, and Certainty Scores as a Function of Positivity of Knowledge

| | Positivity of knowledge | | | |
Dependent variable	Smith's more positive	Brown's more positive	F	p
Attitude—Smith's	6.16	4.93	206.26	<.01
Attitude—Brown's	4.83	6.23	266.06	<.01
Differential attitude	−1.33	1.31	519.79	<.01
Extremity—Smith's	2.19	1.28	204.75	<.01
Extremity—Brown's	1.28	2.24	239.48	<.01
Differential extremity	1.49	1.44	0.14	.70
Knowledge—Smith's	4.86	4.57	5.36	.02
Knowledge—Brown's	4.62	4.67	0.27	.61
Knowledge—average	4.73	4.62	0.85	.36
Certainty—Smith's	4.83	4.55	5.12	.02
Certainty—Brown's	4.67	4.66	0.00	.97
Certainty—average	4.75	4.61	1.57	.21

Alternative Mechanisms for Attitude–Behavior Consistency Effects

Although analyses indicated that the complexity manipulation had a powerful effect on dimensionality of knowledge underlying participants' attitudes, earlier analyses also indicated that this manipulation exerted modest influence on several other strength-related properties of attitudes. Thus, it might be that differences in these properties rather than complexity were responsible for the interaction of complexity, behavioral relevancy, and attitudes. To test this possibility, we conducted a series of regression analyses on behaviors in which we included the same predictor variables and interactions that were included in our previous attitude–behavior consistency analyses. However, in each analysis, we also controlled for one of the alternative strength-related properties of attitudes. This was accomplished by adding the alternative strength

[10] Although the present comparisons among coefficients most directly assess our predictions, one could alternatively compare the regression coefficients across levels of complexity within each condition of behavioral relevance. These comparisons indicate that when attitudes were based on knowledge of high-behavioral relevance, there was no difference in the ability of low- and high-complexity attitudes to predict behavior ($Z = .43$, $p = .67$). In contrast, when attitudes were based on knowledge of low-behavioral relevance, there was a significant tendency for high-complexity attitudes to be better predictors of behavior than were low-complexity attitudes ($Z = 2.72$, $p = .01$). There are several other ways in which attitude–behavior consistency could be assessed. As expected, when attitudes toward one of the stores is used to predict behavior, some effects are weaker. However, both the attitude main effect and the attitude by behavioral relevance interaction effect remained significant for both individual attitude analyses. Likewise, the three-way interaction among attitude, complexity, and behavioral relevance was still significant when attitudes toward Smith's department store is used. Although this interaction was nonsignificant for attitudes toward Brown's department store, the regression coefficients for both three-way interactions parallel those reported for the differential attitude score. The second alternative approach of using the assignment to the positivity of information condition as a proxy variable for the differential attitude index was also examined. In this analysis, all key effects remained significant and parallel the results reported in our main analyses.

Table 10

Experiment 2: Unstandardized Regression Coefficients for Attitudes Predicting Behavior as a Function of Complexity and Behavioral Relevance of Knowledge

	Behavioral relevance	
Complexity of knowledge	High	Low
Low	0.86**	0.26**
High	0.81**	0.60**

$** \ p < .01.$

property as well as all of its possible interactions with other predictor variables in the regression model. This produced a model with 31 predictor variables and thus constituted an extremely stringent test of the robustness of our interaction among complexity, behavioral relevance, and attitudes. We then examined the impact of including these additional predictor variables on our complexity effects (for a discussion of strategies for testing mediated moderation, see Wegener & Fabrigar, 2000).

If one of these alternative properties of attitudes was responsible for the original three-way interaction among attitudes, complexity, and behavioral relevance, one would expect two findings to emerge from such an analysis. First, controlling for the alternative attitudinal property and its interactions should clearly eliminate the original three-way interaction. Second, the alternative property should produce a significant three-way interaction with attitudes and behavioral relevance. Moreover, this three-way interaction should produce a pattern of attitude regression coefficients similar to that of the original three-way interaction.

Perceived certainty. The first property examined was perceived certainty. Although earlier analyses indicated that high-complexity attitudes were held with greater certainty than low-complexity attitudes, prior analyses also supplied some basis to doubt that certainty would provide a viable alternative explanation for the complexity effects. Most notably, although it is the case that the complexity manipulation influenced certainty, the manipulation of amount of knowledge exerted an even greater impact on certainty. Thus, if certainty was responsible for the attitude–behavior consistency effects observed in previous analyses, one would have expected the amount of knowledge manipulation to have a powerful impact on attitude–behavior consistency. However, we found no evidence for such effects. Despite this basis for doubt, we examined the impact of controlling for certainty and its interactions on our original attitude–behavior consistency analyses. None of the key effects obtained in the original attitude–behavior consistency analyses were eliminated. Of particular note, the interaction among attitudes, complexity, and behavioral relevance actually became slightly stronger, $F(1, 423) = 6.11$, $p < .01$. Furthermore, there was no evidence that certainty interacted with attitudes alone or with attitudes and behavioral relevance. Thus, certainty clearly did not account for the complexity effects.

Perceived knowledge. There was some basis to doubt perceived knowledge as a viable alternative to our complexity effects given that the manipulation of amount of knowledge produced a much stronger effect on this construct than did the manipulation of complexity of knowledge. Nonetheless, we examined the impact of controlling for this property. As expected, all significant effects

from the original analyses remained significant, including the interaction among attitudes, complexity, and behavioral relevance, $F(1, 421) = 4.64$, $p = .03$. Likewise, perceived knowledge failed to produce a significant interaction with attitudes and behavioral relevance.

