Affective Attitudes Are Not Always Faster: The Moderating Role of Extremity

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Some models of attitude have speculated that affectively based attitudes are more accessible than cognitively based attitudes. However, there are also reasons to expect that affectively based attitudes may not be generally faster and that any accessibility advantage would hold only at high levels of attitude extremity. Two studies of attitudes with affective and cognitive structural bases examined this possibility. In both studies, no overall effect of attitude basis on extremity emerged, but attitude extremity did moderate the effects of basis. Affectively based attitudes were expressed faster than cognitively based ones only when attitudes were more extreme, and they tended to be expressed more slowly when attitudes were less extreme. These results may have arisen because only strong affect is seen as more diagnostic of true attitude, producing faster responses.

A long-standing premise in Western thought maintains that a preference can either originate in the heart—feelings and emotions about an object—or the head—cognitive beliefs about the attributes of that object. In comparing these grounds for judgment, another commonplace often arises: that the head's evaluations are less basic than the heart's. The power of emotion may be deplored or celebrated, but it is widely acknowledged that conscious, rational thought is at best an imperfect master of our minds. This assertion that "feelings are first," to quote the e e cummings poem that opens Zajonc's (1980) argument for affective primacy, fits well with our notions of both the speed and pervasiveness of affect. Emotions appear to proceed quickly and carry a considerable punch. Reasoned thought, by contrast, is often slow to reach a decision, and when it does, it seems to lack the motivational impetus that emotion provides.

Psychological research on attitudes and preferences, too, tends to support the view that attitudes based on emotions are stronger than attitudes based on cognitive beliefs. For example, affectively based attitudes tend to resist cognitive persuasion appeals, whereas cognitively based attitudes do not resist affective appeals (Edwards, 1990; Edwards & von Hippel, 1995; but see also Millar & Millar, 1990). Affectively based attitudes also appear to be more stable over time (Downing, Jacobson, & Brock, 1998) and are more likely to arise from direct experience with the attitude object (Millar & Millar, 1996).

If affective attitudes are often stronger, might they also tend to be accessed and expressed more quickly? Accessibility, as measured by the speed of a good-bad evaluation of an object, has been proposed as a primary measure of the strength of an attitude (Bassili, 1996; Fazio, 1989, 1995). Among other things, highly accessible attitudes are better predictors of behavior (Bassili, 1993; Fazio & Williams, 1986), exert more influence on information processing (Fazio & Williams, 1986; Houston & Fazio, 1989; Roskos-Ewoldsen & Fazio, 1992), and are more stable and resistant to change (Bassili & Fletcher, 1991; Fazio & Williams, 1986). If affective attitudes and accessible attitudes are both stronger, an attitude based on emotions and feelings may be expressed more quickly than one that is not. On the other hand, attitude strength is a complex construct whose constituents are not perfectly interrelated (Krosnick & Petty, 1995; Pomerantz, Chaiken, & Tordesillas, 1995). Affective basis and accessibility, then, could be separate factors that independently support strength outcomes such as

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stability and resistance. In this case, rapid expression would have little to do with an attitude's basis.

The relationship between affective basis and accessibility also has implications for attitude activation under different conditions of time constraint and awareness. Attitudes expressed after conscious deliberation are often quite different from an immediate evaluative reaction toward the same object (Fazio, Jackson, Dunton, & Williams, 1995; Greenwald, McGhee, & Schwartz, 1998; Wilson, Schooler, & Lindsey, 1998). If attitudes that are most rapidly retrieved turn out to be largely affect based, this would imply that time-constrained or implicit measures of attitude primarily tap feeling-based evaluations.

THEORETICAL PERSPECTIVES ON ATTITUDE BASIS AND ACCESSIBILITY

Attitude researchers have drawn a distinction between affective and cognitive components of attitude within a tripartite model that also includes behavior (e.g., Greenwald, 1968; Katz & Stotland, 1959; Rosenberg & Hovland, 1960). Originally, affect within attitude was seen in purely evaluative terms as the sign or valence of the attitude (Allport, 1935; Katz & Stotland, 1959; M. B. Smith, 1947). But more recently, tripartite attitude models have narrowed the scope of the affective component to include only the evaluative implications of feelings and emotions (e.g., Breckler, 1984; Greenwald, 1968; Ostrom, 1969). Thus, emotions about an object may or may not correspond to its overall evaluation.

Zajonc's (1980) arguments for affective primacy might appear to support the contention that affectively based attitudes are faster. Research using presentation at very fast speeds shows that the "mere exposure" effects of familiarity on liking and the priming effects of positive and negative facial expressions can be obtained even when a person cannot accurately report having seen the stimulus (Kunst-Wilson & Zajonc, 1980; Murphy & Zajonc, 1993). These findings of a very rapid evaluative response are taken as evidence for an affective system whose judgments can be separate from and precede the judgments of conscious, controlled reasoning.

But keeping in mind the distinction between general evaluative preference and specific emotions, it is not clear from the evidence supporting affective primacy that emotionally based evaluations are expressed any faster than cognitively based emotions. For example, participants in a study were influenced in their preferences for Chinese ideograms by subliminally presented facial expressions but did not report any identifiable feelings during this process (Winkielman, Zajonc, & Schwarz, 1997). Leading participants to consciously attribute their feelings to the priming procedure also did not reduce the priming effect. Possibly, then, affective attitude, as measured by the sum of conscious valenced emotional associations to the object, is not primary in the same way that the immediate overall evaluation of an object is primary.

