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Accessibility of affective versus cognitive components of attitudes

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Abstract

Four studies investigated differences in accessibility of affective and cognitive components of attitudes. Accessibility was measured by response times on bipolar semantic differential evaluative adjectives (e.g. 'positive–negative') in response to how one felt and thought, respectively, about an attitude object. The evaluative items were accompanied by affective and cognitive context items, which were not analysed, but were meant to promote the retrieval of affective and cognitive evaluations respectively. Responses to affective evaluations were given faster than responses to cognitive evaluations, suggesting that affect-based evaluations are more accessible in memory than cognition-based evaluations. The results were obtained in two attitude domains, i.e. brand names and countries. The results support the validity of a two-component affect–cognition model of attitude. © *1998 John Wiley & Sons, Ltd.*

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INTRODUCTION

In everyday language usage we frequently distinguish between feeling and thinking. Similarly, attitude theorists make a distinction between affective and cognitive responses to an attitude object. However, although the affect–cognition distinction is frequently discussed in texts on attitudes, two intricacies are prevalent. First, affective responses, in the sense of feelings or emotions, are rarely measured in attitude research (Eagly, Mladinic, & Otto, 1994). Second, one's overall attitude (e.g. as measured by semantic differential items such as *good–bad*, and *favourable–unfavourable*) is often denoted as an *affective* response (e.g. Fishbein & Ajzen, 1975). A number of attitude theorists, however, argued that a distinction should be made between evaluations based on affective responses to an attitude object, thereby referring to feelings or emotions, on the one hand, and evaluations based on cognitive responses, thereby referring to beliefs, thoughts, or rational arguments, on the other hand (e.g. Breckler & Wiggins, 1989; Chaiken, Pomerantz, & Giner-Sorolla, 1995; Crites, Fabrigar, & Petty, 1994; Tesser & Martin, 1996). Thus, following a two-component view of attitude, which is the perspective we take in the present paper, a distinction is made between an affective (i.e. emotion-based) and a cognitive (i.e. belief-based) component of attitudes. Each component may have a positive or negative valence, which can for instance be measured with items like *good–bad*, or *favourable–unfavourable*, and may both thus contribute to a favourable or unfavourable overall attitude (Breckler, 1984; Breckler & Wiggins, 1989, 1991; Chaiken *et al*., 1995; Crites *et al*., 1994; Eagly & Chaiken, 1993; Eagly *et al*., 1994; Ostrom, 1969; Rosenberg & Hovland, 1960; Zanna & Rempel, 1988)[1].

An important issue is whether such a multicomponent model of attitude is valid. Empirical evidence for the distinction between an affective and a cognitive component of attitudes was provided by studies that found higher correlations within than between between measures of each component (e.g. Ostrom, 1969), studies that showed that both components contribute to the prediction of a global measure of attitude (e.g. Breckler, 1984; Breckler & Wiggins, 1989; Crites *et al*., 1994; Eagly *et al*., 1994; Haddock, Zanna, & Esses, 1993; Verplanken & de Graaf, 1997), studies that demonstrate a distinction between affect-based and cognition-based attitudes (e.g. Edwards, 1990; Edwards & von Hippel, 1995; Millar & Millar, 1990), and studies that demonstrated that each component was differently related to other variables, such as prior experience (Breckler & Wiggins, 1989; Verplanken, Meijnders, & van de Wege, 1994), elicitation of cognitive responses (Breckler & Wiggins, 1991), behavioural intentions (Verplanken & de Graaf, 1997), or behaviour (Millar & Tesser, 1986). However, empirical evidence has not been unequivocal so far. For instance, some analyses failed to support a multicomponent model (e.g. Bagozzi, 1978), or revealed very high correlations between components for particular attitude objects (e.g. Breckler & Wiggins, 1989). In all, it seems that a distinction between affective and cognitive components of an attitude is one that is useful in some circumstances, but not always, and for some, but not all, attitude objects.

[1]Although the original formulations of multi-component models of attitude comprised three components (i.e. affect, cognition, and behaviour), most recent research in this tradition focuses on affect and cognition. In this paper too, we confine our arguments to a two-component affect–cognition model.

