

# Effects of Inconsistent Attribute Information on the Predictive Value of Product Attitudes: Toward a Resolution of Opposing Perspectives

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This article examines the effects of evaluative inconsistencies in product attribute information on the strength of the resultant attitude, as manifested in its predictive ability. The existing literature makes opposing predictions regarding the effects of information inconsistency on attitude strength. We seek to resolve this dilemma by investigating the likelihood of inconsistency reconciliation—that is, whether or not people elaborate on inconsistencies with the goal of achieving an integrated evaluation. A strengthening effect should result when the processing goal is conducive to reconciliation and goal-facilitating factors are present in the environment; however, a weakening effect should be obtained when conditions are unfavorable to inconsistency reconciliation. Results from three experiments provide support for this conceptualization and offer a possible resolution of the opposing theoretical perspectives present in the literature.

We are often interested in studying attitudes because of their predictive value—for example, attitudes can help predict behavioral intention and behavior. However, not all attitudes do so (Wicker 1969). It is therefore important to examine factors that influence the predictive ability of attitudes. Existing research on this issue has established that strongly held attitudes possess greater predictive value than weakly held ones (Fazio 1995; Petty, Haugtvedt, and Smith 1995). In this article, we draw on current perspectives on attitude strength to answer the following question: how does exposure to inconsistent information (i.e., information containing both positive and negative elements) affect the predictive capability of the resultant attitude? This question is particularly relevant in the consumer domain because product information often contains conflicting evaluative implications (e.g., a brand may be rated better than its competitors on some attributes but worse on others).

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This issue is also of significant theoretical importance because of opposing predictions that can be derived from the literature. One stream of research suggests that exposure to inconsistent information causes the entire information set to be elaborated on and processed to a greater extent than consistent information (Maheswaran and Chaiken 1991; Srull and Wyer 1989). Such elaboration should result in increased attitude strength (see Petty et al. 1995 for a review) and, hence, improve the predictive value of attitudes. A second stream of research suggests that inconsistencies in underlying attitude structure can create a conflict between opposing evaluative elements (Bargh et al. 1992; Thompson, Zanna, and Griffin 1995). Such conflict has been found to weaken the predictive value of attitudes (Conner et al. 1996; Moore 1980). This article offers a possible reconciliation of these opposing perspectives and demonstrates that information inconsistency can enhance or dilute the predictive ability of attitudes, depending on the influence of theoretically derived moderating variables.

## THEORETICAL FRAMEWORK

### Inconsistency and Elaboration: The Strengthening Effect

The notion that evaluatively inconsistent (vs. consistent) information should produce a stronger attitude, with greater predictive value, is based on the premise that people are spontaneously motivated to make sense of inconsistencies

in order to arrive at an integrated evaluation (Hastie 1980; McGuire 1981; Srull and Wyer 1989). Accordingly, exposure to inconsistencies increases the amount of processing, as the positive and negative items of information are carefully considered in relation to one another in an effort to create an integrated judgment or evaluation (Maheswaran and Chaiken 1991; Srull and Wyer 1989). For instance, Maheswaran and Chaiken (1991) found that evaluative inconsistency between a product endorser and product attributes (e.g., a positively valenced endorser and negatively valenced attributes) led to greater overall elaboration than when the endorser and attributes were mutually consistent.

Because of factors such as greater confidence, greater accessibility of attitude-relevant information, and heightened attitude accessibility, greater elaboration is postulated to increase attitude strength (Petty et al. 1995). The presence of inconsistencies in attribute information, by promoting reconciliation-driven elaboration, should therefore increase the predictive ability of the attitude. Recent research by Jonas, Diehl, and Bromer (1997) supports this proposition—inconsistent information (a mix of positive and negative attributes) about a new shampoo brand resulted in greater information elaboration and a significantly stronger link between brand attitudes and subsequent purchase intentions than consistent information.

### Inconsistency and Attitude Structure: The Weakening Effect

In contrast, research on the structure-strength relationship has long suggested that an attitude based on evaluative inconsistencies should be weaker (i.e., possess lower predictive value) than one based on mutually consistent elements. Early investigations documented that the presence of structural inconsistencies—that is, conflicting elements in an evaluation—lowered attitude stability (Rosenberg 1968) and weakened the attitude-behavior link (Norman 1975). Support for this view has also emerged from recent research on the multidimensionality of attitudes, which suggests that some attitudes are characterized by the coexistence of mutually independent positive and negative evaluations. For instance, Cacioppo and Berntson's (1994) bivariate evaluative space (BES) model posits that positive and negative evaluative responses toward a single object often occupy separate dimensions in a bivariate space (see also Cacioppo, Gardner, and Berntson 1997). This represents a major departure from the traditional view, which assumes that positive and negative components of an evaluation are linked together so that an increase in one will lead to a decrease in the other (Allport 1935). The BES uncouples this link and suggests that one can feel simultaneously positive and negative toward the same object. The degree of conflict between these opposing evaluations (i.e., the extent of inconsistency in the underlying attitude structure) has been conceptualized as attitudinal ambivalence (Kaplan 1972; Priester and Petty 1996, 2001; Thompson et al. 1995). Consistent with earlier findings on the adverse effects of struc-

tural inconsistencies, greater ambivalence has been shown to weaken the attitude-behavior link (Moore 1980; Sparks, Hedderley, and Shepherd 1992) for a variety of reasons. The existence of separate (and conflicting) evaluative dimensions increases the likelihood that attitudes and behavior will be based on discrepant elements, thus lowering the correspondence between them (Lavine et al. 1998). Furthermore, because of response competition between conflicting evaluations, ambivalence tends to reduce attitude accessibility (Bargh et al. 1992; Bassili 1998), which also has an adverse effect on the attitude-behavior link (Fazio 1995).

Thus, the structure-strength research suggests that inconsistencies in attitude structure should weaken the predictive value of the attitude. Even though the extant research on structural effects focuses primarily on the consequences of existing structural inconsistencies, it appears that similar results should be produced by the incoming inconsistent information. That is, the degree of inconsistency in the underlying attitude structure should be higher (and the predictive ability of the attitude should be weaker) when an attitude is formed from a mix of positive and negative information rather than completely consistent information (Lavine, Borgida, and Sullivan 2000).

### Strengthening versus Weakening: A Resolution

The extent of underlying structural inconsistency produced by incoming inconsistent information should, however, be influenced by the way inconsistencies are processed. As we discussed earlier, rather than seeking to hold opposing evaluations, people are generally motivated to reconcile inconsistencies and form an integrated evaluation. Thus, instead of being treated in isolation, positive and negative items of information are considered in relation to each other and explanatory links are formed between them (Asch 1946; Srull and Wyer 1989). Extant research suggests that such reconciliatory elaboration should decrease structural inconsistency of the final attitude. For example, Cacioppo et al. (1997) pointed out that while positive and negative evaluative responses often occupy separate dimensions in a bivariate space, careful consideration of underlying beliefs will create a link between these dimensions and tend to restore the unidimensional structure of the attitude. Similarly, Thompson and Zanna (1995), across a variety of attitudinal domains, found that greater issue elaboration helps to create links between opposing items, thus facilitating the integration of conflicting bits of information into "an overarching account" with reduced structural inconsistency. Finally, research in the domain of impression formation has also shown that greater thought helps to create links between evaluatively inconsistent bits of information received about another person, thus producing more integrated, internally consistent impressions (Press et al. 1975; Rosenbach, Crockett, and Wapner 1973).

In sum, exposure to inconsistent information can lead to reconciliatory elaboration, which reduces the degree of structural inconsistency by integrating conflicting evaluative implications and also facilitates a strengthening effect be-

cause of the increased rehearsal that is needed to achieve reconciliation. If, however, reconciliation is prevented, inconsistencies in a set of information are likely to be maintained in the shape of substantial structural inconsistencies, leading to a weakening effect. Thus, the extent to which inconsistencies are reconciled appears to be a key moderator of the effects of evaluatively inconsistent information on the predictive ability of the attitude. This premise is the basis of our theoretical framework that outlines some conditions under which exposure to inconsistent (vs. consistent) information should lead to a strengthening versus a weakening effect.