Elsewhere (Giner-Sorolla, 1999), I have proposed that the role of affect in attitude can be characterized along a continuum ranging from immediate to deliberative, depending on the amount of time necessary to retrieve a given affective basis for evaluation. Thus, evaluative reactions to subliminally presented stimuli as well as undifferentiated feelings that arise quickly and spontaneously reflect a relatively immediate affective component of attitude. Emotions that are less accessible form a relatively deliberative affective component of attitude. As an example, a novice dieter may have a generally favorable immediate affective reaction to a rich cake, but upon further reflection, the dieter may see the cake as a potential threat to the goal of losing weight and react to it with anxiety or guilt. Here, the initial positive reaction is highly accessible, whereas the later negative reaction is not.

Measures of the affective component of attitude often present respondents with emotional terms such as *love* and *hatred*, ask how strongly the attitude object is associated with each emotion, and average the valence of the responses (e.g., Breckler, 1984; Chaiken, Pomerantz, & Giner-Sorolla, 1995; Crites, Fabrigar, & Petty, 1994; Stangor, Sullivan, & Ford, 1991). Retrieving such specific information can be a conscious, controlled, and relatively slow process. Thus, the time taken to construct an evaluation from specific emotional associations may not be appreciably greater than the time taken to construct one from equally specific cognitive beliefs about the object.

EMPIRICAL FINDINGS ON ATTITUDE BASIS AND ACCESSIBILITY

Fazio (1995) has speculated that affectively based attitudes might be more accessible than cognitively based attitudes. Attitude accessibility, in this view, is operationalized by speed of evaluation, which represents the strength of association between the object representation and its stored evaluation in memory. The stored evaluation, as in Zanna and Rempel's (1988) view, exists independently of its cognitive, affective, or behavioral sources and can be activated without necessarily calling to mind these sources. Fazio's model does not explicitly address the influence of structural basis on accessibility. In theory, a strong object-evaluation link could lead to equally accessible attitudes whether the link was originally established by beliefs, emotions, or behaviors. However, both Zanna and Rempel (1988) and Fazio (1995) recognize that a summary evaluation may keep some emotional quality if it was derived from

emotions, even if the specific experiences that formed it are not accessible.

Fazio (1995) further conjectures that emotional evaluations may be especially rapidly accessed because they are seen as more diagnostic of true attitude than unemotional ones are and cites the results of an unpublished study to support this (Fazio & Powell, 1992). Participants in this study evaluated 20 attitude objects, and the latency of each response was measured. They then described each object using a set of adjectives scaled on the dimensions of emotionality and valence. Across participants, attitudes evoking more emotional adjectives had faster response times. Extremity is a well-established correlate of attitude accessibility (Bargh, Chaiken, Govender, & Pratto, 1992; Judd & Kulik, 1980; Raden, 1985); even so, the affective speed advantage remained when controlling for each adjective's normative evaluative extremity, establishing that affectively based attitudes were not expressed more quickly just because they were more extreme.

However, this study was not able to examine the possibility that some types of affective basis for an attitude will not lead to faster evaluations. For example, a weak evaluation based on faint or contradictory emotions may be felt to be no more diagnostic of true attitude than one based on beliefs. Also, because this study did not assess the cognitive basis of the attitude, accessibility may not have depended on whether an attitude corresponds to affective material but whether it has any basis at all.

Other investigations of attitude structure have measured the affective and cognitive bases of attitude in terms of the consistency of overall evaluation with specific emotions and beliefs (Chaiken et al., 1995). As in earlier work (Rosenberg, 1960), the more closely a valenced measure of beliefs about the attitude object approximates the overall attitude, the greater the evaluative-cognitive consistency (ECC), and the greater the presumed cognitive basis for that attitude. Chaiken et al. (1995) also investigated attitudes' affective basis through a novel measure of evaluative-affective consistency (EAC), which includes a measure of feelings and emotions associated with the object. Attitudes low in both kinds of consistency were thought to be baseless nonattitudes and so should be less accessible than attitudes with one or both bases.

The results of another unpublished study, by Chaiken and Giner-Sorolla (1992), were cited in support of these predictions. Participants were asked to give their opinion on capital punishment using a computerized scale. Those with attitudes low in both ECC and EAC responded more slowly than the three other groups. Affectively based attitudes, with high EAC and low ECC, showed no speed advantage over cognitively based attitudes, with high ECC and low EAC. These findings, although limited to one attitude object, appeared to show that an evaluation with any basis is accessed more rapidly than a baseless evaluation consistent with neither affective nor cognitive material.

A more recent set of studies by Verplanken, Hofstee, and Janssen (1998) supported the related idea that the affective component of attitude is more accessible than the cognitive. Over three studies involving a variety of objects, participants responded more rapidly when a purely evaluative question about the attitude object was presented in the immediate context of other questions assessing feelings, versus beliefs, about the object. A fourth study compared participants' speed in answering different questions that assessed feelings and beliefs and again found feelings to elicit faster responses than beliefs.

However, Verplanken et al.'s (1998) measures of beliefs were somewhat different from previous studies of attitude components. Most studies have used response alternatives with a strong intrinsically evaluative meaning to measure cognitive attitudes, such as Crites et al.'s "valuable/worthless" and "useful/useless." By contrast, many of the belief items in Verplanken et al.'s studies involved judgments such as "known/unknown," "old/new," and "flat/hilly." Although these items did have evaluative meaning in the context of the attitude objects used, some of the items have clear evaluative meaning only in such a context and may have different evaluative meaning depending on the participant's own preferences. The affective items, on the other hand, involved judgments such as "warm/cold" (for consumer products) and "beautiful/ugly," which may be more likely to have an intrinsic and consensual evaluative meaning regardless of context.