Extremity. Finally, we examined attitude extremity as an alternative to our complexity effects. When controlling for extremity, most key effects demonstrated in the original analyses remained significant; however, the interaction among attitudes, complexity, and behavioral relevance was only marginally significant, $F(1, 423) = 2.67$, $p = .10$. Although this finding might suggest extremity was responsible for the original three-way interaction involving complexity, there is reason to doubt this conclusion. First, the decrease in the original interaction is too modest to suggest that extremity fully accounted for this effect (the shift was only from $p = .02$ to $p = .10$). Second, although extremity produced some significant effects, these effects were not in the direction one would expect if extremity was responsible for the previously reported complexity effects. For example, the Extremity × Attitude interaction was statistically significant, $F(1, 423) = 15.92$, $p < .01$. However, when examining the effects of attitudes on behavior at varying levels of extremity, we found that this interaction indicated that low-extremity attitudes were more predictive of behavior than were high-extremity attitudes (an opposite pattern to the trend observed for complexity). The three-way interaction among attitudes, extremity, and behavioral relevance was also significant, $F(1, 423) = 9.98$, $p < .01$. However, contrary to what one would expect if extremity was responsible for complexity effects, this analysis revealed that the pattern of coefficients did not fully parallel the coefficients reported in Table 10 for complexity (see Table 11). For example, low-complexity–low-relevance attitudes were the poorest predictors in the complexity analysis. In contrast, high-extremity–low-relevance attitudes were the poorest predictors in the extremity analysis.

A final basis for skepticism is that analyses that used an alternative index of extremity failed to eliminate the three-way interaction among attitude, complexity, and behavioral relevance, $F(1, 423) = 4.75$, $p = .03$. Moreover, in this analysis, the three-way interaction among attitude, extremity, and behavioral relevance was not significant, $F(1, 423) = .01$, $p = .94$.

Discussion

Experiment 2 produced several notable findings. First, it replicated the knowledge–behavior matching effect reported in Exper-

Table 11

Experiment 2: Unstandardized Regression Coefficients for Attitudes Predicting Behavior as a Function of Attitude Extremity and Behavioral Relevance of Knowledge

	Behavioral relevance of knowledge	
Extremity of attitude	High	Low
Low	2.07**	0.68**
High	0.77**	0.45*

$* \ p < .05. \quad ** \ p < .01.$

iment 1. Second, it provided the first test of another prediction derived from the attitude inference explanation. Specifically, this experiment revealed that complexity of knowledge is also important in determining the extent to which people will rely on their attitudes as a guide to behavior. It is interesting to note that this experiment also revealed that it was the complexity of knowledge rather than the mere amount of knowledge that was responsible for attitude–behavior consistency effects. This finding is notable given that virtually all prior attitude–behavior consistency research involving knowledge has not differentiated between these constructs and has been conceptualized in terms of amount rather than complexity of knowledge.

A final contribution of Experiment 2 was that it suggested that other strength-related properties of attitudes were not responsible for the observed complexity effects. Past attitude–behavior consistency research on knowledge has not controlled for other strength-related properties of attitudes. The present experiment statistically controlled for three such properties: extremity, certainty, and perceived knowledge. In addition, the procedures used in the present experiment minimized the potential impact of other strength-related properties. For example, many of these properties (e.g., personal importance and vested interest) seem unlikely to have been influenced by our knowledge manipulations given that known antecedents of these constructs (e.g., value-relevance, self-interest, social identification; see Boninger, Krosnick, & Berent, 1995) are conceptually unlikely to be influenced by the number of departments for which people received information. Similarly, the mere number of departments should not alter attitude accessibility, and the fact that participants completed multi-item attitude measures should have elevated accessibility to a similarly high level in all conditions (Powell & Fazio, 1984).

Experiment 3

Goals and Overview

Experiment 3 was designed to replicate two key predictions derived from our attitude inference perspective: the knowledge–behavior matching effect and the moderating role of complexity on the knowledge–behavior matching effect. Experiment 3 allowed us to explore additional questions related to the attitude inference explanation for the role of knowledge in attitude–behavior consistency. In prior experiments, participants confronted behavioral decisions in which the goals of the behavior were clearly articulated and relatively specific (e.g., purchasing a camera). Thus, the relevance of knowledge underlying attitudes to the behavior was easy to determine. However, behavioral decisions are sometimes more general, and thus the relevance of one's knowledge to the goals of the behavior may be more ambiguous. When confronted with situations in which it is not clear that one's knowledge is relevant to the goals of the behavior, people with attitudes based on a single dimension of knowledge may be reluctant to conclude that their attitude is a meaningful guide to behavior (although perhaps not as reluctant as with a behavior, clearly of low relevance). In contrast, people with attitudes based on multiple evaluatively consistent dimensions of knowledge are likely to conclude that their attitudes are generally informative guides to behavior and thus should rely on their attitudes when faced with such situations. Experiment 3 was designed to provide a test of these hypotheses.

A second important issue that was not addressed in earlier experiments has to do with whether participants relied on global attitudes or more specific attitudes when making their behavioral decisions. Thus far, we have discussed attitude–behavior consistency in terms of global evaluations toward the attitude objects in question. This conceptualization is certainly a common way of thinking about attitude–behavior consistency. However, people also have evaluations of the specific dimensions of the object for which they have knowledge. In the context of the present experiments, participants likely developed attitudes toward the stores in general as well as attitudes toward the specific departments of which they had knowledge. A question that could not be addressed in the earlier experiments was which of these levels of evaluation people relied on when making their behavioral choices.