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In the present series of studies we focused on a qualitative aspect of affective and cognitive components of an attitude, namely the *accessibility* of the two components in memory. In particular, we investigated the hypothesis that the affective component is more accessible than the cognitive component. If the two components were differentially accessible, this would provide further evidence to the validity of a two-component model of attitude.

Accessibility in memory has been established as an important quality of attitudes (e.g. Fazio, 1985, 1995; Krosnick, Boninger, Chuang, Berent, & Carnot, 1993). It refers to the speed with which an attitude is accessed in memory, and is typically measured by the time participants need to elicit an evaluative response. Accessibility of an attitude increases, for example, by direct experience with an attitude object, or by frequently expressing an attitude (e.g. Fazio, Chen, McDonel, & Sherman, 1982). Importantly, accessibility of an attitude has been found to be a powerful determinant of subsequent behaviour. Attitudes that are accessed more quickly are more strongly related to behaviour (e.g. Fazio *et al.*, 1982).

If affective and cognitive components of an attitude can be distinguished, these might differ in accessibility. Although there may be many reasons why one component will be more accessible than the other component in a particular case (e.g. frequency or recency of expression), it can be expected that, by default and all things being equal, the affective component will be more accessible than the cognitive component for a number of reasons. First, although cognitive activity often accompanies, or follows, affect (e.g. Isen, 1984), affective reactions are by nature more primary, basic, and inescapable than cognition (Bargh, Litt, Pratto, & Spielman, 1989; Murphy & Zajonc, 1993; Zajonc, 1980). Second, if one focuses on the evaluative consequences of feelings and cognitions, an overall evaluative judgment of one's cognitions (e.g. an evaluation of costs and benefits) is likely to be more complex, and thus less easy to access, than an overall judgment of one's feelings, which will usually be one dominating feeling. Also, any assessment of one's own feelings might be faster than an assessment of cognitions, because feelings need not be tested for truth (i.e. a feeling is a true experience by definition), whereas cognitions might be tested for truth, for instance by comparisons with other cognitions, or by estimates of assessments by others. In all, when measures of the affective and cognitive components of attitude are compared that specifically aim at tapping the *evaluative status* of each component, as was the case in the present studies (cf. Breckler & Wiggins, 1989), affective responses are likely to be given faster than cognitive responses.

STUDY 1

Method

Procedure

In a computer-controlled experiment, participants worked in isolated cubicles. They were asked to indicate how they *felt* (the affective component), and how they *thought* (the cognitive component; see e.g. Breckler & Wiggins, 1989) about four brand

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names, namely Omo (detergent), Marlboro (cigarettes), IBM (computers), and Black & Decker (D.I.Y. equipment). The accompanying instruction was rather extensive. Using the example of blood donation, it was explained that concerning one and the same object, one may have feelings as well as thoughts ('heart versus mind'), that these two kinds of responses may go together, but may also diverge. Participants were then told that they would be asked to respond as quickly and as accurately as possible (e.g. Fazio, 1990) to a number of bipolar statements about brand names. There would be two blocks of trials: the first series of trials were meant to rate feelings about the brand name, while the second series of trials were meant to rate thoughts about the brand name. For half of the subjects this order was reversed. Because there were no significant effects concerning order, this factor will further be ignored. For each trial, on the screen appeared in vertical order: the name of the brand, the statement 'your feelings:' or 'your thoughts:' (depending on which block of trials), and a pair of bipolar adjectives (e.g. good–bad). Participants pushed a lefthand or righthand button, according to which of the two adjectives they judged as best expressing their feelings (in the affective block), or thoughts (in the cognitive block).

For each component participants responded to eight items, which were randomly presented within each component block, with 2-second intervals between each item. This procedure was followed for each of the four brand names. The order of the four brand names was randomly determined by the computer for each participant.

Response Times

Response times (RTs) were measured from the moment adjectives appeared on the screen to the moment participants pushed one of the two response buttons. RTs longer than 4 seconds were treated as missing values. The resolution of the RTs was 16.7 milliseconds. RTs were subjected to a 1/RT transformation (e.g. Fazio, 1990). However, in reporting means RTs were retransformed into seconds.