One explanation for these results, then, is that the affect items simply made overall evaluation more accessible because they were more strongly evaluative in meaning. Two of these studies did include instructions to give a general evaluation on the basis of feelings or thoughts, which is a more direct manipulation of attitude basis. However, these responses in both studies were still elicited in the context of different affective and cognitive items. As a result, affective evaluations could have become more accessible due to a stronger evaluative context, whereas cognitive evaluations were less strongly activated.

Although none of the existing studies conclusively settles the question of the relative accessibility of affectively and cognitively based attitudes, we can identify two main approaches to the question. One approach, similar to that taken by Verplanken et al. (1998), examines the accessibility of cognitive and affective information itself by measuring reaction times to specific cognitive and affective questions or to evaluative questions asked

under conditions of cognitive and affective focus. By contrast, the present studies, similar to Fazio and Powell (1992) and Chaiken and Giner-Sorolla (1992), examine the accessibility of attitudes with a cognitive versus affective structural basis—that is, separating attitudes whose overall evaluation is closer to affect from those whose evaluation is closer to cognitive beliefs.

In the present research, it was predicted that affectively based attitudes may not always be more accessible than cognitively based attitudes and that the relationship of affective basis to accessibility depends on the overall extremity of the attitude. If affective basis is measured by the congruency between overall attitude and affect, then both an extreme attitude consistent with strong affect and a weaker attitude consistent with weak affect can be said to have an affective basis. So, the subjective strength of affect in the extreme affectively based attitude would plausibly lend it a greater perceived diagnosticity and accessibility relative to an extreme cognitively based attitude. However, an attitude congruent with weak or confused affect might show no advantage or even a disadvantage in perceived diagnosticity and hence no advantage in response speed. This moderating effect of attitude extremity was expected to produce an interaction between extremity and attitude basis, so that only at high levels of extremity would affectively based attitudes be expressed faster than cognitively based attitudes.

A secondary hypothesis was whether an attitude had a basis that might influence its speed of expression as much as the type of its basis, in line with the predictions of Chaiken et al. (1995). Each study, then, was additionally analyzed for the interactive effects of affective and cognitive basis in a manner similar to Chaiken and Giner-Sorolla's (1992) analysis. Attitudes low in both EAC and ECC were expected to be expressed exceptionally slowly compared with the other three combinations of EAC and ECC levels.

Both studies include several improvements over previous attempts to test the relative accessibility of affectively and cognitively based attitudes. First, each study includes measures of both cognitive and affective attitude basis; Study 1 measures general impressions about feelings and beliefs, whereas Study 2 uses a more specific measure of emotions and beliefs derived from Crites et al. (1994). Second, a variety of attitude objects is used. Finally, each of these studies takes evaluative extremity into account as a potential moderator of the effect of attitude basis as well as controlling for its main effect.

In both studies, individual differences in attitudes across attitude objects are not of primary interest, nor are the differences in attitudes toward different objects across the same set of people. Rather, the properties of each individual's attitude toward each object are of central concern. Because of this, the studies were analyzed using each attitude—that is, Person × Attitude object combination—as a separate data point while controlling for between-person variance using multilevel data analysis (Kenny, Kashy, & Bolger, 1998).

STUDY 1

Method

OVERVIEW

Study 1 examined the relation between the affective or cognitive basis of an attitude and the speed with which it is expressed. For 80 attitude objects, three aspects of attitude—overall evaluation, affective attitude, and cognitive attitude—were assessed in a first session using a new instrument, the Heart-Mind Questionnaire (HMQ). Two to 3 days later, participants expressed their attitudes toward each object in a positive-negative decision task on a computer; responses were timed.

PARTICIPANTS

Participants were 28 New York University undergraduate students, 11 male and 17 female, who participated in partial fulfillment of a course requirement. All participants had learned English before the age of 10. An additional 6 people who did not meet this criterion were allowed to participate in the experiment, but their data were not examined because of the difficulty of interpreting response latencies among nonnative speakers.

THE HEART-MIND QUESTIONNAIRE

For this research, the HMQ, a measure of affective, cognitive, and overall evaluative aspects of attitude flexible enough to use with large numbers of attitude objects, is introduced. The HMQ is divided into three parts: the HMQ-A (Affective), HMQ-C (Cognitive), and HMQ-E (Evaluative). In each part, the same set of attitude objects is evaluated on an 8-point scale ranging from –4 to +4 but excluding the midpoint of 0. The HMQ's lack of a neutral option is meant to correspond to the absence of a neutral option in the good-bad judgment task used to assess attitude accessibility.

Different instructions are given to the participant before each part of the HMQ. In the HMQ-E, the participant is instructed as follows:

> In this part of the survey, we would like to know how favorable or unfavorable is your general attitude toward a number of things.

In the HMQ-A, the participant is instructed as follows:

> In this part of the survey, we would like to know your feelings and emotions about a number of things. That is,

> apart from your non-emotional beliefs, how does the idea of each of these things make you feel?

And in the HMQ-C, the participant is instructed as follows:

> In this part of the survey, we would like to know your beliefs about a number of things, excluding your feelings or emotions. That is, do you believe that each one of these items is generally good or bad when you think about it in an unemotional way?

Adequate discrimination between affective attitude, cognitive attitude, and overall evaluation is a special concern of this research given the sizeable intercorrelations typically found among these constructs (e.g., Breckler & Wiggins, 1989, 1991). Because of this, Study 1 focused on attitude objects that tend to evoke affective-cognitive discrepancy—that is, objects that evoke positive feelings but negative beliefs and objects that evoke negative feelings but positive beliefs. Among attitudes that are likely to have this kind of internal conflict, which is one type of ambivalence (Thompson, Zanna & Griffin, 1995), affect and cognition are more likely to make separate or opposing contributions to overall evaluation.