The answer to this question may depend on the complexity of knowledge and the nature of the knowledge–behavior match. When attitudes are based on a single dimension of knowledge, there may be little distinction between the global and specific evaluations. For example, participants' global attitudes should be based almost exclusively on their attitudes toward the camera departments in the low-complexity-attitude conditions, because the camera departments were the only dimensions of knowledge for which participants received evaluative information. Thus, one might expect attitudes toward the camera departments and the stores in general to produce very similar patterns of effects across different types of knowledge–behavior matching or mismatching. However, when attitudes are based on multiple dimensions of knowledge, the distinction between specific dimension and global attitudes may be more interesting. For example, when faced with a behavior relevant to only one of the dimensions of knowledge, do participants rely solely on the attitude toward this relevant dimension? Alternatively, might they have difficulty recognizing the extent to which their evaluative responses are attributable to specific dimensions of knowledge and thus might a broader range of evaluative responses exert influence on their behaviors? Experiment 3 was designed to explore such questions.

A final new issue explored in Experiment 3 was whether the effects demonstrated in prior experiments could be produced in contexts that were more consequential for participants. In earlier experiments, behavioral choices were purely hypothetical. In Experiment 3, we tested our predictions in a context in which the attitude objects were more involving. Such a context should motivate participants to be more deliberative in their decisions. Given that Experiment 1 suggested that our proposed attitude inference processes are more likely under highly deliberative conditions, one would expect more involving attitude objects to produce stronger effects.

Method

Participants

Participants were 310 undergraduate students who received extra credit in an introductory psychology course or a payment of $5 in return for their involvement in the experiment.

Design and Procedure

The experiment was a 2 (complexity of knowledge: low vs. high) × 3 (behavioral relevance of knowledge: high relevance vs. low relevance vs.

ambiguous relevance) factorial design. The procedure for this experiment was generally similar to that of Experiment 2; however, because the amount of knowledge manipulation had little effect in the prior experiment, it was not included in Experiment 3. Instead, amount of knowledge was equated across levels of complexity. Another modification of the procedures was that participants were presented with an introduction designed to make the attitude objects more involving. Specifically, participants were informed that the two stores were real but that fictitious names were being used in order to prevent their preexisting opinions from biasing their responses to the questions about the stores. Participants were instructed that while reading about the stores and answering questions about them, they should imagine that they might actually be shopping at these stores. Participants were further informed that to make this task more relevant to them, once all the data had been collected, a random draw would be conducted to award $50 gift certificates that could be used in select departments at these stores. Participants were instructed to leave contact information with the researcher so that they could receive their gift certificate if they were selected.

Complexity manipulation. Participants received two sets of information describing two department stores. For the first store, those randomly assigned to the low-complexity condition received a two-paragraph passage containing a paragraph with a general description of the store and a paragraph with a description of the store's camera department (containing six pieces of evaluative information) Participants then received a two-paragraph passage for the second store that contained a paragraph with a general description of the store and a paragraph with six pieces of evaluative information about the camera department. Participants randomly assigned to the high-complexity condition received a passage with a general introductory paragraph about the first store and a second paragraph containing two pieces of evaluative information about its camera department. This passage also contained a paragraph describing the sporting goods department (two evaluative pieces of information) and a paragraph describing the gardening supplies department (two evaluative pieces of information). For the second store, participants also received a passage with a general introductory paragraph and three additional paragraphs, each of which contained two pieces of evaluative information about one of the three departments. To ensure variance in attitudes, half of the participants received information favoring Smith's over Brown's, and the other half received information favoring Brown's over Smith's. The order of the passages was counterbalanced.

Following the information about the stores, participants reported their global attitudes toward the stores using the same attitude measures used in prior experiments. The order of these measures was counterbalanced. Participants then completed measures of perceived knowledge and attitude certainty. Finally, in contrast to prior experiments, participants were then asked to report their attitudes toward the specific departments of the stores for which they had received information. In the case of low-complexity attitudes, they completed an attitude measure for the camera department of the first store and then completed an attitude measure for the camera department of the second store. For the high-complexity condition, participants reported their attitudes on separate measures for the camera department, sporting goods department, and gardening supplies department of the first store. They then did the same for the second store.

Behavioral relevance of knowledge manipulation. Participants then completed the behavioral task. In the high-behavioral relevance condition, participants indicated which store they would choose if they needed to buy a camera. In the low-behavioral relevance condition, they indicated which store they would choose if they needed to buy jewelry. Participants assigned to the ambiguous relevance condition were presented with a decision task in which no specific product was designated. As in Experiment 2, the introduction to the decision task asked participants to imagine that at the time of their decision they happened to be 5 min closer to one store than the other. The store specified as closer was always the store described in less favorable terms. On completion of the decision task,

participants received a written debriefing describing the objectives of the study and the fictitious nature of the information they received. Participants' questions were answered and they were informed that they would not be eligible for $50 gift certificates (because the stores were fictitious) but that a random draw would be conducted to award two $50 cash prizes.

Measures

Attitudes. General attitudes toward the two stores were assessed and coded as in Experiments One and Two. Attitudes toward specific departments were assessed using the same 8-item scales used to assess general attitudes with the only change being that a specific department was specified as the target of judgment rather than the store in general. As with general attitudes, difference scores were computed by subtracting each person's attitude score for the specific department of Smith's Department Store from his or her attitude score for the specific department of Brown's Department Store.

Attitude strength-related properties. Attitude extremity, certainty, and perceived knowledge were measured and coded in a manner similar to Experiment 2.

Behavior. Behavior was measured and coded as in Experiment 2. However, for the ambiguous relevance condition, no specific target of purchase was designated.

Results

Analyses of Attitude Formation Procedures

We examined the impact of our attitude formation procedures on the properties of attitudes measured in Experiment 3 by conducting a series of 2 (complexity of knowledge: low vs. high) × 2 (positivity of knowledge: Smith's more positive vs. Brown's more positive) ANOVAs.