The *affective adjectives* were: unpleasant–pleasant, exciting–dull, good–bad, cold–warm, negative–positive, uncomfortable–comfortable, favourable–unfavourable, and troublesome–excellent. The *cognitive adjectives* were: expensive–cheap, known–unknown, good–bad, old–new, negative–positive, useful–unuseful, favourable–unfavourable, and troublesome–excellent. Note, that four pairs of adjectives were the same for the affective and cognitive responses: in order to avoid a confound of response class and adjectives, we *only* analysed responses to the four adjectives that were the same for each component, i.e. good–bad, negative–positive, favourable–unfavourable, and troublesome–excellent. These items will be referred to as the *target items*. In fact, we included the other four adjectives for each component as context items. These were typically affective in nature in the affect block (e.g. cold–warm), and cognitive in nature in the cognition block (e.g. expensive–cheap), thus providing an affective and cognitive context, respectively, in which the target evaluations for each component were made. Note also, that across the four target adjectives the left–right position of the positive and negative labels was counter-balanced. In addition to response time, the *valence* of each response was recorded, i.e. whether the response was a positive or negative one.

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Table 1. Mean response times in seconds of the affective and cognitive target items in Study 1

Brand name	Affective target items	Cognitive target items	*df*	*F*
Omo	1.07	1.34	4,83	2.49**
Marlboro	1.01	1.16	4,85	3.77***
IBM	1.10	1.15	4,84	2.25*
Black & Decker	1.11	1.15	4,84	3.85****

Note. The analyses were conducted on 1/RT transformed scores. The variation in degrees of freedom was caused by RTs that were longer than 4 seconds, which were treated as missing values. *$p < 0.10$; **$p < 0.05$; ***$p < 0.01$; ****$p < 0.001$.

Participants and Design

Participants were 89 undergraduate students, who were paid for participation. The design was a 4 (brand: Omo, Marlboro, IBM, Black & Decker) × 2 (attitude component: affective items, cognitive items) repeated measures.

Results and Discussion

A 4 (brand: Omo, Marlboro, IBM, Black & Decker) × 2 (attitude component: affective items, cognitive items) multivariate analysis of variance (MANOVA) was conducted on the eight target RTs with both factors as repeated measures. Mean RTs differed across brands, $F(12,75) = 10.85$, $p < 0.001$. Importantly, however, as expected, the mean RTs of the affective target items were smaller, $m = 1.07$ seconds, than those of the cognitive target items, $m = 1.20$ seconds, $F(4,83) = 5.20$, $p < 0.001$. A significant brand × attitude component interaction indicated that the differences between affective and cognitive RTs were not equally large across brands, $F(12,75) = 2.91$, $p < 0.002$. In Table 1 the mean RTs of the affective and cognitive items are presented for each brand.

In order to inspect the data for a possible confound of component and valence of the responses (i.e. favourable versus unfavourable responses), response valences of the items were included as covariates. However, the main effect of attitude component remained significant, $F(4,79) = 3.65$, $p < 0.009$.

The results thus suggest that evaluations of feelings concerning brand names were given faster than evaluations of thoughts about these names. The results, however, were obtained within one attitudinal domain. Therefore, we attempted to extend this finding by replicating the study in another attitude domain, using countries as objects of attitude.

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STUDY 2

Method

Procedure

The procedure and instructions were identical to those of Study 1. Participants were asked to indicate how they *felt* (the affective component), and how they *thought* (the cognitive component), about three European countries, i.e. Spain, France, and Italy. The order of presentation of the three countries was randomly determined by the computer.

In this study, the target items concerned the adjectives good–bad, negative–positive, and favourable–unfavourable. In the affective block these items were accompanied by six pairs of context items, namely pleasant–unpleasant, cheerless–cheerful, sad–happy, romantic–unromantic, cold feeling–warm feeling, and exciting–dull. In the cognitive block the six pairs of context items were large–small, modern–traditional, closed–open, uninteresting–interesting, cultured–uncultured, and unimportant–important. For each country, half of the participants first responded to the affective items, and then to the cognitive items, while vice versa for the other participants. Because there were no significant effects concerning this factor, order will further be ignored.

Participants and Design

Participants were 58 undergraduate students, who were paid for participation. The design was a 3 (country: Spain, France, Italy) $\times$ 2 (attitude component: affective items, cognitive items) repeated measures. The analyses were conducted on $1/X$ transformed RTs.