A preliminary study of responses to the HMQ presented 27 undergraduate participants at New York University with an 85-object version of the HMQ and was primarily intended to identify objects with a low affective-cognitive discrepancy rate for exclusion. In creating the final version of the HMQ, 10 objects were excluded for which fewer than 10% of participants gave cognitive and affective responses of differing valence, and 5 objects were added (butter, cookies, cheesecake, McDonald's, whiskey).

PROCEDURE

Attitude assessment session. In the first session, participants filled out the final version of the HMQ in one of two different orders: the HMQ-E followed by the HMQ-A and then the HMQ-C or the HMQ-E followed by the HMQ-C and then the HMQ-A. After completing the three parts of the HMQ, participants completed a thought-listing task focusing on 5 attitude objects from the HMQ: beer, surgery, gambling, math, and credit cards. As in the thought-listing procedure used by Millar and Tesser (1986) to measure affective and cognitive aspects of attitude, participants were instructed to write down their feelings and emotions about the attitude object on one page and their beliefs about the attitude object on another. These listings were counterbalanced in line with the counterbalancing of the HMQ-A and HMQ-C, so that if the HMQ-A came first, the emotions listing came first in each pair, and if the HMQ-C came first, the belief listings also came first. Subsequently, each participant rated each of his or her own thoughts on a 7-point scale according to its favorability or unfavorability toward the attitude object.

Attitude accessibility session. Participants returned to the lab either 2 or 3 days later, depending on the experimenter's schedule, for a computer session. Participants were seated in front of a Macintosh IIsi computer. In a series of instruction screens, they were told that they would be seeing a number of words appearing on the screen and that their task was to judge each word as something good or bad as fast as possible. The position of the good and bad keys was randomly assigned, so that 15 participants (12 right-handed and 3 left-handed) responded to the good key with their left hand, and 13 (all right-handed) responded to the good key with their right hand. To ensure quick responses, participants were told to keep their fingers over the response keys.

Participants were then shown the 80 attitude object words from the HMQ, one after the other in random order, with a 3-second interval between words. For each word, the computer recorded both the individual's response and his or her response latency in milliseconds.

Results and Discussion

THE HMQ

Face validity. The HMQ performed reasonably well in identifying objects that might be expected to evoke conflicts between affect and cognitive attitude. The objects most frequently rated as cognitively negative but affectively positive mainly fell into the category of things that feel good but are known to be bad for health and other long-term outcomes: butter, suntan, sugar, vodka, and so on. Similarly, the objects most frequently rated as cognitively positive but affectively negative mainly fell into the category of things that must be endured for a long-term good: surgery, jail, math, studying, and so on.

Discriminant validity. The individual attitude was used as the unit of analysis. Scores on the HMQ-C showed moderate correlations with the HMQ-A, $r(2239) = .58$, and HMQ-E, $r(2239) = .57$. However, the HMQ-A was much more closely correlated than the HMQ-C was to the HMQ-E, $r(2239) = .84$; in a test of differences between dependent *r*s, $t(2237) = 25.83$, $p < .001$. In a regression analysis across all attitudes, predicting the HMQ-E from scores on the other two HMQ parts, both the HMQ-A ($\beta = 0.76$), $t(2238) = 54.28$, $p < .001$, and the HMQ-C ($\beta = 0.14$), $t(2238) = 9.72$, $p < .001$, were significant predictors; but evidently, the HMQ-A was the much stronger predictor. Because all participants answered the block of HMQ-E questions before the block of HMQ-A questions, it is unlikely that this reflects an undue influence of the more specific affective questions on the more general evaluative questions. Rather, it

appears that, at least among this subset of objects, affective-cognitive conflict was usually resolved in favor of affect when it comes to expressing one's overall attitude.

Despite the trend across attitude objects for evaluation to be more closely related to affect than to cognition, it is possible that, as in Crites et al. (1994), some items showed overall evaluations primarily based on cognitive attitude, and others showed evaluations based on both affective and cognitive attitude. For each of the 80 attitude objects, a regression analysis was carried out pitting HMQ-A score against HMQ-C score as predictors of HMQ-E score. Reflecting overall trends, HMQ-E scores for 69 out of the 80 objects were significantly predicted by the HMQ-A but not by the HMQ-C. For two objects, overall evaluation was significantly predicted by the HMQ-C but not the HMQ-A: church and censorship. For eight more objects—vodka, video games, religion, protest, MTV, mice, cars, and abortion—HMQ-E scores were predicted significantly by both the HMQ-A and HMQ-C. Finally, only one object, fur, had HMQ-E scores predicted by neither scale. Thus, despite the overall predominance of the HMQ-A in predicting overall attitudes, the HMQ-C played a significant role in attitudes toward 10 out of 80 attitude objects, as opposed to the 4 out of 80 that would be expected solely by chance.

Convergent validity. The inclusion of affect and belief thought-listing measures for 5 of the 80 attitude objects allowed the HMQ-A and the HMQ-C to be compared as predictors of affective and cognitive thoughts. Across the 5 attitude objects, the mean valence of affective thoughts associated with an object was strongly predicted by the HMQ-A, $\beta = .38$, $t(131) = 3.85$, $p < .001$, but not by the HMQ-C, $\beta = .11$, $t(131) = 1.08$, $p > .10$. Conversely, the valence of beliefs was significantly predicted by the HMQ-C, $\beta = .24$, $t(131) = 2.30$, $p < .05$, but not by the HMQ-A, $\beta = .16$, $t(131) = 1.57$, $p > .10$. Both the HMQ-A and HMQ-C, then, were most likely to reflect the valence of thoughts that corresponded to the attitude component they were supposed to measure.