In our conceptualization, which is based on the impression-formation literature (e.g., Asch 1946; Rosenbach et al. 1973), reconciliation involves elaboration for the purpose of forming an integrated attitude. Hence, two conditions have to be met for reconciliation to occur: inconsistencies in an information set should be elaborated on, and such elaboration should be undertaken for the goal of forming a unified attitude. Because the wish to attain evaluative consistency is a powerful and pervasive one (Heider 1958; McGuire 1981), the reconciliation goal is likely to be salient in a majority of evaluation settings (Hastie 1980; Maheswaran and Chaiken 1991; Srull and Wyer 1989). The presence of factors that facilitate reconciliatory elaboration will promote a strengthening effect in such cases. However, as we discuss later, the reconciliation goal may at times be overridden by certain extrinsic motivations (such as minimizing decision regret; Janis and Mann 1977) that encourage the maintenance rather than the reconciliation of inconsistencies. In these situations, elaboration of inconsistencies is likely to induce vacillation rather than reconciliation. The underlying attitude structure will then contain substantial evaluative inconsistencies, resulting in a weakening effect. Figure 1 provides an overview of our theoretical framework.

This framework is collectively tested in three experiments. Experiment 1 holds the reconciliation goal constant across conditions and investigates the effect of a goal-facilitation factor (information accessibility). High information accessibility is hypothesized to facilitate the process of reconciliatory elaboration, resulting in a strengthening effect. Low information accessibility is hypothesized to hinder reconciliatory elaboration, leading to a weakening effect. Experiment 2 varies the processing goal (reconciliation vs. regret minimization, as induced by an accountability mind-set) holding goal-facilitation influences (e.g., information accessibility) constant at a high level. A strengthening effect is expected under the reconciliation goal, but a weakening effect is predicted when the processing goal (regret minimization) encourages the maintenance rather than the reconciliation of inconsistencies. Experiment 3 then provides further insights into the weakening effect by holding the processing goal constant (regret minimization) and examining the effect of an individual-specific antecedent of elaboration: need for cognition (NFC). Given a processing goal that is adversarial to reconciliation, we predict that the weakening effect is actually facilitated

(rather than prevented) by elaboration of inconsistent information.

## EXPERIMENT 1: MODERATING ROLE OF INFORMATION ACCESSIBILITY

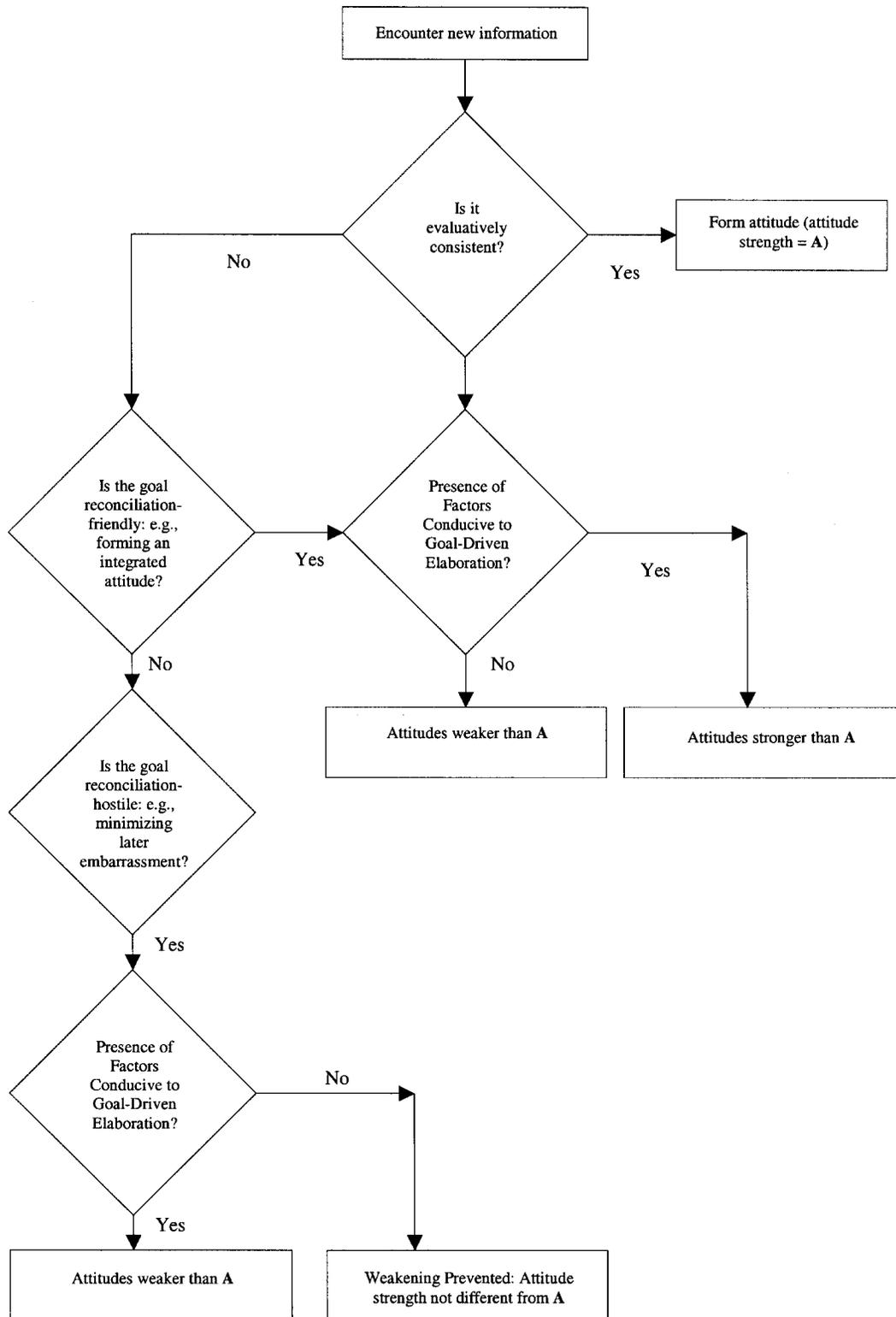
This experiment focuses on situations in which the reconciliation goal is likely to be salient, such as when inconsistent information is processed with an impression-formation mind-set (Srull and Wyer 1989). We argue that this goal is not sufficient to yield strengthening effects; the outcome is further moderated by the presence of goal-facilitating factors that influence the likelihood of reconciliatory elaboration. A host of situational or individual factors can affect the ability to construct links between conflicting pieces of information, thus influencing whether a strengthening or a weakening effect is obtained. For instance, other things being equal, the relative accessibility of the complete information set should affect the likelihood of reconciliatory elaboration. In particular, the construction of links between specific bits of conflicting information should be facilitated when these items of information are more (vs. less) accessible.

The moderating role of information accessibility is particularly pertinent in the consumer domain where attribute information is often acquired in stages (cf. Johar, Jedidi, and Jacoby 1997). Suppose that a consumer forms a positive impression of a new VCR after viewing an ad that describes the product as possessing an array of the latest technical features. After some time has elapsed, the consumer also learns that this VCR is difficult to operate. If the initial ad information is highly accessible at the time of encountering the updated information, it is likely to get activated at this time. Accordingly, the updated information will be considered in light of the initial information, facilitating the process of reconciliation. For instance, the consumer is likely to carefully consider the implications of the attributes "latest technical features" and "difficult to operate" in relation to one another before arriving at a final attitude. The construction of such links between discrepant items of information (when guided by the goal of forming an integrated evaluation) will serve to reduce the degree of structural inconsistency in final attitudes toward the VCR (Press et al. 1975; Rosenbach et al. 1973; Thompson and Zanna 1995). Further, because the reconciliation process involves rehearsal and elaboration of the different items of information, the predictive ability of the resultant attitude is likely to be greater than when the consumer views only consistent information and therefore has no need to engage in reconciliation-driven elaboration.

However, it is often the case that the initial impression itself is retrievable, but the specific initial information on which it is based is relatively inaccessible (Kardes 1986). In such cases, a final attitude may be formed by simply combining the initial evaluation with the updated information. However, the inaccessibility of the actual bits of information will hinder the construction of reconciliatory

FIGURE 1

EFFECTS OF INCONSISTENT INFORMATION ON ATTITUDE STRENGTH



links between positive and negative features. Research on attitude structure suggests that the lack of such links between underlying beliefs will lead to substantial inconsistencies in the underlying structure of the final attitude (Cacioppo et al. 1997; Rosenbach et al. 1973; Thompson and Zanna 1995). In turn, this will lower the predictive ability of the attitude.