Complexity of Knowledge

Table 12 summarizes the influence of the complexity manipulation on attitudes, attitude extremity, perceived knowledge, and certainty. Effects were generally as expected. Complexity had only a weak influence on actual attitudes. There was a modest tendency for high-complexity attitudes to be more extreme than low-complexity attitudes on the differential attitude index. Complexity influenced perceived knowledge and certainty.

Positivity of Knowledge

Table 13 shows that positivity of knowledge generally had its intended effects. Actual attitudes were influenced in the predicted ways by the manipulation (see rows 1–3 of Table 13). Attitude extremity for the individual stores was influenced by this manipulation, but extremity for the differential attitude index was only weakly influenced. The positivity of knowledge manipulation had weak or no influence on perceived knowledge and certainty (see rows 7–12 of Table 12). Taken together, these analyses generally supported the success of the attitude formation procedures.

Analyses of Attitude–Behavior Consistency

The next analytic step was to test the central predictions regarding attitude–behavior consistency by using an analytic strategy similar to Experiment 2. A multiple regression model was specified with predictor variables that included the differential attitude

index, a dummy variable representing complexity of knowledge condition, and two dummy variables representing the three levels of behavioral relevance of knowledge. The model also included all interactions. Although 11 predictor variables were in the model, only variables involving the differential attitude scores were of theoretical interest, and none of the effects that did not involve attitudes reached significance. The dependent variable was the behavioral intention response.

A significant attitude effect was obtained, $F(1, 297) = 102.49$, $p < .01$. The unstandardized regression coefficient for the differential attitude score predicting behavior (collapsed across experimental conditions) indicated a substantial positive impact on behavior ($b = .69$, $p < .01$).

The analysis also revealed the predicted interaction between attitudes and behavioral relevancy, $F(2, 297) = 14.60$, $p < .01$. As in Experiment 2, we examined the ability of differential attitudes to predict behavior within the different conditions of behavioral relevance. Attitudes of high-behavioral relevance had the most influence on behaviors ($b = .95$, $p < .01$), attitudes of low-behavioral relevance had the least influence on behaviors ($b = .34$, $p < .01$), and attitudes of ambiguous behavioral relevance had an intermediate level influence on behavior ($b = .64$, $p < .01$). This result replicated the basic knowledge–behavior matching effect.

The interaction between attitudes and complexity was significant, $F(1, 297) = 8.42$, $p < .01$. An examination of the regression coefficients for differential attitudes predicting behavior within the two levels of complexity revealed that high-complexity attitudes exerted more influence on behavior ($b = .83$, $p < .01$) than low-complexity attitudes ($b = .42$, $p < .01$). Experiment 2 produced a similar but nonsignificant trend.

As in Experiment 2, the interaction involving attitudes, complexity of knowledge, and behavioral relevance was significant, $F(2, 297) = 11.60$, $p < .01$. To decompose this interaction, we examined the unstandardized regression coefficients for differential attitude scores that predicted behavior separately within the different combinations of complexity of knowledge and behavioral relevance. As seen in row 1 of Table 14, when attitudes were of low complexity, there was a substantial difference in the impact of attitudes on high- versus low-relevance behaviors ($Z = 5.93$, $p <$

Table 12

Experiment 3: Attitude, Extremity, Knowledge, and Certainty Scores as a Function of Complexity of Knowledge

	Complexity of knowledge			
Dependent variable	Low complexity	High complexity	F	p
Attitude—Smith's	5.63	5.42	3.74	.05
Attitude—Brown's	5.62	5.65	0.09	.76
Differential attitude	−0.01	0.24	3.69	.06
Extremity—Smith's	1.70	1.67	0.13	.72
Extremity—Brown's	1.72	1.82	1.44	.23
Differential extremity	0.97	1.40	14.59	<.01
Knowledge—Smith's	3.84	4.62	21.92	<.01
Knowledge—Brown's	3.94	4.61	15.41	<.01
Knowledge—average	3.89	4.61	20.88	<.01
Certainty—Smith's	4.16	4.66	10.61	<.01
Certainty—Brown's	4.10	4.70	16.18	<.01
Certainty—average	4.13	4.68	15.84	<.01

Table 13

Experiment 3: Attitude, Extremity, Knowledge, and Certainty Scores as a Function of Positivity of Knowledge

	Positivity of knowledge			
Dependent variable	Smith's more positive	Brown's more positive	F	p
Attitude—Smith's	6.05	4.99	97.99	<.01
Attitude—Brown's	5.08	6.19	109.60	<.01
Differential attitude	−0.97	1.20	304.03	<.01
Extremity—Smith's	2.08	1.28	91.76	<.01
Extremity—Brown's	1.32	2.22	124.76	<.01
Differential extremity	1.08	1.29	3.65	.06
Knowledge—Smith's	4.42	4.04	5.40	.02
Knowledge—Brown's	4.26	4.29	0.04	.84
Knowledge—average	4.34	4.17	1.25	.26
Certainty—Smith's	3.82	3.09	7.10	.01
Certainty—Brown's	4.43	4.37	0.17	.68
Certainty—average	4.52	4.29	2.90	.09

.01). What is also of interest was the fact that attitudes of high-behavioral relevance had significantly greater influence on behavior than attitudes of ambiguous relevance ($Z = 3.84$, $p < .01$). Thus, participants with low-complexity attitudes relied heavily on the behavioral relevance of their knowledge. However, for attitudes of high complexity (see row 2 of Table 14), the effect of behavioral relevance was weaker. Indeed, comparisons among coefficients revealed that none of these coefficients were significantly different. Hence, knowledge–behavior matching effects occurred for simple attitudes but not for complex attitudes. As in Experiment 2, this decreased knowledge–behavior matching effect was primarily a result of the fact that people were willing to rely on high-complexity attitudes even when the knowledge underlying the attitude had little direct relevance or ambiguous relevance to the behavior.[11]