Results

A 3 (country: Spain, France, Italy) $\times$ 2 (attitude component: affective items, cognitive items) multivariate analysis of variance (MANOVA) was conducted on the six target RTs with both factors as repeated measures. Mean RTs differed across countries, $F(6,43) = 14.13$, $p < 0.001$. Importantly, in this study too, the mean RTs of the affective target items were smaller, $m = 1.12$ seconds, than those of the cognitive target items, $m = 1.46$ seconds, $F(3,46) = 8.47$, $p < 0.001$. A significant country $\times$ attitude component interaction indicated that the differences between affective and cognitive RTs were not equally large across countries, $F(6,43) = 7.66$, $p < 0.001$. In Table 2 the mean RTs of the affective and cognitive items are presented for each country. Finally, in this study too, the main effect of attitude component remained significant when RTs were controlled for the valence of the responses, $F(3,43) = 4.29$, $p < 0.01$.

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Table 2. Mean response times in seconds of the affective and cognitive target items in Study 2

Country	Affective target items	Cognitive target items	*df*	*F*
Spain	1.14	1.56	3,53	10.59**
France	1.07	1.36	3,49	7.11**
Italy	1.15	1.46	3,52	3.78*

Note. The analyses were conducted on 1/RT transformed scores. The variation in degrees of freedom was caused by RTs that were longer than 4 seconds, which were treated as missing values. $*p<0.05$; $**p<0.001$.

Discussion

The findings of Study 1 were thus replicated for attitudes toward the three countries. However, although the target items were supposed to be primarily evaluative rather than affective or cognitive in nature, an alternative explanation for smaller RTs of the target items in the affective compared to the cognitive blocks might be that the target items were more suitable to provide affective than cognitive evaluations. Consequently, it might have been more difficult to respond to the target items under the instruction to evaluate one's thoughts than under the instruction to evaluate one's feelings, which may have resulted in longer RTs in the cognitive blocks. Therefore, we replicated Study 2, but did not include *any* instructions about evaluating feelings and thoughts whatsoever. Participants were simply asked to respond to the items that were presented in response to the three countries. What remained was that the target evaluations were surrounded by affective or cognitive items, which were thus supposed to prime affect-based or cognition-based evaluations.

STUDY 3

Method

Procedure

The procedure, stimulus material, and response items were identical to those in Study 2. However, instead of the instructions concerning feelings and thoughts, participants were only asked to respond as quickly and accurately as possible to a number of bipolar items. The affective and cognitive blocks were presented as was done in the previous study, albeit that on the screen the statements 'your feelings:' or 'your thoughts:' were left out. Also, participants were not made aware of the existence of two blocks. Because the target items appeared twice (i.e. once within each block), participants were told that some items, but not all, could come up twice. Again, the order of presentation of the affective and cognitive block was counterbalanced, but did not affect the results, and was further neglected.

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Participants and Design

Participants were 47 undergraduate students, who were paid for participation. The design was a 3 (country: Spain, France, Italy) × 2 (attitude component: affective items, cognitive items) repeated measures. The analyses were conducted on 1/RT transformed scores.

Results and Discussion

A 3 (country: Spain, France, Italy) × 2 (attitude component: affective items, cognitive items) multivariate analysis of variance (MANOVA) was conducted on the six target RTs with the two factors as repeated measures. The only significant effect was an attitude component main effect. As expected, the mean RTs of the affective target items were smaller, $m = 1.10$ seconds, than those of the cognitive target items, $m = 1.16$ seconds, $F(3,42) = 2.97$, $p < 0.05$. The effects of country, as well as country × attitude component, were nonsignificant, $F(6,39) = 1.60$, n.s., and $F(6,39) = 1.81$, n.s., respectively. Also, the effect of attitude component remained significant after controlling for response valence, $F(3,39) = 3.21$, $p < 0.04$. Thus, without an instruction to focus on 'feeling versus thinking', in the affective blocks responses were given significantly faster than responses on identical items in the cognitive blocks[2].

STUDY 4

The hypothesis that affect-based evaluations are more accessible than cognition-based evaluations, rested on the assumption that, in general, affective judgments are being made faster than cognitive judgments. In order to test this assumption in the present context of judgments about countries, participants in the fourth study were presented with items that were not necessarily evaluative, but differed especially in being affective versus cognitive in nature. It was tested whether affective judgments were given faster than cognitive judgments.