In sum, given a reconciliation goal, high (low) initial information accessibility should produce a strengthening (weakening) effect of inconsistent versus consistent information on the predictive value of the final attitude. Experiment 1 was conducted to test this hypothesis.

## Design and Procedure

One hundred thirty-eight undergraduate students participated in the  $2 \times 2$  experiment manipulating initial information accessibility (high vs. low) and evaluative consistency between initial and updated information (inconsistent vs. consistent). All participants first received a questionnaire booklet on which they wrote down the last four digits of their student identification number. The first page of the booklet informed them that the experimenters were interested in evaluations of a new VCR, VX-5000. The information-accessibility manipulation (high vs. low) was couched in these instructions. The next page contained positive attribute information about the VX-5000. Participants were allowed to read this information at their own pace. They were then asked to evaluate the VCR on three seven-point attitude scales anchored by "very bad/very good," "not at all useful/very useful," and "very unfavorable/very favorable" ( $\alpha = 0.84$ ).

After completing these initial evaluations (at which point participants thought that the study about VCRs was over), they were asked to complete a totally unrelated task, dealing with social stereotypes (e.g., "Please list 10 attributes that come to mind when you think of Japanese people"). This filler task took about 10 minutes to complete. Subsequently, participants were given another booklet. For matching purposes, participants again wrote down the last four digits of their student identification number on the front page of this booklet. The next page contained updated attribute information (negative or positive) describing two additional features of the VX-5000. After participants had read the information at their own pace, they were asked to fill out their evaluations of the VX-5000 on two seven-point scales, anchored by "like/dislike" and "positive/negative" ( $r = 0.82$ ).

Following the attitude scales, participants completed a three-minute filler task that consisted of a set of questions about candy bars. This was followed by two measures of purchase intention for the VCR. First, participants were asked to rate the likelihood that they would consider the VX-5000 as a possible option if they were shopping for VCRs. Next, they were asked to rate the likelihood that they would actually buy the VX-5000 if they were shopping for VCRs. Both scales were anchored by "not at all likely" (1) and "very likely" (7). The average of the two scales ( $r = 0.71$ ) formed an index of purchase intention. The link be-

tween attitudes and intentions served as a measure of the predictive ability of the attitude (Jonas et al. 1997; Petty, Cacioppo, and Schumann 1983; Sengupta, Goodstein, and Boninger 1997).

Participants then wrote down all the attribute information that they remembered about the VX-5000, followed by the thoughts they had had while reading the updated information about the VCR. The thought protocols were coded by two independent coders into categories described in the "Results" section. Intercoder reliability exceeded 80% for each coding category, and disagreements were resolved by discussion. Finally, participants responded to questions on age and gender and were thanked and debriefed.

## Manipulations and Stimuli

*Information Accessibility.* All participants were told that the experimenters were interested in their opinion of the VCR. This evaluation goal was expected to activate the motivation to reconcile evaluative inconsistencies (Srull and Wyer 1989). No further instructions were given in the low-accessibility condition. In the high-accessibility condition, participants were given an additional memorization goal and told that they would later be asked to recall the information (Biehal and Chakravarti 1986).

*Attribute Information.* The initial positive information about VX-5000, adapted from Aaker and Maheswaran (1997), was presented as the research report of an independent consumer agency. It compared the VX-5000 with two other brands (Sony 2500 and Hitachi EX9500) on five different features. All five features had been pretested to be important VCR attributes for our target student population (each attribute was rated greater than five on a seven-point importance scale). These three brands were described as being equally good on one of these attributes (ease of operation), but the VX-5000 was presented as being superior to the competing brands on all other attributes (picture quality, sound quality, number of automatic features, and remote control). For example, the description of picture quality read, "The new VX-5000 delivers a very high picture quality. The VX-5000's record and playback picture quality is sharper and clearer than the SONY 2500 and Hitachi EX 9500. This is mainly because the VX-5000 transmits about 300 lines of horizontal resolution ensuring optimal sharpness. The SONY 2500 and Hitachi EX 9500 deliver only about 200 lines, resulting in a reduction in clarity."

*Consistency between Initial and Updated Information.* Updated information on the VCR was presented on two attributes, video head life and color, which had also been rated as important attributes in the pretest. In order to induce evaluative consistency (inconsistency) with respect to the initial positive information, the updated information described the VX-5000 as being superior (inferior) to its competitors on both these attributes (e.g., "Tests have shown that the wear and tear on the VX-5000 video head is 25% lower [higher] than the wear and tear on the video heads

TABLE 1  
EXPERIMENT 1: MODERATING ROLE OF INFORMATION ACCESSIBILITY ON INCONSISTENCY EFFECTS

	Low accessibility		High accessibility	
	Inconsistent	Consistent	Inconsistent	Consistent
Recall	5.00 (1.39)	4.97 (1.53)	5.98 (1.56)	5.51 (1.74)
Initial attitude	5.50 (.76)	5.19 (.91)	5.38 (.76)	5.48 (.80)
Updated attitude	4.52 (.80)	5.37 (.82)	4.19 (.85)	5.51 (.61)
Attitude-intention correlation	.35	.66	.81	.55
Total product thoughts	3.57 (1.62)	3.32 (1.41)	4.10 (1.58)	2.91 (1.64)
Ratio index	.79 (.22)	.92 (.17)	.88 (.17)	.90 (.18)
Ambivalence index	5.00 (2.28)	3.79 (1.68)	4.20 (1.86)	4.20 (1.62)

NOTE.—Standard deviations are in parentheses.

of the other two brands”). Note that inconsistency between initial and updated information could also have been manipulated by presenting negative product information initially and later following up with positive information. This was not done because of a concern (borne out in pilot testing) that negative information, when presented first, would exert such a strong anchoring effect (Fiske 1980; see also Cacioppo et al. 1997) that the subsequent positive information would not be successful in inducing structural inconsistency in any condition. This limitation is overcome in experiment 2.

In order to equate the initial and updated information on credibility, participants were told that the updated information also came from a (different) independent research agency. A pretest was carried out to check whether perceptions of the source agency providing the initial information and the updated information differed in terms of credibility, particularly in the case where the updated information was negative and thus inconsistent with the initial (positive) information. Such a difference could imply that inconsistency in this condition was being created through source perceptions, rather than (as we would wish) via the evaluative implications of the attributes themselves. Eighteen participants from our subject pool were exposed to the initial positive information and the updated negative information. They then rated the two agencies along four seven-point scales: not at all/very trustworthy, believable, expert, and credible. Analyses on the average of these scales ( $\alpha = 0.86$ ) revealed no differences in source perceptions ( $M$ 's = 4.92 and 4.97,  $F < 1$ ).

## Results

Analyses were conducted in the context of a  $2 \times 2$  ANOVA (information accessibility: high vs. low; information consistency: inconsistent vs. consistent), unless otherwise mentioned.

**Manipulation Checks.** Attribute recall was used to check the manipulation of information accessibility. Analyses suggested that the manipulation worked as intended. Greater recall was obtained for the high-accessibility condition ( $M = 5.76$ ) versus the low-accessibility condition

( $M = 4.98$ ,  $F(1, 134) = 7.97$ ,  $p < .05$ ). No other effects were significant (see table 1 for means).

To check the manipulation of information consistency, we ran a mixed-model ANOVA that included time of attitude measurement as a repeated measure. A main effect of time revealed that attitudes declined after exposure to the updated information (initial attitude = 5.38, updated attitude = 4.88,  $F(1, 133) = 44.70$ ,  $p < .01$ ). As expected, this effect was qualified by a significant interaction with information consistency ( $F(1, 133) = 66.98$ ,  $p < .001$ ), which showed that greater attitude change occurred when the updated information was evaluatively inconsistent (initial attitude = 5.43, updated attitude = 4.32) than when it was consistent (initial attitude = 5.33, updated attitude = 5.44). No other effects were significant. In particular, the degree of attitude change caused by inconsistency did not differ ( $F = 1.04$ ,  $p > .30$ ) for the low-accessibility (initial attitude = 5.50, updated attitude = 4.52) versus high-accessibility conditions (initial attitude = 5.38, updated attitude = 4.19). Note that the lower-inconsistency reconciliation posited in the low-accessibility condition does not necessarily translate to a different final evaluation (vs. the high-accessibility condition), as measured on a standard bipolar scale. This finding is consistent with previous research on attitude structure, which has shown that underlying structural inconsistencies may not be captured on a simple bipolar scale (Kaplan 1972; Press et al. 1975; Thompson et al. 1995). Importantly, however, the predictive ability of the attitude should be influenced by the presence of such inconsistencies.