Alternative Mechanisms for Attitude–Behavior Consistency Effects

We once again conducted a series of regression analyses on behaviors. We included the predictor variables from the original

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[11] It is also possible to compare the regression coefficients across levels of complexity within each condition of behavioral relevance. Tests of differences between coefficients for these comparisons indicated that in all cases, the coefficients were significantly different. Thus, simple attitudes were slightly better predictors of behavior than complex attitudes under conditions of high-behavioral relevance ($Z = 2.14$, $p = .04$). However, complex attitudes were better predictors than simple attitudes when behaviors were of low ($Z = 4.43$, $p < .01$) or ambiguous relevance ($Z = 3.20$, $p < .01$). Several other methods of assessing attitude–behavior consistency were examined. When the ability of attitudes toward one of the stores was used to predict behavior, some effects were weaker. The attitude main effect, the attitude by complexity interaction, and the attitude by behavioral relevance interaction effect remained significant for both individual attitude analyses. The interaction among attitude, complexity, and behavioral relevance was marginally significant for one store and nonsignificant for the other. The second approach using assignment to the positivity of information condition as a proxy variable for the differential attitude index was also examined. In this analysis, all key effects remained significant.

Table 14
Experiment 3: Unstandardized Regression Coefficients for Attitudes Predicting Behavior as a Function of Complexity and Behavioral Relevance of Knowledge

Complexity of knowledge	Behavioral relevance of knowledge		
	High	Low	Ambiguous
Low	1.31**	−.29	.35*
High	.84**	.73**	.89**

* $p < .05$.   ** $p < .01$.

attitude–behavior consistency analyses as well one of the alternative strength-related properties of attitudes and its interactions.

Perceived certainty.   Analyses including certainty and its interactions failed to eliminate any of the key effects obtained in the original analyses. Of particular note, the interaction among attitudes, complexity, and behavioral relevance remained strong, $F(2, 285) = 10.98, p < .01$. Furthermore, there was no evidence that certainty interacted with attitudes and behavioral relevance.

Perceived knowledge.   Analyses including perceived knowledge and its interactions failed to eliminate any of the key effects from the original analyses. Most important is that the interaction among attitudes, complexity, and behavioral relevance remained, $F(2, 284) = 9.64, p < .01$. In addition, there was no evidence that perceived knowledge interacted with attitudes and behavioral relevance.

Extremity.   Finally, when controlling for extremity, none of the key effects in the original attitude–behavior consistency analyses were eliminated. Most important, the key interaction among attitudes, complexity, and behavioral relevance remained significant, $F(2, 285) = 7.58, p < .01$. It is interesting to note that the extremity produced some effects independent of complexity. The Extremity × Attitude interaction was significant, $F(1, 285) = 8.96, p < .01$. Similar to Experiment 2, this interaction indicated that low-extremity attitudes were more predictive of behavior than were high-extremity attitudes. The interaction among attitudes, extremity, and behavioral relevance was not significant, $F(2, 285) = 1.86, p = .16$. When we conducted parallel analyses with our alternative index of extremity, all key effects in our original analyses remained significant, including the interaction among attitudes, complexity, and behavioral relevance, $F(2, 285) = 12.21, p < .01$. None of the extremity effects were significant including the interaction among attitudes, extremity, and behavioral relevance, $F(2, 285) = .70, p = .50$.

Analyses of the Impact of Dimension of Knowledge Attitudes on Behavior

The final question we address in our analyses was the extent to which participants relied on their specific attitudes toward the departments or considered their more general evaluative responses when reaching decisions. Before exploring this question, it was first necessary to establish the extent to which global attitudes were in fact a function of evaluations of the specific departments for which participants received knowledge. In the low-complexity condition, this was done by conducting a simple regression analysis in which the differential camera department attitude index was

used to predict the differential global attitude index. As expected, camera attitudes exerted a powerful impact on global attitudes ($b = .75, p < .01, R^2 = .74$). In the high-complexity condition, this was done by conducting a multiple regression analysis in which the three differential attitude indices for specific departments simultaneously predicted the global differential attitude index. As expected, camera attitudes ($b = .29, p < .01$), sporting good attitudes ($b = .36, p < .01$), and gardening supplies attitudes ($b = .26, p < .01$) all independently contributed to global attitudes and collectively accounted for most of the variance in global attitudes ($R^2 = .83$).

The fact that global attitudes were almost completely determined by the department attitudes was intended. The purpose of the attitude formation procedure was to create attitudes in which participants relied on either a single dimension of knowledge or multiple dimensions of knowledge to derive their attitudes. However, this powerful association between evaluations of the underlying dimensions of knowledge and the global attitude makes it difficult to disentangle the effects of department and global attitudes. For example, simultaneously including specific department attitudes and global attitudes in regression analyses that predict behavior are highly problematic. Given that specific attitudes account for 74%–83% of the variance in global attitudes (which corresponds to correlations of .86–.91), this presents serious multicollinearity problems. Hence, statistical tests and estimates of coefficients derived from analyses that adopt this approach could be suspect (Cohen & Cohen, 1983). More fundamentally, the conceptual interpretation of regression coefficients in such analyses can be unclear (Cohen & Cohen, 1983). Consider the meaning of the global attitude in an analysis of this sort. This analysis tests the degree to which global evaluations predict behavior after having removed the variance in global attitudes that was due to the evaluative information people used to form their attitudes in the first place. It is not clear what this residual variance in global attitudes is at the conceptual level. Indeed, even assuming good psychometric properties, a substantial portion of this residual variance is likely random error of measurement.