The thought-listing results were also used to answer whether the strong tendency for HMQ-E responses to be predicted by HMQ-A responses represented a genuinely stronger affective influence on overall evaluation or merely a failure of the HMQ-A to represent a separate aspect of attitude from the HMQ-E. A regression analysis simultaneously predicting HMQ-E response from the valence of affective and belief thoughts showed that affective thoughts had a reliable influence on evaluation, $\beta = .29$, $t(131) = 3.29$, $p < .01$, but that beliefs did not, $\beta = .13$, $t(131) = 1.46$, $p > .10$. The stronger influence of affect on evaluation among this set of attitude objects, then, appears not to have been a mere artifact of similarities between the HMQ-A and HMQ-E, because it was also found among the methodologically distinct thought-listing measures.

ATTITUDE BASIS AND RESPONSE SPEED

The main experimental predictions were tested on an attitude-by-attitude basis by treating each individual's attitude about each distinct object as a separate case, with its own evaluative, affective, and cognitive components and its own accessibility as measured by response time to an overall evaluative question. Following the technique of multilevel data analysis using weighted least squares (Kenny, Bolger, & Kashy, 1997; Kenny et al., 1998), between-participants effects were controlled for in a two-step sequence of general linear model (GLM) analyses. A preliminary GLM tested the main model fully crossed with a categorical participant variable. Then, a final GLM was conducted including the main model, the uncrossed participant variable, and any significant participant interaction effects revealed by the first analysis.

In this analysis, differences in response time between attitude objects also had to be taken into account. For example, objects that tend to elicit evaluations based on feelings might only happen to be more quickly evaluated due to confounding factors such as word length. To deal with these possibilities, the reaction time analyses statistically controlled for mean object reaction time across participants. Differences in extremity among affectively and cognitively based attitudes were controlled for by examining the two types of attitude separately at each possible level of evaluative extremity. Also, to correct for bias resulting from the skewed nature of response time data, each response time was reciprocally transformed (1000/x) into a speed score (Abelson, 1995; Fazio, 1990), in which higher numbers correspond to faster responses. Although it was decided a priori to eliminate all outlying response times greater than 10 seconds or less than 300 milliseconds, all response times fell between these two extremes. Results from analyses of raw scores are reported when their significance level differs from analyses of the transformed scores.

Each attitude's EAD score was calculated from the absolute value of the difference between the HMQ-A and HMQ-E, and an ECD score was likewise calculated from the absolute value of the difference between the HMQ-C and HMQ-E. An attitude with a higher EAD than ECD was initially considered to be cognitively based, whereas an attitude with a higher ECD than EAD was considered to be affectively based.

However, one potential type of ambiguous basis remained to be dealt with—the case in which an attitude's overall evaluation was closer to one component of opposite valence in scale terms but shared its valence with the other component. For example, if evaluation is

–1 and affect is +1 but cognition is –4, it could be argued that the attitude is affectively based (because evaluation is closer to affect) or cognitively based (because evaluation has the same valence as cognition). Thus, attitudes that had both a lower EAD than ECD, indicating an overall evaluation closer to affect than to cognition, and an evaluation score of the same valence as the affect score were considered to be affectively based ($n = 886$). Those with a lower ECD than EAD and an evaluation score of the same valence as the cognition score were considered cognitively based ($n = 392$). Attitudes for which EAD equaled ECD ($n = 875$) and those additionally excluded due to ambiguous valence matching ($n = 87$) were not included in the analysis.

Attitude extremity was computed as the absolute value of the HMQ-E response, with an integer value from 1 to 4. Attitude basis was crossed with extremity in a 2×4 between-cases design. Response valence (–1 if negative, 1 if positive) and mean response time to the attitude object across all participants were included as covariates. The SAS v. 6.02 (1988) procedure GLM was used, and adjusted least-squares means were computed. No significant interactions of the participant variable with any of the factors of interest were found, so participant was entered as an uncrossed categorical variable in the analysis.

Extremity had the expected main effect on response speed, $F(3, 1241) = 4.01$, $p < .01$, such that response speed increased as extremity increased. Attitude basis did not have a main effect on response speed, $F(3, 1241) = 0.09$, *ns*. The Attitude Basis × Extremity interaction, however, was significant, $F(3, 1241) = 3.83$, $p < .01$. Figure 1 presents the adjusted mean response speed to cognitively and affectively based attitudes separately for each level of extremity. At low and moderate levels of extremity, cognitively based attitudes tended to be expressed faster than affectively based attitudes, but none of the comparisons between means was significant. At the highest level of extremity, affectively based attitudes were expressed significantly faster than cognitively based attitudes. Tukey's HSD for these comparisons was .058 for $\alpha = .05$.

To test the secondary hypothesis that attitudes low in both types of consistency would be expressed especially slowly, each attitude was classified according to median splits of its evaluative-affective and evaluative-cognitive discrepancy scores, in which high discrepancy indicated low consistency. Unlike the previous analysis, no attitudes were excluded from this analysis for having an equal affective and cognitive basis. The preliminary analysis crossing participant with the variables of interest showed no significant interactions, so a $4 \times 2 \times 2$ (Extremity Level × EAC Level × ECC Level) GLM was conducted on response speed scores. Participant, mean attitude object response time, and response valence were once more entered as uncrossed variables. The interaction of extremity with cognitive consistency was marginally significant, $F(3, 2220) = 2.19$, $p < .10$, reflecting the overall interaction of attitude basis with extremity in the previous analysis. Of more central interest, the EAC × ECC interaction was not significant, $F(1, 2220) = 0.20$, nor was the three-way interaction with extremity level significant, $F(3, 2220) = 0.67$. Thus, there was no evidence that baseless attitudes low in both kinds of consistency were less accessible than attitudes with one or both bases.