**Attitude-Intention Link.** The correlation between the updated brand attitude and purchase intention, which provided an index of the predictive value of the attitude, served as the critical dependent variable. We expected that exposure to inconsistent (vs. consistent) updated information would strengthen the attitude-intention link when initial information accessibility was high but would weaken this link when initial information accessibility was low. The Pearson product-moment correlation between attitudes and intentions was first calculated in each cell. Each of these correlations was then transformed into a Fisher  $z$ -score, and these scores were analyzed using the  $2 \times 2$  ANOVA. The known within-cell variance for the ANOVA (with infinite degrees of freedom)

is given by  $(\Sigma 1/[n_i - 3])/k$ ; where  $n_i$  is the number of observations in group  $i$ , and  $k$  is the number of groups (Berger 1992; Sengupta and Fitzsimons 2000; Wilson, Kraft, and Dunn 1989).

The ANOVA on the Fisher  $z$ -scores yielded a significant interaction effect of the two factors ( $F(1, \infty) = 6.44, p < .05$ ). Neither of the two main effects was significant. Planned contrasts then revealed that, within the high-accessibility condition, the attitude-intention correspondence was significantly higher under conditions of inconsistency ( $r = 0.81$ ) versus consistency ( $r = 0.55, z = 1.92, p < .05$ , one tailed), reflecting the hypothesized strengthening effect. However, within the low-accessibility condition, a significantly lower attitude-intention link was obtained in the inconsistent condition ( $r = 0.35$ ) versus the consistent condition ( $r = 0.66, z = 1.66, p < .05$ , one tailed), reflecting the hypothesized weakening effect.<sup>1</sup> A control condition was also run to provide a baseline measure of attitude-intention consistency for the low information-accessibility condition. Twenty-six student participants completed the same task as the low-accessibility experimental subjects without exposure to any updated product information. The attitude-intention correlation in this condition ( $r = 0.67$ ) was not significantly different from the correlation in the low accessibility-consistent updated information condition ( $r = 0.66$ ) and was significantly higher than that in the low accessibility-inconsistent updated information condition ( $r = 0.35, z = 1.65, p < .05$ ). The control-group data thus indicate that the difference in attitude-intention correspondence within the low information-accessibility conditions of the main study was indeed because of the hypothesized weakening effect of inconsistent information rather than a strengthening effect of consistency.

*Process Explanation.* The attitude strengthening effect was predicated on the premise that, given evaluation instructions, participants try to form a unified attitude by elaborating on all the information in an attempt to reconcile positive and negative evaluative implications. However, participants for whom initial information is not accessible are prevented from doing so. We examined the thoughts data for evidence of this process.

*Amount and Content of Elaboration.* The total number of thoughts (all product relevant) listed by participants in the experimental conditions provided an indication of the extent to which the VCR information was elaborated on. We expected that high information accessibility would facilitate reconciliatory elaboration of inconsistencies. Thus, exposure to inconsistent (vs. consistent) updated information was predicted to increase total elaboration under high accessibility but not under low accessibility.

Analyses revealed a significant main effect of information consistency ( $F(1, 134) = 7.12, p < .01$ ) such that more thoughts were listed when updated information was incon-

sistent (vs. consistent) with initial information ( $M$ 's = 3.88 vs. 3.11). This effect was qualified by a marginally significant interaction ( $F(1, 134) = 3.04, p < .09$ ). Planned contrasts revealed that elaboration for low accessibility participants did not vary across conditions of inconsistency ( $M = 3.57$ ) versus consistency ( $M = 3.32, F < 1$ ). As expected, however, within the high accessibility conditions, exposure to inconsistent information led to greater elaboration ( $M = 4.10$ ) than exposure to consistent information ( $M = 2.91, F(1, 134) = 10.85, p < .01$ ).

We also analyzed another index, consisting of only the thoughts that were specifically based on initial attribute information. Since thought protocols were obtained by asking participants to write down the thoughts they had while reading the updated attribute information, the extent to which initial attribute information was activated at this time provides insights into the extent to which participants reconciled initial information with updated information. As expected, under conditions of high accessibility, exposure to inconsistent updated information led to a significantly greater activation of initial attribute information ( $M = 0.95$ ) than exposure to consistent updated information ( $M = 0.34, F(1, 134) = 6.03, p < .01$ ). However, for low accessibility, activation of initial attribute information did not differ across conditions of inconsistency ( $M = 0.50$ ) versus consistency ( $M = 0.44, F < 1$ ). The low absolute means obtained are a reflection of the extreme specificity of this index. In all conditions, thoughts were only classified as "initial" thoughts if they contained a reference to a specific initial attribute—thus, a thought such as "I like this VCR," which may well have been based on the initial attribute information, was not included in this category.

*Outcome of Elaboration: Structural Consistency Indices.* Greater reconciliation of inconsistent information should result in a reduction of the structural inconsistency that would otherwise be produced. This prediction was tested via two different indices of attitude structure, both computed using the thought protocols—(a) a ratio index of evaluative consistency and (b) an ambivalence index. The former index was defined as the ratio of the total number of either positively or negatively valenced thoughts (whichever is greater) to the total number of thoughts listed about the brand. This index has often been used to measure the underlying structural consistency of an attitude (Sengupta and Fitzsimons 2000; Tetlock 1983; Wilson et al. 1989). The higher the value of the ratio index (i.e., the closer the index is to 1), the greater the evaluative consistency of the attitude structure. Clearly, greater reconciliation of inconsistencies should result in a higher score on this index.

Although the interaction of the two experimental factors on the ratio index did not attain significance ( $F(1, 101) = 1.68, p > .18$ ), planned contrasts (cf. Winer 1971) provided results supportive of our theorizing. Under conditions of low accessibility, exposure to inconsistent information led to a significantly lower ratio index ( $M = 0.79$ ) than exposure to consistent information ( $M = 0.92, F(1, 101) = 5.32, p < .05$ ). However, for high accessibility, the ratio in-

<sup>1</sup>In all the studies reported here, a comparison of regression beta-weights produced a similar pattern of results to that obtained by comparing correlations.

dex did not differ for inconsistent ( $M = 0.88$ ) versus consistent conditions ( $M = 0.90$ ,  $F < 1$ ), reflecting a greater level of inconsistency reconciliation.

The thought protocols were also used to construct an index of attitude ambivalence. If  $P$  is the total number of positive brand thoughts, and  $N$  is the number of negative brand thoughts, the ambivalence score =  $([P + N] - 2 \times \text{absolute value } [P - N] + 5)$ , where 5 is an arbitrary positive constant that is added to preclude negative scores. This formula, proposed by Bell, Esses, and Maio (1996; see also Maio, Bell, and Esses 1996), is a linear function of the equivalent ambivalence formula for closed-ended data ( $([P + N]/2 - \text{absolute value } [P - N])$ ) proposed and validated by Thompson et al. (1995). A desirable property of this ambivalence index is that it is a direct function of the extent to which attitudes contain conflicting versus nonconflicting elements. Results on this index were similar to those obtained using the ratio index. The interaction of the two experimental factors attained marginal significance ( $F(1, 134) = 3.58$ ,  $p < .07$ ). Under conditions of low accessibility, exposure to inconsistent information led to significantly greater ambivalence ( $M = 5.0$ ) than exposure to consistent information ( $M = 3.79$ ,  $F(1, 134) = 6.58$ ,  $p < .05$ ). However, for high accessibility, ambivalence scores did not differ for inconsistent ( $M = 4.2$ ) versus consistent conditions ( $M = 4.2$ ,  $F < 1$ ). Thus, results on both the attitude-structure indices provided support for the prediction that greater reconciliation of inconsistent information (and thus, greater structural consistency) would be obtained under high versus low information accessibility.