Despite such challenges, there are analyses that can provide insight into whether participants used their attitudes toward specific departments to guide their behavioral decisions. Specifically, one useful approach is to conduct separate regression analyses in which differential attitudes toward the specific departments are used to predict behavioral decisions within different combinations of complexity and behavioral relevance conditions. Such analyses are analogous to the results reported in Table 14 for global attitudes. An examination of the pattern of coefficients can then provide insight into the degree to which participants relied on attitudes toward specific departments when reaching behavioral decisions within the different experimental conditions.

Thus, we conducted regression analyses within each combination of our complexity and behavioral relevance conditions. For low-complexity attitudes, the differential attitude index for the camera department was used to predict behavior. For high-complexity attitudes, the differential attitude indices for the camera, sporting goods, and gardening supplies departments were used to simultaneously predict behavior. As seen in row 1 of Table 15, for simple attitudes, the attitudes toward the specific department produced a pattern of effects quite similar to that of the global attitude. Camera attitudes were very influential on behaviors di-

Table 15
Experiment 3: Unstandardized Regression Coefficients for Dimension Attitudes Predicting Behavior as a Function of Complexity and Behavioral Relevance of Knowledge

| | Behavioral relevance of knowledge | | |
Complexity of knowledge	High	Low	Ambiguous
Low (Camera)	1.43**	−.28†	.28†
High (Camera)	.37†	.22	.02
(Sporting goods)	.05	.48*	.49*
(Gardening supplies)	.61**	−.01	.37

† $p < .10$.　* $p < .05$.　** $p < .01$.

rectly relevant to this dimension of knowledge but had minimal impact on behaviors that were of low- or ambiguous-relevance to this dimension. Thus, as expected, there was little distinction between the global and specific evaluations when the global evaluation was based on a single dimension of knowledge.

Rows 2–4 of Table 15 provide the results for the high-complexity attitudes. Turning first to the high-behavioral relevance condition, if participants were simply relying on their specific department attitudes to guide behavior, then one would expect for attitudes toward the camera department to exert a powerful effect on behavior and for the other department attitudes to have little influence. It is interesting to note that this did not happen.

Camera attitudes were only marginally significant predictors, and gardening supplies attitudes were actually slightly stronger predictors of behavior. Moreover, it is worth noting that none of these individual department attitude coefficients was as large as the global attitude coefficient for this condition (see Table 14). Likewise, in the low- and ambiguous-relevance conditions, none of the individual department attitude coefficients were as large as the global attitude coefficients reported for these conditions in Table 14. It is interesting to note that the sporting goods department attitude was the strongest predictor in the low-behavioral-relevance condition. Given that pretesting of dimensions indicated that the quality of a store's camera department was seen as more diagnostic than the quality of a store's sporting goods department for assessing the quality of a jewelry department, this finding does not seem readily compatible with people adopting a simple strategy of relying on the most relevant specific attitude. Instead, the results for high-complexity attitudes, as shown in Table 15, suggest that people may rely on their broader evaluative responses to guide their behaviors and may find it difficult to make precise judgments that rely only on the portion of their global attitude due to a specific dimension of knowledge when reaching decisions.

Discussion

Experiment 3 replicated the major findings of Experiment 2 regarding the impact of complexity and behavioral relevance of knowledge on attitude–behavior consistency. Indeed, the present effects were generally stronger than those observed in Experiment 2. These stronger effects may have been due to the fact that the procedures in Experiment 3 were more consequential for participants than in the previous experiments. Analyses in Experiment 3 suggested that complexity effects could not be explained by other

strength-related properties of attitudes, which is consistent with the results of Experiment 2. More significantly, Experiment 3 went beyond Experiment 2 in some important ways. First, this experiment extended the findings on the role of complexity in attitude–behavior consistency to contexts in which the behavioral relevance of knowledge was ambiguous. As predicted, participants were reluctant to rely on low-complexity attitudes when confronted with a behavior for which the relevance of their underlying knowledge was ambiguous. However, participants did rely on high-complexity attitudes when faced with such behavioral decisions.

Second, Experiment 3 provided the first exploration of the extent to which people relied on more global evaluations of attitude objects versus evaluations of specific dimensions of the objects when reaching their behavioral decisions. In the case of low-complexity attitudes, analyses suggested that the global and specific dimension attitudes were largely interchangeable. However, for high-complexity attitudes, there was little evidence that people relied solely on the specific attitude most directly relevant to the behavioral decision. Instead, Experiment 3 suggested that people's behavioral decisions were shaped by their broader evaluative reactions to the object. That is, for attitudes based on multiple dimensions, participants faced with a decision relevant to a single dimension underlying their attitudes seemed to recognize that their attitudes were meaningful guides to behavior because of the relevance or breadth of their knowledge. However, they failed to precisely determine how much of their evaluation was uniquely attributable to the relevant dimension and failed to use only this aspect of their attitude as the basis for their choices. Similarly, when faced with low-relevance behaviors, participants relied on their evaluations without clearly taking into account the portion of their attitude likely to be most diagnostic for the behavior. In the case of ambiguous relevance behaviors, it is not clear that reliance on a specific department attitude would even be a viable approach given that no specific attitude is clearly more relevant than any other. It is also important to note that our analyses did not suggest that people were unable to differentiate among the dimensions of knowledge when attitudes were of high complexity. Most notably, our analyses suggested that evaluations of each dimension of knowledge uniquely contributed to the global attitude. Thus, people were clearly able to differentiate sufficiently among these dimensions to take each into account when forming their global attitudes. However, people did not show evidence of making such clear distinctions when reaching their behavioral decisions.

General Discussion

Summary of Findings

This research supported a number of predictions derived from our attitude inference explanation for the impact of attitude-relevant knowledge on attitude–behavior consistency under high-deliberation conditions. Experiment 1 demonstrated that the relevance of knowledge underlying the attitude to the goals of behavior moderated attitude–behavior consistency. Extending past research on attitude–behavior matching effects (e.g., Millar & Tesser, 1989), this study showed that matches did not have to occur within broad affective–cognitive categories; rather, the matches could be quite specific (e.g., within the cognitive basis). Moreover, this effect of matching was stronger under deliberative than nondeliberative conditions.