Method

Procedure

Participants were presented with 16 bipolar items in response to 10 countries. Eight items were supposed to be primarily affective in nature, i.e. beautiful–ugly, unfriendly–friendly, gloomy–cheerful, exciting–dull, romantic–not romantic,

[2]The findings in Study 3 were also replicated in another study, using the four brand names. In that study too, the only instruction participants received was to respond as quickly and as accurately as possible to the items. Affective target items were again reponded to faster than cognitive target items, $F(4,90) = 3.97$, $p < 0.005$. However, we felt that reporting this replication would not further contribute to the present arguments, in addition to what Study 3 has demonstrated.

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aggressive–peaceful, enjoyable–unenjoyable, nervous–calm. Eight items were supposed to be primarily cognitive in nature, i.e. large–small, modern–traditional, sparsely populated–densely populated, flat–hilly, woody–bare, dry–wet, full–empty, north–south[3]. The 10 stimulus countries were Sweden, Spain, Mexico, Ireland, France, Italy, Indonesia, Japan, Germany, and Portugal. The 160 item–country combinations were randomly presented. Participants were asked to indicate as quickly and accurately as possible which of the two labels they found most appropriate for that particular country. Before they started the judgment task, they were familiarized with the items and countries.

Participants and Design

Participants were 28 undergraduate students, who were paid for participation. The design was a 10 (country: Sweden, Spain, Mexico, Ireland, France, Italy, Indonesia, Japan, Germany, and Portugal) $\times$ 2 (attitude component: affective items, cognitive items) multivariate analysis of variance (MANOVA). Because of computer memory problems, the eight cognitive and affective RTs were averaged, respectively, for each country. The analyses were conducted on $1/X$ transformed RTs.

Results and Discussion

A 10 (country: Sweden, Spain, Mexico, Ireland, France, Italy, Indonesia, Japan, Germany, and Portugal) $\times$ 2 (attitude component: affective items, cognitive items) multivariate analysis of variance (MANOVA) was conducted on the averaged cognitive and affective RTs. The attitude component main effect was highly significant. As expected, the mean RTs of the affective item set were smaller, $m = 1.28$ seconds, than those of the cognitive item set, $m = 1.42$ seconds, $F(1,27) = 71.55$, $p < 0.001$. The effects of country, and country $\times$ attitude component, were nonsignificant, $F(9,19) = 1.98$, n.s., and $F(9,19) = 0.74$, n.s., respectively.

GENERAL DISCUSSION

The present studies demonstrated that responses to affective evaluative items were given faster than responses to cognitive evaluative items. The results were obtained in two attitude domains. Note, that, while participants in Studies 1 and 2 were instructed to report on feelings versus thoughts, the target items for both components were identical, thus ruling out confounds stemming from item

[3]The (Dutch) words that were used in the affective item set contained a total of 141 characters, and 106 in the cognitive item set. This difference runs against our hypothesis, however, and is therefore not problematic.

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content. In addition, affective and cognitive context items, which were not analysed, accompanied the target items in the respective blocks, so as to promote the retrieval of affective or cognitive evaluations. In the third study, the expected differences in RTs were found, even in the absence of any instruction concerning feeling and thinking. That is, target evaluations were made faster in the context of affective responses than in the context of cognitive responses. The fourth study confirmed the general assumption that affective judgments are made faster than cognitive judgments.

The results suggest that evaluations of emotions and feelings that are associated with an attitude object are more accessible in memory than evaluations of thoughts about the object. Differential accessibility of the two attitude components may stem from the inherently different nature of affect and cognition, that is that, although not everyone shares this perspective (cf. Lazarus, 1984), affect is more primary, and can thus be faster elicited, than cognition (e.g. Bargh *et al.*, 1989; Murphy & Zajonc, 1993; Zajonc, 1980). In addition, evaluations of affect may be less complex (e.g. feeling happy), compared to cognition-based evaluations (e.g. a good product, given its price). Also, affective responses need no truth verification, whereas cognitive responses might. Edwards and von Hippel (1995), for instance, found that affect-based attitudes tended to be expressed with greater confidence than cognition-based attitudes.