## Discussion

This study takes a step toward resolving theoretical perspectives that make opposing predictions regarding the effects of inconsistencies on the strength of the resultant attitude as manifested in its predictive value. We argued that the reconciliatory elaboration of evaluative inconsistencies should yield a strengthening effect; however, when reconciliation is hindered, a weakening effect should be obtained. In this experiment, reconciliation was facilitated by increasing the accessibility of initial information at the time of exposure to updated information. As predicted, in this condition, exposure to evaluatively inconsistent updated information (vs. consistent information) led to a strengthening of the attitude-intention link. However, the opposite effect (i.e., a weakening of this link) was obtained when initial information was relatively inaccessible and reconciliation-driven elaboration was prevented. Process measures also provided support for our reasoning. Exposure to inconsistency led to elaboration and reconciliation in the high-accessibility condition but not in the low-accessibility condition.

These findings both replicate and extend the work of Jonas et al. (1997). Participants in the Jonas et al. (1997) experiment were presented with different items of product information at the same time and then asked to respond to attitude and intention measures. Thus, their experimental conditions

paralleled the high information-accessibility conditions in this study. Apart from providing a replication of their attitude-strengthening results, our experiment shows that inconsistent information can also lead to a weakening effect, under conditions adversarial to inconsistency reconciliation (i.e., low information accessibility).

An alternate account of the strengthening effect of inconsistent information should be considered here. It might be argued that, when initial information is highly accessible, participants simply discount the inconsistent information they encounter later, in a bid to preserve their initial attitudes.<sup>2</sup> Such a process would, at a minimum, explain a lack of weakening (of inconsistent vs. consistent information) under conditions of high information accessibility. However, such biased processing typically occurs for strong attitudes (Liberman and Chaiken 1992) and is unlikely in the context of forming impressions of a new product. Further, the attitude-change data (i.e., the difference between initial and updated attitudes) in the two inconsistent conditions offer direct evidence against the discounting mechanism. If high accessibility of initial information causes later inconsistent information to be discounted, attitude change should be lower in the high-accessibility condition compared with the low-accessibility condition (cf. Lord, Ross, and Lepper 1979). However, similar amounts of attitude change occurred in the two conditions (high-accessibility,  $M = 1.17$ ; low-accessibility,  $M = 0.98$ ,  $F < 1$ ), refuting the discounting-based explanation.

The moderating influence of information accessibility depicted in our experiment may be contrasted with prior research on attitude structure, which has found that greater accessibility of the competing evaluations comprising an ambivalent attitude leads to increased feelings of ambivalence (Bassili 1998; Newby-Clark, McGregor, and Zanna 1997).<sup>3</sup> This finding, however, is not opposed to our position, which speaks to the accessibility of underlying information rather than evaluations. Even when the accessibility of competing evaluations is high (as, indeed, it may well have been in our experiment), the accessibility of the information basis of these evaluations may be low (Carlston 1980; Kardes 1986). This is particularly likely to be the case with attitudes that have been in existence for some time (rather than being newly formed), such as those studied in past research (e.g., attitudes toward abortion; Newby-Clark et al. 1997). In such cases, the relative inaccessibility of the opposing bits of information on which the attitude is based makes it hard to engage a process of reconciliation, thus resulting in substantial structural conflict.

Thus, the results depicting the moderating influence of information accessibility on inconsistency effects do not contradict earlier findings. It should be kept in mind, however, that increased information accessibility in itself might not always result in a strengthening effect. While high information accessibility typically produces greater elaboration

<sup>2</sup>We thank the associate editor for this suggestion and for pointing out possible ways to rebut it.

<sup>3</sup>We thank a reviewer for pointing us to this literature.

tion of inconsistencies, we argued earlier that such elaboration should lead to attitude strengthening only when undertaken for the specific purpose of inconsistency reconciliation. Although reconciliation is likely to be the underlying goal of elaboration in a majority of evaluation settings involving exposure to inconsistent information, extrinsic motives may sometimes override this tendency. In particular, we suggest that when people are highly concerned about the likelihood of making errors in their judgments/decisions (i.e., anticipatory regret is high), they will have a low need to reconcile inconsistencies because the act of reconciliation and the formation of a final evaluation itself opens up the possibility of an error having been made (Janis and Mann 1977; Thompson and Zanna 1995). In such situations, therefore, even under conditions of high information accessibility, the salient processing goal will act against reconciliation of inconsistencies, thereby promoting a weakening effect. Experiment 2 examines this issue by keeping information accessibility constant at a high level and manipulating the processing goal.

## EXPERIMENT 2: MODERATING ROLE OF ACCOUNTABILITY

The existing body of work on the effects of making people accountable for their judgments (Janis and Mann 1977; Lerner and Tetlock 1999; Tetlock 1983) offers support for the notion that a concern for minimizing the regret associated with possible errors in judgment can override the reconciliation motive. Research in this area postulates that people who expect to later justify their views to an unknown audience are likely to experience high levels of predecisional conflict in any judgment/decision situation because their major concern is to avoid postdecisional regret (Janis and Mann 1977; Tetlock 1983). Accordingly, they engage in “pre-emptive self-criticism” that leads to a continuous consideration and evaluation of information and vacillation between options (Kruglanski 1989; Tetlock 1983, 1992). Because of this tendency, accountable people, even though they process information carefully (Chaiken 1980), tend to have a high tolerance for inconsistency (Janis and Mann 1977). In support, empirical work in this area has shown that attitudes of accountable respondents possess greater structural inconsistencies than those of nonaccountable respondents (Tetlock 1983).

Drawing on these ideas, we hypothesize that making consumers accountable for their judgments will be conducive to the maintenance rather than the reconciliation of inconsistencies in product information, leading to a less internally consistent attitude structure and a lower attitude-intention link. This effect should be obtained even when attribute information is highly accessible and consumers are therefore able to elaborate on all the information. Under such conditions, information inconsistency (vs. consistency) is likely to produce increased elaboration for both accountable and nonaccountable participants, but the difference in underlying goals—regret minimization versus reconciliation—will pro-

duce important differences across these two groups. Accountable participants, when faced with inconsistent (vs. consistent) information are likely to engage in greater processing of the information because the likelihood of making a judgment error is greater in the case of inconsistent information; however, this will not result in a reconciliation of inconsistencies. On the contrary, when the predominant goal is regret minimization, greater thought about an issue leads to increased vacillation (Kruglanski 1989) and exacerbates underlying structural inconsistencies (Thompson and Zanna 1995). Thus, information inconsistency should produce a weakening effect for accountable participants. For nonaccountable respondents, however, the normal reconciliation motive should be predominant. Therefore, given conditions of high information accessibility, inconsistencies in attribute information should lead to reconciliatory elaboration for this group, resulting in a strengthening effect (as found in experiment 1).

## Design and Procedure

One hundred and ninety-three undergraduate students participated in the  $2 \times 3$  between-subjects experiment manipulating accountability (accountable vs. nonaccountable) and information valence (inconsistent information vs. all positive information vs. all negative information) in return for monetary compensation. Participants were told that the study concerned a new VCR and read instructions inducing an accountable or a nonaccountable mind-set. All items of attribute information were presented together ensuring high information accessibility in all conditions. Participants read the description of the VCR at their own pace and were then asked to write down all the thoughts that they had about the new VCR. These responses were coded by two independent coders (agreement  $> 80\%$ ) into various categories. Next, participants provided their overall evaluations of the VCR on three  $-3$  to  $+3$  scales (dislike–like, negative–positive, unfavorable–favorable;  $\alpha = 0.97$ ). Following the same, short filler task as in experiment 1, participants rated their purchase intention toward the VX-5000 on two 1–7 scales (unlikely–likely to consider; unlikely–likely to buy;  $\alpha = 0.90$ ). Finally, as a check on the amount of effortful processing, participants were asked whether they had put in a lot of thought in forming their evaluations of the VCR (1 = not at all; 7 = very much so). They were then thanked and debriefed.