Experiment 2 replicated the attitude bases–behavior matching effect and demonstrated that this effect was stronger for attitudes of low complexity than for attitudes of high complexity. This later finding occurred because people were still willing to follow attitudes for behaviors of low relevance to their knowledge if the knowledge underlying their attitudes was complex. Furthermore, this experiment demonstrated that the willingness of participants to follow attitudes as guides for low-relevance behaviors was influenced by complexity but not by the mere amount of knowledge. The latter finding helps to clarify what it is about high amounts of knowledge that may have led to greater attitude–behavior consistency in prior research (e.g., Davidson et al., 1985; Kallgren & Wood, 1986). Indeed, prior researchers had assumed that it was the amount of knowledge that was responsible for enhancing attitude–behavior consistency, whereas the present research suggests that it is the complexity of the knowledge that may normally be confounded with amount that is more critical. Experiment 3 replicated the basic findings of Experiment 2 in a context that was more consequential to participants and extended the complexity effect to behaviors that were of ambiguous relevance to the knowledge underlying the attitude.

Implications of Findings

The Nature of Attitude-Relevant Knowledge

These findings contribute to our understanding of the nature of attitude-relevant knowledge in several ways. Past research has conceptualized knowledge primarily in terms of mere amount of information. These experiments suggest that the content of knowledge also matters. Specifically, the relevance of the content of knowledge may often play a role in the impact of attitudes on attitudinal processes (e.g., attitude–behavior consistency, resistance to persuasive messages). Moreover, in the few prior studies (Millar & Tesser, 1986b, 1989) that have explored content of knowledge, content has been assumed to be most usefully conceptualized in terms of broad categories, such as affect and cognition. The present studies suggest that more fine-grained distinctions within these broad categorizations are useful.

In addition, these experiments suggest that the number of distinct dimensions of knowledge (i.e., complexity) is also important. Although amount and complexity of knowledge are likely to be positively correlated, they are conceptually and operationally distinguishable. The current findings are interesting in that they challenge the traditional assumption that amount of information was responsible for past attitude strength effects. It is interesting to note that although complexity has received some attention in the attitudes literature, its potential role as a determinant of attitude strength (e.g., attitude–behavior consistency, resistance) has largely been ignored. Our experiments suggest more attention to the role of complexity as a determinant of attitude strength effects is warranted.

Knowledge and Attitude–Behavior Consistency

These findings also have implications more specifically for research in the role of knowledge in attitude–behavior consistency. The present experimental demonstrations of effects for knowledge provide some of the strongest evidence to date that knowledge plays a causal role in attitude–behavior consistency and shed light on why this construct is related to attitude–behavior consistency. The role of knowledge has been assumed to be a function of differences in attitude stability or accessibility or perhaps some other property of attitudes, such as confidence. The present research proposes and tests a new conceptual perspective for understanding the role of knowledge in attitude–behavior consistency. Because increases in attitude-relevant knowledge are likely associated with greater complexity of knowledge, attitudes based on extensive knowledge are more likely to have at least one dimension of knowledge relevant to a given behavior than attitudes based on little knowledge. Thus, knowledge–behavior matching effects could be one mechanism by which knowledge influences attitude–behavior consistency. In addition, even when a behavior has little relevance to the specific knowledge underlying an attitude, our experiments suggest that people still follow their attitudes when attitudes are derived from multiple evaluatively consistent dimensions because of their willingness to extrapolate beyond what they know. Although this new attitude inference perspective does not preclude traditional explanations, it does differ from traditional explanations in interesting ways.

For example, the attitude stability explanation for knowledge implies that attitudes that differ on knowledge may not differ per se in their impact on behaviors (i.e., there should be no difference between high- and low-knowledge attitudes' prediction of behavior if changes in attitudes over time are taken into account). In contrast, our perspective implies that high- and low-knowledge attitudes (if they differ in complexity) will sometimes differ in their impact on behaviors even if stability is held constant. Indeed, in our experiments, attitudes and behavior were assessed in immediate succession; thus, it is very unlikely that attitudes changed. Nonetheless, under certain conditions, such attitudes differed in their impact on behavior. Our conceptual framework also differs from the stability explanation in that our framework predicts that depending on the nature of the behavior and the extent to which behaviors are deliberative, high- and low-knowledge attitudes can exert equal or differing influence. The stability explanation does not imply such moderating factors.

The attitude inference framework can also be contrasted with the attitude accessibility explanation for knowledge effects. According to this view, because knowledge is positively related to accessibility, attitudes differing in knowledge also differ in their likelihood of being activated at the time of the behavior and thus in their likelihood of exerting an influence. If this is the only mechanism, high- and low-knowledge attitudes equated on accessibility should not differ in their impact on decisions. In contrast, the attitude inference perspective suggests that attitudes that differ in knowledge might still differ in their impact.

In our experiments, it is unlikely that high- and low-complexity attitudes differed in accessibility because participants completed a multi-item attitude measure that should have made all attitudes highly accessible (Powell & Fazio, 1984). Nonetheless, complexity of knowledge did play a role in attitude–behavior consistency. In addition, the accessibility explanation makes no explicit predictions regarding the moderating role of the nature of the behavior or the deliberativeness of the behavior. In contrast, the attitude inference explanation clearly specifies a role for these factors.