Study 1 showed that among high extremity attitudes, affectively based attitudes were more accessible than cognitively based attitudes, whereas among lower extremity attitudes, cognitively based attitudes tended to be slightly more accessible, but not significantly so. One concern in interpreting these results, however, is the very strong relationship between affect and evaluation in the objects used for this study. Because these attitude objects were selected for discrepancy between affective and cognitive attitude, the predominance of affect may indicate that such dilemmas are likely to be resolved in favor of the heart rather than the mind. Would Study 1's results generalize to a set of attitude objects in which cognitive and affective bases occur about equally?

Study 2, then, sought to replicate Study 1 using a more representative set of attitude objects and including other improvements. This study opted for fewer attitude objects (10 instead of 80), so that the multi-item Crites et al. (1994) measures of affective and cognitive components of attitude could be used. Using a different measure of attitude components would also test whether Study 1's results generalized across measurement methods. A third improvement over Study 1 eliminated the gap in time between the measures of attitude basis and of response speed. In Study 2, attitude basis was measured in the same session as the response speed task.

STUDY 2

Method

PARTICIPANTS

Participants were 67 undergraduate students at the University of Virginia, 26 male and 41 female, who took part in the study in exchange for course credit. All participants had learned English before the age of 10.

MATERIALS

The computer setup used in this study was similar to in Study 1. A response box rested in front of the monitor, with the far left and far right buttons labeled "good" and "bad"; the positioning of the good button on the left or the right was counterbalanced between participants.

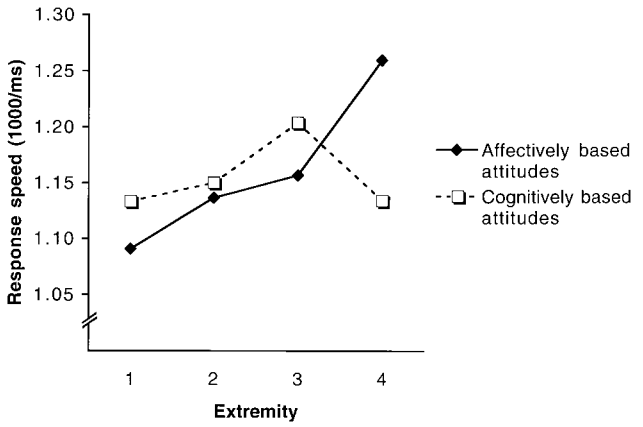

Figure 1 Study 1: Response speed by attitude basis and evaluative extremity.
NOTE: Higher speed scores indicate faster responses.

PROCEDURE

Participants took part in the experiment one at a time. An introductory screen on the computer explained the experiment in terms similar to those used to introduce Study 1, except that participants were instructed not to use the three middle buttons on the response box. After answering any questions about the experiment and making sure the participant's fingers were properly positioned, the experimenter started the experiment and left the room.

On each accessibility trial, the name of an attitude object appeared in the center of the screen. Centered underneath the attitude object's name was the connecting word "is . . ." or "are . . ."; and three quarters of the way down the screen, the words "good" and "bad" appeared, each on the side corresponding to the appropriate response button. The computer recorded the participant's response and the time, in milliseconds, elapsed between presentation of the attitude object name and the response. After each response, a blank screen appeared for 5 seconds before the next attitude object name appeared.

Six practice accessibility trials preceded the actual trial and used the following attitude objects: immigration, disease, flowers, legalizing marijuana, President Clinton, and blood donation. The 10 attitude objects used in the actual accessibility trials were legalized abortion, capital punishment, literature classes, snakes, church, birth control, math classes, computers, gun control, and fraternities. These were presented in a random order to each participant.

After the computer task was over, participants remained in the room and filled out a 10-page attitude questionnaire. Each page presented a different one of the attitude objects, with questions assessing affective, cognitive, and evaluative aspects of the participants' attitude toward that object. These questions were identical to those developed by Crites et al. (1994); they consisted of nineteen 7-point bipolar scales ranging from –3 to +3 and anchored by a positive and a negative word. The order of presentation of questions was varied; after the evaluative questions, some participants read the affective questions first, and others read the cognitive questions first. The order in which the attitude objects appeared was also varied, with the second order being the reverse of the first. Both of these counterbalancing conditions were crossed with each other and with the response side counterbalancing. However, the attitude accessibility task always preceded the more detailed attitude questionnaire, because it was felt that filling out the questionnaire would substantially increase the spontaneous accessibility of the attitude. After completing the questionnaire, participants were thanked for their involvement in the experiment and given a debriefing.

Results and Discussion

ATTITUDE BASIS

Unlike the attitude objects used in Study 1, the objects in Study 2 did not, as a set, show a trend toward affective attitude basis. Scores from the affective and cognitive scales, entered in a simultaneous regression, both significantly predicted evaluative scale scores for each attitude object except gun control, where only the cognitive scale was a significant predictor of evaluation. For five attitude objects—computers, literature classes, math classes, snakes, and church—affect had a higher beta weight than did cognition in predicting overall attitude. For the other five—fraternities, legalized abortion, birth control, capital punishment, and gun control—cognition had a higher beta weight than did affect. As in the original findings of Crites et al. (1994), then, these scales revealed a variety of attitude bases among the set of objects used.

ATTITUDE BASIS AND RESPONSE SPEED

Study 2's response time data were analyzed in a way similar to Study 1's. Responses greater than the a priori upper cutoff of 10 seconds (1.1% of total) were excluded, but no responses faster than the lower cutoff of 300 milliseconds were obtained. The remaining response times were reciprocally transformed into speed scores; results differing from the analysis of raw response times will be noted. As in Study 1, attitudes were characterized as either affectively based ($n = 239$) or cognitively based ($n = 358$) based on discrepancy scores; attitudes with equal EAD and ECD scores ($n = 46$) and those with incongruent valence- and discrepancy-based classifica-

tions (n = 27) were not analyzed. Evaluative extremity was calculated as the absolute value of the mean of the evaluative attitude scale. To parallel the four-level extremity analysis of Study 1, mean extremity scores were truncated (removing the decimal portion) to yield four categories: 0, 1, 2, and 3.