## Manipulations and Stimuli

*Accountability.* The manipulation of accountability was based on existing research by Tetlock and his coinvestigators (Tetlock 1983; Tetlock and Boettger 1989). On the opening page of the questionnaire (just before receiving the product information), participants in the accountable conditions were told to form a careful impression of the VX-5000 VCR based on information that would be provided to them. In addition, they were told that in an interview at the end of the experimental session they would be asked to

TABLE 2  
EXPERIMENT 2: MODERATING ROLE OF ACCOUNTABILITY ON INCONSISTENCY EFFECTS

	Accountable			Nonaccountable		
	Inconsistent	Negative	Positive	Inconsistent	Negative	Positive
Brand attitude	4.25 (.95)	3.49 (.81)	5.66 (1.19)	4.74 (.98)	3.65 (.84)	5.94 (1.17)
Attitude-intention correlation	.24	.55	.64	.76	.45	.50
Processing effort	4.36 (1.63)	2.94 (1.78)	3.24 (1.86)	4.40 (1.50)	3.48 (1.69)	3.53 (2.16)
Proportion of product-relevant thoughts	1.00 (.00)	.96 (.18)	.94 (.20)	.98 (.05)	.94 (.20)	.90 (.21)
Ratio index	.71 (.20)	.97 (.08)	.94 (.15)	.84 (.21)	.95 (.13)	.98 (.08)
Ambivalence index	6.15 (2.25)	2.75 (1.87)	3.55 (1.90)	4.59 (2.27)	2.84 (1.67)	3.14 (1.12)

NOTE.—Standard deviations are in parentheses.

explain and justify their impression of the VCR. Finally, they were also asked to write their initials on each page of the questionnaire. Participants in the nonaccountable condition were also told to form a careful impression of the VCR. However, they were then informed that their responses would be kept completely confidential and would not be traced to them. Finally, to ensure some degree of equivalence with the accountable condition, they were asked to write down a three-digit number of their own choosing on each page of the questionnaire booklet, purportedly in order to keep their responses together.

*Information Valence.* The stimuli used were very similar to those in experiment 1 with the exception that all information was presented together. Further, because simultaneous presentation of a large number of attributes may have prevented careful processing, information was only presented on five attributes (instead of the seven attributes in experiment 1). As before, the VX-5000 was compared with two competing brands on each of the five features (sound quality, ease of operation, color, remote control, video head life). In the inconsistent information condition, three features (sound quality, ease of operation, remote control) were rated positively and two (color, video head life) were rated negatively. In an improvement on the experiment 1 design, two levels of consistent information were studied—a positive-consistent condition (all five features were rated positively) and a negative-consistent condition (all five features were rated negatively). To further reinforce the valence manipulation, each attribute description was accompanied by a numerical rating ranging from one (very bad) to seven (very good; cf. Jonas et al. 1997). Thus, video head life was given a rating of one in the “negative” condition and a rating of seven in the “positive” condition.

## Results

Analyses were first conducted in the context of a  $2 \times 3$  ANOVA (accountability: high vs. low; information valence: inconsistent vs. positive vs. negative). Since our major predictions involved a test of inconsistent versus consistent conditions, the two consistent conditions (positive and negative) were pooled whenever results in these two conditions

were similar, and analyses were then carried out in the context of a  $2 \times 2$  ANOVA (accountability: high vs. low; information consistency: consistent vs. inconsistent; cf. Jonas et al. 1997).

*Manipulation Check: Brand Attitude.* The pattern of brand attitudes provided an indication of the efficacy of the information valence manipulation. As expected, a main effect of information valence ( $F(2, 187) = 75.29, p < .01$ ) was obtained such that the brand attitude in the inconsistent condition ( $M = 4.52$ ) was lower than that in the positive condition ( $M = 5.80; F = 28.42, p < .01$ ) but higher than that in the negative condition ( $M = 3.56; F = 55.42, p < .01$ ). A main effect of accountability instructions was also revealed ( $F(1, 187) = 4.51, p < .05$ ), with a more favorable attitude obtained for nonaccountable ( $M = 4.79$ ) versus accountable ( $M = 4.41$ ) conditions. However, the interaction of the two factors was not significant ( $F < 1, NS$ ). Means are provided in table 2.

*Attitude-Intention Link.* As before, the correlation between brand attitude and purchase intention was the critical dependent variable. We expected that exposure to inconsistent (vs. consistent) information would increase this correlation for nonaccountable participants (replicating experiment 1) but decrease it for accountable participants. After transforming the correlations to Fisher  $z$ -scores, the ANOVA yielded only a significant interaction effect of information valence and accountability ( $F(2, \infty) = 5.19, p < .01$ ). For nonaccountable participants, the correlations for the two consistent conditions did not differ ( $r_{\text{positive}} = 0.50, r_{\text{negative}} = 0.45, z < 1, NS$ ), and a significantly greater attitude-intention link was obtained for the inconsistent condition ( $r = 0.76$ ) versus the two consistent conditions ( $F(1, \infty) = 4.52, p < .05$ ). Thus, a strengthening effect of inconsistency was obtained for nonaccountable participants, replicating findings from the experiment 1 high-accessibility conditions. For accountable participants, however, this effect was reversed. Again, correlations in the two consistent conditions did not differ ( $r_{\text{positive}} = 0.64, r_{\text{negative}} = 0.55, z < 1, NS$ ), but a significantly lower attitude-intention correlation was obtained for the inconsistent condition ( $r = 0.24$ ) compared with the two consistent conditions ( $F(1, \infty) = 3.85,$

$p < .05$ ). Thus, as predicted, accountability led to a weakening effect of inconsistent information.

*Amount of Elaboration.* We expected greater elaboration of attribute information in the inconsistent versus consistent information conditions. Accountability was not expected to moderate this effect, since inconsistency should lead to a greater amount of processing for both nonaccountable (reconciliation motive) and accountable (regret minimization motive) participants. The thought protocols provided a check on the total amount of elaboration across conditions. Unlike in experiment 1, where there were no irrelevant thoughts in any condition, participants in this study did write down some irrelevant thoughts in most conditions (e.g., “this was a boring survey”). Accordingly, the proportion of product-relevant thoughts to total thoughts was used as the index of elaboration (cf. Jonas et al. 1997). As before, the positive and negative conditions were pooled after orthogonal contrasts showed no differences between these two conditions for accountable as well as nonaccountable participants ( $F$ 's  $< 1$  in each case). The resulting  $2 \times 2$  ANOVA revealed only a significant effect of information consistency ( $F(1, 184) = 5.54, p < .05$ ), such that inconsistent information led to greater elaboration ( $M = 0.99$ ) than consistent information ( $M = 0.94$ ). The interaction of consistency with accountability was not significant ( $F < 1$ ), indicating that greater elaboration for inconsistency was obtained for both accountable and nonaccountable participants. Similar results were obtained using the self-report measure of effort, which revealed only a main effect of information consistency ( $F(1, 188) = 17.22, p < .01$ ), with greater effort being reported in the inconsistent ( $M = 4.38$ ) versus consistent conditions ( $M = 3.28$ ).

*Outcome of Elaboration: Structural Consistency Indices.* Even though inconsistency produced increased elaboration for both accountable and nonaccountable conditions, we predicted that accountable participants would be less likely to reconcile inconsistencies than nonaccountable participants. Therefore, inconsistent information should produce lower structural consistency for accountable versus nonaccountable groups. The same structure indices were constructed from the thought protocols as in experiment 1. After pooling the consistent conditions ( $F$ 's  $< 1$  for both accountable and nonaccountable participants), analyses of the ratio index revealed main effects of information consistency ( $F(1, 166) = 59.81, p < .001$ ) and accountability ( $F = 7.89, p < .05$ ). These effects were qualified by a significant interaction ( $F(1, 166) = 5.43, p < .05$ ). Planned contrasts revealed that inconsistent information produced lower structural consistency (i.e., a lower ratio score) than consistent information for both accountable ( $M_{\text{inconsistent}} = 0.71, M_{\text{consistent}} = 0.96, F(1, 166) = 46.40, p < .01$ ) and nonaccountable participants ( $M_{\text{inconsistent}} = 0.84, M_{\text{consistent}} = 0.97, F(1, 166) = 16.07, p < .01$ ). However, support for the greater reconciliation of inconsistencies under nonaccountable conditions was provided through a direct comparison of ratio scores for the two inconsistent information groups: a signif-

icantly higher ratio (i.e., greater structural consistency) was obtained for nonaccountable ( $M = 0.84$ ) versus accountable participants ( $M = 0.71, F(1, 166) = 10.20, p < .01$ ).