Likewise, the present findings cannot be attributed to the complexity of knowledge influencing strength-related properties, such

as certainty and perceived knowledge, because controlling for these beliefs in our analyses had little impact on the results. This finding does not mean that complexity is completely unrelated to these beliefs. There was evidence that people felt more knowledgeable and certain as the complexity of their knowledge increased. However, these beliefs did not play a role in their willingness to rely on their attitudes. Of course, the inference explanation implies that subjective beliefs of some sort play a role in our effects. However, rather than being general perceptions of certainty or knowledge, they may be more specific perceptions of the utility of the attitude in a particular behavioral context.

Although the attitude inference account of knowledge effects appears to be the most parsimonious explanation for the present results and provides novel predictions, we do not wish to imply that the other explanations are invalid. These explanations and the inference mechanisms we propose are not mutually exclusive. Knowledge may moderate attitude–behavior consistency for many reasons. These experiments merely suggest that stability, accessibility, and strength beliefs are not the only reasons for such effects.

Link to Attitude–Behavior Specificity Research

It is useful to contrast our work with the research on attitude–behavior specificity matching. Although research that finds that attitude–behavior consistency increases when attitudes and behaviors are measured at comparable rather than differing levels of specificity (e.g., Fishbein & Ajzen, 1974; Weigel & Newman, 1976) could be framed as attitude–behavior matching effects, these effects differ from our findings in a fundamental way. Attitude–behavior specificity research has not concentrated on properties of attitudes and behaviors but instead on whether or not the attitude object and the target of the behavior are of comparable specificity. Thus, this work has focused on the properties of the target of judgments and behaviors rather than properties of the judgments and behaviors themselves. Indeed, in our experiments, the specificity of the attitude object and the behavior were held constant. What varied was the complexity of knowledge underlying the global attitude judgment and the relevancy of the goals of the specific behavior to the knowledge underlying the attitude judgment. Moreover, our finding that global attitudes were sometimes as good or better at predicting very specific behaviors than corresponding specific attitudes directly relevant to these behaviors does not fit within the specificity-matching literature. This literature would suggest that attitudes toward the camera departments should always have been the best predictors of behavioral decisions regarding cameras, regardless of complexity.

Nonetheless, our findings have implications for the attitude–behavior specificity matching literature. For example, these experiments suggest when one might expect global attitudes to predict broad multibehavioral criteria. When a global attitude is based a single dimension of knowledge, it may do a poor job predicting all but a very limited number of behaviors. Thus, such an attitude might be a poor predictor of even an aggregate measure of different behaviors. In contrast, a global attitude derived from many evaluatively consistent dimensions of knowledge might do well at predicting such a behavioral measure.

In addition, global attitudes could, under certain conditions, do very well at predicting specific behaviors if those global attitudes are based at least in part on information relevant to the specific behavior. Most notably, attitudes based on multiple consistent dimensions of knowledge could also predict single specific behaviors even if there is no underlying relevance, because people are willing to extrapolate from such attitudes.

Directions for Future Research

These experiments suggest numerous directions for future research. One direction is an exploration of more complex cases of knowledge–behavior matching or mismatching. The present experiments involved simple unidimensional attitudes based on evaluatively consistent information and complex multidimensional attitudes based on dimensions that were evaluatively consistent both within and across dimensions. Sometimes, information within a dimension is not evaluatively consistent, or even if it is, the dimension might not be evaluatively consistent with other dimensions (see Thompson, Zanna, & Griffin, 1995). It would be interesting to explore how these types of evaluative inconsistency alter the results obtained in the present experiments. Inconsistency across dimensions might make people less willing to use their attitudes when confronted with a behavior of low relevance to the knowledge underlying the attitude because they can no longer confidently make assumptions about the evaluative nature of dimensions for which they have no knowledge. Thus, the attitude inference perspective tested in the present experiments might prove useful for understanding why some other strength-related properties of attitudes such as attitudinal ambivalence moderate attitude–behavior consistency. Another more complicated situation would be to examine behaviors that are multidimensional in nature. Although we examined behaviors with a single goal, some behaviors have multiple goals. It would be useful to examine how complexity and consistency of knowledge interact with the number of goals of behaviors.

Another avenue for research would be to explore the generalizability of the findings to other types of dimensions of knowledge and behaviors. These experiments involved the manipulation of cognitive bases specific to a particular type of attitude object (i.e., departments within a department store). These bases were examined because they provided a straightforward method for testing our hypotheses.

However, it would be valuable to test whether the present findings can be generalized to more global categories of attitude-relevant information. One obvious set of more general categories that could be tested are attitude functions. Future research could manipulate the number or consistency of attitude functions on which an attitude was based and the relevancy of a given behavior to one or more of these functions.

An additional direction for future research would be to explore variations in the extent to which dimensions of knowledge are strongly linked to the global attitude in memory. In the present context, participants' dimensions of knowledge were strongly linked to global evaluations because attitudes were newly formed. However, over time, evaluations of the specific dimensions of the object and the global evaluation originally derived from these dimensions might become somewhat dissociated in memory. Thus, people might be able to access their attitude but not necessarily have a clear notion of the knowledge that originally gave rise to this attitude (see Lingle & Ostrom, 1985). Exploring the differences between attitudes of this sort and attitudes with strong links

to their underlying dimensions of knowledge could provide useful insights.

Finally, it would be interesting to further examine the potential role of amount of knowledge in attitude–behavior consistency. In Experiment 2, we found that amount of knowledge had little impact on attitude–behavior consistency. However, this does not imply that amount of knowledge never plays a role in such processes. For example, in our experiments, even our low amount of knowledge conditions involved a moderate amount of information (i.e., six pieces of information). It might be that amount of knowledge would have had an effect if conditions involving fewer pieces of information were included.

Taken together, these directions of inquiry would do much to elaborate on the conclusions suggested by the present results. These lines of inquiry would also further broaden the implications of these findings for understanding the psychological processes by which attitudes influence behaviors.

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