Including the three counterbalancing factors, the final analytic model was a 2 × 2 × 2 × 2 × 4 design (Response Side × Questionnaire Attitude Order × Questionnaire Component Order × Attitude Basis × Extremity Category). The model additionally included mean response time to attitude object, and response valence, as covariates. As recommended by Kenny et al. (1997), the preliminary analysis crossed the participant variable only with the within-participants variables, attitude basis and extremity. There was a significant interaction of participant with attitude basis, $F(49, 271) = 1.4$, $p < .05$, indicating that participants varied in the extent to which affectively or cognitively based attitudes were faster. This interaction was therefore included in the final analysis together with the uncrossed participant variable.

None of the between-participants counterbalancing variables showed significant interactions with the within-participants variables of interest. The main effect of extremity was significant, $F(3, 415) = 15.83$, $p < .001$, again reflecting that more extreme attitudes elicited faster responses. Attitude basis had no significant main effect, $F(1, 415) = 1.87$, $p > .10$, but did show an interaction with extremity, $F(3, 415) = 3.11$, $p < .05$. As in Study 1, comparison tests showed that cognitively based attitudes were significantly faster than affectively based ones at the lower levels of extremity, and affectively based attitudes were significantly faster at higher levels, Tukey HSD = .039 for $\alpha = .05$ (see Figure 2). Only in the second extremity category was there no significant difference between the two attitude types. When raw scores were used, the Attitude Basis × Extremity interaction did not achieve significance, $F(3, 522) = 2.06$, $p > .10$. Comparisons using the raw scores, however, replicated the results of comparisons using transformed scores, except in the highest extremity category where affective attitudes, although faster than cognitive, were not significantly so.

In an analysis identical to Study 1's examination of EAC and ECC levels, Study 2 also replicated Study 1's lack of interaction between ECC and EAC levels. The preliminary analysis showed that the participant variable did not significantly interact with any of the other variables. As in Study 1, the main analysis showed no reliable ECC x EAC interaction, $F(1, 570) = 0.17$, nor was there a three-way interaction with extremity, $F(3, 570) = 0.21$. EAC level (but not ECC level) did show a significant interaction with extremity, $F(3, 570) = 5.19$, $p < .01$, such that high-EAC attitudes were faster at high levels of extremity, and low-EAC attitudes were faster at low extremity. This effect reflects the previously found interaction of attitude basis and attitude extremity.

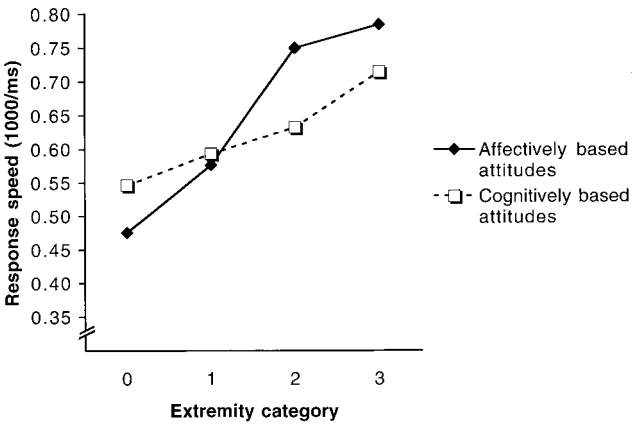

Figure 2 Study 2: Response speed by attitude basis and evaluative extremity category.
NOTE: Higher speed scores indicate faster response times.

GENERAL DISCUSSION

These studies have shown that the relative accessibility of affectively and cognitively based attitudes depends on more than might be inferred from the assertion that "feelings are first". Despite differences in method, Studies 1 and 2 found very similar effects of attitude basis on response time. Although neither study found an appreciable main effect of attitude basis, both studies found that attitude extremity moderated the effects of attitude basis. Among less extreme attitudes, cognitively based attitudes tended to be more accessible; among more extreme attitudes, affectively based attitudes were more accessible. These effects were admittedly small in magnitude, possibly because of the large variety of attitude objects used. The effect size index ω^2 for the critical interaction, where .06 is seen as the lowest "medium"-sized effect (Cohen, 1977), was only .0046 in Study 1 and .0045 in Study 2, whereas the main effect of extremity had ω^2 of .0049 in Study 1 and .033 in Study 2. However, the effects appeared in similar form across both studies and were found even taking into account the potential confounding effects of mean response speeds for different attitude objects and response valences.

These results stand in contrast to previously reported studies suggesting that affectively based attitudes enjoy a general speed advantage in expression. In particular, Fazio and Powell (1992), as reported in Fazio (1995), seem to have found that attitudes are expressed more quickly when their object is characterized by emotional

rather than unemotional words, even controlling for the effects of extremity. But without a fuller reporting of these procedures, it is not easy to compare findings and find a reason for the difference. The Fazio and Powell (1992) data, although showing a main effect of attitude basis, may not have been analyzed for the kind of Attitude Basis × Extremity interaction that figured so prominently in the present studies. Also, the present studies examined both affective and cognitive bases for attitude, whereas the Fazio and Powell (1992) studies only compared attitudes with affective content to attitudes without such content. It is hard to say what would have been found if, as in these studies, the earlier study had also analyzed the affinity of overall evaluation to the valence of cognitive beliefs about the attitude object.