Similar results were obtained on the ambivalence index. After pooling the consistent conditions (contrast  $p$ 's  $> .10$  for both accountable and nonaccountable participants), analyses revealed a main effect of information consistency ( $F(1, 184) = 56.56, p < .01$ ), which was qualified by a significant interaction with accountability ( $F(1, 184) = 5.62, p < .05$ ). Compared with consistent information, inconsistent information led to a less coherent attitude structure for both accountable ( $M_{\text{inconsistent}} = 6.15, M_{\text{consistent}} = 3.12, F(1, 184) = 46.91, p < .01$ ) and nonaccountable groups ( $M_{\text{inconsistent}} = 4.59, M_{\text{consistent}} = 3.00, F(1, 184) = 15.27, p < .01$ ). Again, however, a comparison of the two inconsistent information conditions revealed significantly lower ambivalence for nonaccountable ( $M = 4.59$ ) versus accountable participants ( $M = 6.15, F(1, 184) = 10.31, p < .01$ ).

Thus, the pattern of results on both measures of attitude structure was supportive of our prediction that greater reconciliation of inconsistencies (and consequently, higher structural consistency) would be achieved for nonaccountable versus accountable participants. Interestingly, however, inconsistent information produced a less coherent attitude structure than consistent information for both accountable and nonaccountable participants, a finding that is somewhat discrepant from the analogous results from our earlier study. In experiment 1, both indices of attitude structure actually revealed equivalent structural consistency for participants exposed to inconsistent versus consistent information ( $F$ 's  $< 1$  for both indices) under conditions conducive to reconciliation (high information accessibility; nonaccountable mind-set). The reason for this interexperimental difference may have to do with the timing of the thought protocols (from which the structure measures were computed) vis-à-vis the attitude measure. In experiment 1, thoughts were reported after attitude and intention measurement. In experiment 2, thoughts were reported immediately after information exposure (and before attitude measurement). It seems possible that some inconsistency reconciliation occurs on-line at the time of exposure to the information in the nonaccountable condition, and further reconciliation occurs at the time of reporting attitudes. Thus, structural differences between inconsistent versus consistent groups (under conditions conducive to reconciliation) may be further diminished after attitude measurement.

We received support for this reasoning in a posttest ( $n = 81$ ) that used the main study stimuli and measured structural consistency after attitude measurement on closed-ended subjective ambivalence scales (taken from Priester and Petty 1996). These scales (e.g., “to what extent do you feel conflicted/not conflicted about your reactions to the VCR?”; 1 = very conflicted, 10 = not at all conflicted) tap into the degree of phenomenological attitudinal conflict experienced by participants and serve as a more sensitive measure of ambivalence than the thoughts-based indicator de-

scribed earlier. Measures were taken for accountable as well as nonaccountable participants, exposed to either the inconsistent information or the positive-consistent information from the main study. For accountable participants, as in the main study, ambivalence was greater in the inconsistent condition ( $M = 4.88$ ) versus the consistent condition ( $M = 6.31$ ,  $F(1, 77) = 8.84$ ,  $p < .01$ ). However, this was not the case for nonaccountable participants ( $M_{\text{inconsistent}} = 6.32$ ,  $M_{\text{consistent}} = 6.62$ ,  $F < 1$ ), supporting the notion that, given a reconciliation goal, reporting an attitude may itself lead to further inconsistency reconciliation.

*Nature of Elaboration.* Additional evidence for greater inconsistency reconciliation among nonaccountable versus accountable participants was provided by a more detailed examination of the thoughts data in the two inconsistent conditions of the main study. Two independent coders examined whether participants had written down any thoughts indicative of a conflict resolution. Thoughts were scored in this category if they satisfied the following two criteria: (a) the thought contained both a positive and a negative implication about the VCR and (b) it was also clear from the thought that a resolution had been reached in either direction. Examples of thoughts that satisfied both these criteria include “there were pros and cons; but the pros outweighed the cons” and also “sound quality was good, but sound quality isn’t as important to me as color—there’s no way I would buy this VCR.” Simple evaluative thoughts such as “I like this VCR” were excluded. Analyses were carried out on the proportion of participants who wrote down at least one such thought in their protocol. As expected, a higher proportion of conflict resolution was obtained in the nonaccountable condition (76.92%) versus the accountable condition (44.00%,  $\chi^2(1) = 7.17$ ,  $p < .01$ ).<sup>4</sup>

## Discussion

Experiment 2 provided a goal-based resolution of opposing theoretical perspectives on the effects of inconsistency on the predictive value of the resultant attitude. Drawing on the notion that accountable people are more concerned with avoiding postdecision embarrassment rather than achieving an integrated evaluation, we hypothesized that high accountability in the face of inconsistent information would promote vacillation rather than reconciliation. Our overall theoretical framework posits that attitudes will exhibit a weakening effect if the salient processing goal militates against inconsistency reconciliation. Results were supportive of this prediction. While inconsistency led to a

strengthening effect under nonaccountable conditions (thus replicating experiment 1 results), it led to a reliable weakening effect under conditions of accountability.

From a theoretical perspective, these results further clarify the mechanisms underlying the effects of inconsistency on attitude strength. Experiment 2 findings support the contention that these effects are not dependent simply on the amount of elaboration (which is made possible by factors such as high information accessibility)—whether or not the processing of information is undertaken for the purpose of reconciliation is also important. Results on both the number of thoughts and the self-report index of processing showed that the amount of elaboration produced by inconsistent attribute information did not differ for accountable versus nonaccountable participants—indeed, both groups displayed greater elaboration for inconsistent versus consistent information. Yet a weakening effect (relative to consistent conditions) occurred for the former group, whereas a strengthening effect occurred for the latter group. The measures of attitude structure helped to clarify these effects, by revealing greater reconciliation of inconsistencies for nonaccountable versus accountable participants.

These findings suggest that reconciliation and elaboration may not always go hand in hand. If elaboration is undertaken for the purpose of reconciliation (as under nonaccountable conditions), the weakening effect of inconsistency can be prevented and a strengthening effect can be produced. However, the greater thought associated with high accountability actually results in vacillation between alternatives because of the underlying goal of minimizing postdecision regret (Janis and Mann 1977; Kruglanski 1989; Tetlock 1983). Consequently, a weakening effect is obtained. This reasoning implies that the weakening effect of inconsistency under conditions of accountability, rather than being prevented by increased information elaboration, is actually caused by greater thought about the inconsistencies, which leads to heightened vacillation and indecisiveness. Stronger support for this somewhat counterintuitive thesis would be obtained by directly manipulating the amount of thought within accountability conditions. Experiment 3 provides a test of this hypothesis by examining the moderating impact of an individual-specific antecedent of elaboration, the need for cognition (NFC; Cacioppo and Petty 1982; Cacioppo et al. 1996).

## EXPERIMENT 3: ADVERSE EFFECT OF GREATER ELABORATION

“Need for cognition” has been used in persuasion research to manipulate the amount of elaboration (Haugtvedt and Petty 1992; see also Mantel and Kardes 1999). Higher (lower) scores on this measure are associated with a greater (lower) propensity for thought. Accordingly, when faced with inconsistent information under high accountability, high NFC will induce participants to engage in more thought; however, we suggest that greater thought in this case will not help in reconciliation. Rather, it will have the

<sup>4</sup>We thank the associate editor and a reviewer for suggesting this examination of our thought protocols. We also attempted a similar analysis in experiment 1. However, very few resolution thoughts were found across conditions, possibly because the thoughts data in that experiment were collected some time after stimulus exposure (following attitude measurement, a filler task, and also purchase intention measures)—accordingly, participants may have felt less compelled to articulate resolution thoughts in their protocols. In the current study, however, thoughts were collected immediately after exposure to attribute information, thus increasing the validity of this measure.