Although in all three studies smaller RTs of affective versus cognitive evaluations were found, suggesting that affective evaluations are more accessible than cognitive evaluations, alternative explanations can be considered. One such explanation might be that the target items were more suitable to respond to when it concerns feelings compared to thoughts (Studies 1 and 2). The consequence of this might be that the longer cognitive RTs were the result of the difficulty that participants might have had in using these scales for rating their thoughts. However, the results of Study 3, in which no instructions concerning judgments of feelings and thoughts were given, ruled out this particular explanation.

A second alternative explanation might be that the procedure of presenting affective and cognitive context items that accompany the target evaluations in each respective block worked better for the affective than for the cognitive items, thus resulting in smaller RTs of the affective evaluations. This explanation is not likely for a number of empirical reasons. First, when we look at the correlations between the context and target RTs for the affective versus cognitive blocks, these are 0.54 and 0.50 respectively, averaged across the first three studies, which does not support such an explanation[4]. Furthermore, we tested whether not only the target items differed between the affective and cognitive item sets, but also the context items. This was the case in all three studies[5]. In addition, Study 4 more vigorously tested and found the

[4]Correlations were Fisher z transformed before being averaged.

[5]Study 1: m-affective context items = 1.15 seconds, m-cognitive context items = 1.20 seconds, $F(16,69) = 4.53$, $p < 0.001$. Study 2: m-affective context items = 1.25 seconds, m-cognitive context items = 1.59 seconds, $F(18,31) = 10.92$, $p < 0.001$. Study 3: m-affective context items = 1.24 seconds, m-cognitive context items = 1.31 seconds, $F(12,18) = 9.23$, $p < 0.001$.

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expected faster RTs for affective versus cognitive items. The latter study thus not only supported the general assumption that affective judgments are made faster than cognitive judgments, it also gives an argument against the possibility that the affective context items worked better in retrieving affect-based evaluations than the cognitive context items.

Finally, it might be argued that the target items are by themselves more affective than cognitive in nature, and would therefore yield smaller RTs in the affective blocks. Although the results of Study 3 do not completely rule out this explanation, these make it at least less likely. Furthermore, at a conceptual level, there is no reason to believe that items like 'good–bad' and 'positive–negative' cannot be used to make valid cognitive evaluations (Breckler & Wiggins, 1989; Chaiken *et al*., 1995; Crites *et al*., 1994; Tesser & Martin, 1996; Verplanken & de Graaf, 1997). In everyday language we frequently use such terms to denote cognitive evaluations, rather than referring to feelings, mood or emotions (e.g. 'This is a good product', 'He made a positive statement'). In the context of a discussion on the measurement of affective and cognitive components of attitudes (e.g. Eagly *et al*., 1994; Haddock *et al*., 1993), Crites *et al*. (1994) showed that the semantic differential method to measure affective and cognitive properties of attitudes was reliable, and could be used to differentiate between attitudes that were experimentally induced as being primarily affect-based or cognition-based. Verplanken and de Graaf (1997) demonstrated that open affective and cognitive responses were exclusively related to the respective semantic differential-type instruments. The latter scales, as in the present studies, also consisted of identical evaluative target items, which were surrounded by affective or cognitive context items. In addition, both the affective and cognitive scales shared unique portions of variance with a global measure of attitude. Note also, that in the tradition of the model of reasoned action, a semantic differential that contains items like our target items is used as a direct measure of attitude (Fishbein & Ajzen, 1975). This measure typically represents an overall evaluation of the individual's beliefs concerning the attitude object. In the perspective of the two-component model of attitude, this measure would be one that represents the *cognitive* component of an attitude. The affective component in the two-component view could then be regarded as what is missing in the Fishbein–Ajzen approach (Manstead & Parker, 1995; Manstead, Parker, Stradling, & Lawton, 1996).

Taken together, the present series of studies support the validity of a two-component view of attitudes by demonstrating that the two components are differentially accessible in memory. Whereas a two-component model has been frequently demonstrated in the attitude research tradition in terms of the valence of attitudinal judgements, this may thus contribute to this knowledge by distinguishing the affective and cognitive component in terms of speed of judgment. The studies suggest that, by default, affective evaluations are more accessible than cognitive evaluations. It is of course quite conceivable that there are circumstances under which the cognitive rather than the affective component is more accessible, for instance as a result of recent considerations of advantages and disadvantages, personal experience concerning a particular attitude object, or influence attempts that use rational appeals. Future research may reveal more of the dynamics that may underlie the differential accessibility of affective and cognitive components of attitudes.

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