Comparing these studies to the Verplanken et al. (1998) ones, which came to the conclusion that affective evaluations enjoy a speed advantage over cognitive evaluations, one salient difference is the nature of the reaction being measured. Apart from the possible confounding of the affect-cognition distinction with evaluative content, Verplanken et al. based many of their conclusions on the speed of retrieval of affective or cognitive material itself. There are problems in assuming that the accessibility of the information on which the attitude is based always relates to the accessibility of the attitude itself. For this to be true, basis information—feelings or beliefs—would have to be accessed anew every time an expression of general attitude is called for.

However, the models of Fazio (1995) and Zanna and Rempel (1988) both specify that, once established, the object-evaluation link can function as a rapid reference to the positive or negative nature of the object without having to call up the more specific information on which it is based. In this model, attitude basis can influence the speed of attitude expression in several different ways. Different rates of accessibility among components can influence evaluations that are constructed on the spot from those components. In addition, attitude basis might also affect whether the evaluation is a slow response constructed from the retrieval of specific information or a faster, intuitive response based on quick access to the object-evaluation link. Finally, attitude basis could influence accessibility by affecting the strength of the object-evaluation link, as suggested by Fazio (1995) in presenting the results of Fazio and Powell (1992). Thus, the accessibility of affective or cognitive material itself will not necessarily fall in line with the accessibility of attitudes based on this material.

In the present studies, attitude extremity was calculated from the same evaluative attitude measure used to calculate an attitude's affective or cognitive basis. Could the moderating effect of extremity be an artifact of greater extremity among affective versus cognitive responses, so that extreme attitudes were more likely to be close to affective responses? Two elements of Studies 1 and 2 render this explanation unlikely. First, each individual level of extremity was represented categorically in the analysis. Thus, even if a high extremity category contained more affectively based attitudes than cognitive, the difference between response speeds to the two types of attitude basis within that category would still be meaningful, not artifactual. Second, the relative extremity of affective and cognitive responses was in fact different in Study 1 and Study 2. In Study 1, HMQ-A responses tended to be more extreme (mean extremity = 2.51) than HMQ-C responses (mean extremity = 2.39). In Study 2, however, affective component responses were less extreme (mean extremity = 1.14) than cognitive component responses (mean extremity = 1.53). Therefore, it is unlikely that an alternate explanation based on the different extremity of affective and cognitive component responses could adequately explain the similar results of both studies.

The strongest theoretical explanation for the moderating effect of extremity on attitude basis stems from Fazio's (1995) idea that affective attitudes might be expressed more quickly because they are seen as more diagnostic of true attitude. To carry this idea further, affect may only be seen as diagnostic when it—and hence the attitude with which it is congruent—is strong enough to be reported as extreme. An attitude that evokes well-felt and internally congruent emotions may thus generate enough confidence to trigger an immediate response, whereas an extreme attitude congruent only with beliefs or an attitude congruent with weak or conflicted emotions would trigger a more hesitant response.

However, another possibility is that the extremity of an attitude is itself inferred from the ease with which it comes to mind, in line with the "false fame" effect and other demonstrations that the ease of retrieval of information can influence judgments of its importance (Jacoby & Kelley, 1990; E. R. Smith, 1989). An argument could then be made that accessibility is a stronger influence on judgments of extremity among affectively based attitudes than among cognitively based attitudes. For cognitive attitudes, extremity might be influenced more by the strength of beliefs retrieved or by their internal consistency.

One unexpected finding in these studies is the apparent speed advantage of cognitively based attitudes at lower levels of extremity. In Study 1, the lowest three levels of extremity showed a trend for cognitively based attitudes to be slightly faster than affectively based ones; in Study 2, cognitive attitudes were significantly faster but

only at the lowest level of extremity. If affectively based attitudes are faster at high extremity because strong affect is seen as diagnostic of true attitude, they may be slower at low extremity because weak affect is seen as nondiagnostic, leading to more deliberation about the attitude. Another way to interpret the interactions in both studies is that extremity had a more pronounced effect on accessibility among affective than cognitive attitudes. This suggests that the accessibility of cognitively based attitudes comes from factors less strongly related to the extremity of the attitude, such as amount of knowledge.

The secondary hypothesis that baseless attitudes are slower than attitudes with one or both bases was not confirmed in either study, as the expected interaction between levels of attitude basis was not observed. These analyses also did not find any overall advantage in speed of expression for attitudes high, rather than low, in affective-evaluative consistency. Together with the overall lack of main effects for attitude basis, these results suggest that both cognitively and affectively based attitudes may be expressed relatively quickly or slowly. Even attitudes congruent with neither emotions nor beliefs can be expressed quickly, as these may reflect other bases of attitude such as habitual responding to topics about which one knows or feels nothing (Converse, 1964).

These speculations provide a useful starting point for further investigations into the relations among the three characteristics of attitudes studied here. For example, these studies examined two strength dimensions characterized by Bassili (1996) as operative, that is, defined by characteristics of the attitude response itself. But further studies including meta-attitudinal measures of strength—ones derived from subjective feelings such as certainty or commitment—could test the assumption that affective attitudes are faster at high extremity because affective basis is related to a stronger subjective sense of true attitude.

More generally, the results of these studies support the point that affect is not necessarily a faster basis for judgment than is cognition. Different types of affective information may be retrieved at different speeds, and attitudes based on affect may be accessed faster or slower than those based on cognition, depending in part on the attitude's extremity. These findings are a reminder that the heart-mind dichotomy, reinforced by centuries of Western philosophy and popular culture, may be less important than previously thought in studying attitudes—or at least that distinctions such as novel versus practiced, deliberative versus immediate, imagistic versus verbal, and controlled versus automatic should be considered separately from the emotion-belief dimension.

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