TABLE 3

EXPERIMENT 3: MODERATING EFFECT OF NEED FOR COGNITION (NFC) UNDER HIGH ACCOUNTABILITY

	Low NFC		High NFC	
	Inconsistent	Consistent	Inconsistent	Consistent
Brand attitude	4.48 (.92)	5.51 (1.36)	4.21 (.80)	5.68 (.94)
Attitude-intention correlation	.66	.44	.02	.70
Attitude persistence correlation	.58	.55	.21	.83
Processing effort	4.47 (1.70)	4.56 (1.63)	5.94 (.97)	4.56 (1.90)
Proportion of product-relevant thoughts	.82 (.22)	.82 (.31)	.88 (.27)	.80 (.27)
Ratio index	.86 (.20)	.89 (.19)	.76 (.22)	.99 (.06)
Ambivalence index	4.85 (2.00)	4.31 (1.97)	5.78 (2.63)	3.94 (2.20)

NOTE.— Standard deviations are in parentheses.

opposite effect of increasing vacillation, thus leading to the weakening effect that we observed in experiment 2. Conversely, because the weakening effect of inconsistent information for accountable participants actually arises because of thought-induced vacillation, factors (such as low NFC) that reduce the amount of thought accorded to inconsistent information have the potential to prevent weakening. Therefore, we hypothesize that the weakening effect of inconsistent information under conditions of accountability is likely to be observed for high-NFC participants rather than low-NFC participants. Experiment 3 examines this thesis for two measures of attitude strength: the attitude-intention link and attitude persistence. Research on attitude strength has shown that stronger attitudes, apart from displaying a greater correspondence with behavioral intent, are also likely to be more predictive of attitudes measured at a later point in time (Petty et al. 1995). Obtaining convergent findings on these two indicators of an attitude's predictive ability would increase confidence in our theoretical conceptualization.

### Design and Procedure

Experiment 3 used a  $2 \times 2$  between-subjects design manipulating information consistency (inconsistent vs. consistent) and NFC (high vs. low). In light of experiment 2, results documenting similar findings for the positive-consistent and negative-consistent conditions, only positive-consistent conditions were included in this experiment. Sixty-six undergraduate students participated in the experiment in return for monetary compensation. All participants were exposed to the accountability instructions used in experiment 2. The stimuli and procedure used in this experiment also closely followed that in experiment 2, with one major addition. After completing the initial set of questions about the VX-5000 (i.e., thoughts, evaluations, and purchase intentions), participants completed a set of unrelated filler tasks that lasted 45 minutes. They were then asked to fill out the shortened version of the NFC personality measure (Cacioppo and Petty 1982). Next, participants were reminded that they had earlier read information about the VX-

5000 VCR and were asked to once again provide their evaluations of this VCR, by indicating their agreement/disagreement with three statements: "I think the VX-5000 is a very good VCR"; "I think the VX-5000 is a very useful VCR"; "My opinion of the VX-5000 is very favorable" (1 = disagree, 7 = agree). Scores on these statements were averaged to create a delayed attitude index ( $\alpha = 0.93$ ). Delayed attitudes were deliberately measured using different anchors from those used to measure initial attitudes in order to prevent simple affect retrieval at delay. Finally, participants were asked how much effort they had put into thinking about the attribute information provided for the VCR (1 = very little; 7 = a lot).

### Results

Participants were classified as being either high or low in NFC based on a median split of the summed responses to the 18-item NFC scale (cf. Haugtvedt and Petty 1992). Analyses were then conducted in the context of a  $2 \times 2$  ANOVA (NFC: high/low; information consistency: inconsistent/consistent).

*Manipulation Check: Brand Attitude.* As expected, a main effect of information consistency ( $F(1, 62) = 21.98, p < .01$ ) was obtained such that the brand attitude in the inconsistent condition ( $M = 4.35$ ) was lower than that in the positive condition ( $M = 5.59; F = 28.42, p < .01$ ). None of the other effects in the model approached significance. Means are provided in table 3.

*Attitude-Intention Link.* Given the accountability mind-set induced in all conditions, we hypothesized that a lower attitude-intention link for inconsistent versus consistent information should be observed for participants who were more prone to thought (high NFC) rather than for those less prone to thought (low NFC). In support of this prediction, an ANOVA carried out on the Fisher  $z$ -transforms of the attitude-intention correlations in each cell revealed only a significant interaction effect of information consistency and NFC ( $F(1, \infty) = 4.14, p < .05$ ). Within the low-NFC conditions, inconsistent information ( $r = 0.66$ ) did not pro-

duce a weakening effect compared with consistent information ( $r = 0.44$ ,  $z < 1$ ). In contrast, under high NFC, a significant weakening effect was observed for inconsistent ( $r = .02$ ) versus consistent information ( $r = 0.70$ ,  $z = 2.08$ ,  $p < .05$ ).

*Attitude Persistence.* Persistence was measured via the absolute difference between initial and delayed attitudes for each participant; the greater this difference, the lower the persistence (Sengupta and Fitzsimons 2000). The overall ANOVA revealed only a significant interaction effect of information consistency and NFC ( $F(1, 62) = 4.39$ ,  $p < .05$ ). Further, a higher difference score (indicating lower persistence) was observed for inconsistent ( $M = 1.33$ ) versus consistent information under high NFC ( $M = 0.55$ ,  $F = 7.40$ ,  $p < .01$ ) but not under low NFC (inconsistent  $M = 0.68$ , consistent  $M = 0.75$ ,  $F < 1$ , NS). Similar results were obtained on another index of attitude persistence: the correlation between initial and delayed attitudes (Hodges and Wilson 1992). As before, only the interaction of information consistency and NFC approached significance ( $F(1, \infty) = 3.46$ ,  $p < .07$ ). While attitude persistence did not differ for inconsistent ( $r = 0.58$ ) versus consistent information conditions ( $r = 0.55$ ,  $z < 1$ ) under low NFC, a significant weakening effect was observed under high NFC ( $r_{\text{inconsistent}} = 0.21$ ,  $r_{\text{consistent}} = 0.83$ ,  $z = 2.52$ ,  $p < .05$ ). Thus, results on attitude persistence also support the thesis that, under an accountability mind-set, a weakening effect of inconsistent information is more likely to be observed for participants prone to greater thought.

*Amount of Elaboration.* In experiment 2, we had found that inconsistent information was elaborated on more than consistent information for accountable participants. We reasoned that this elaboration effect should be more likely to hold for participants more prone to thought (high NFC) than otherwise (low NFC). Analyses of self-reported effort supported this prediction. As expected, a significant main effect of NFC was obtained ( $F(1, 62) = 3.79$ ,  $p < .06$ ). A marginally significant effect of information consistency was also obtained ( $F(1, 62) = 2.75$ ,  $p < .10$ ). These effects were qualified by a two-way interaction ( $F(1, 62) = 3.56$ ,  $p < .07$ ). Planned contrasts revealed that, for high-NFC participants, greater effort was put into processing inconsistent information ( $M = 5.94$ ) than consistent information ( $M = 4.56$ ,  $F = 6.26$ ,  $p < .05$ ). For low-NFC participants, however, no effort difference was observed for inconsistent ( $M = 4.47$ ) versus consistent information ( $M = 4.56$ ,  $F < 1$ ). The proportion of product-relevant thoughts was also analyzed. The pattern of results was similar to the one above (see table 3 for means); however, none of the effects on this index was significant.

*Outcome of Elaboration: Structural Consistency Indices.* Our theorizing suggests that inconsistent information should produce greater vacillation for high- versus low-NFC participants; thus, the structural inconsistency that can be produced by inconsistent information is particularly

likely to be manifested for the former group. An ANOVA on the ratio index of attitude structure revealed a significant main effect of information consistency ( $F(1, 55) = 7.02$ ,  $p < .05$ ), which was qualified by a marginally significant interaction with NFC ( $F(1, 55) = 3.67$ ,  $p < .07$ ). Contrasts for high-NFC participants revealed a significantly lower ratio (indicating greater structural inconsistency) for the inconsistent ( $M = 0.76$ ) versus consistent conditions ( $M = 0.99$ ,  $F = 10.18$ ,  $p < .01$ ). No difference was observed for the low-NFC conditions (inconsistent = 0.86, consistent = 0.89,  $F < 1$ ). Similarly, inconsistent information produced greater ambivalence ( $M = 5.78$ ) than consistent information ( $M = 3.94$ ,  $F = 5.62$ ,  $p < .05$ ) within high NFC but not within low NFC ( $M$ 's: inconsistent = 4.85, consistent = 4.31,  $F < 1$ ).

*Nature of Elaboration.* The thoughts data in experiment 2 showed evidence for greater conflict resolution when participants processed inconsistent information under a reconciliation goal rather than a regret minimization (accountability) goal. Since all participants in the current study were given the latter goal, we did not expect a difference in conflict resolution when high- versus low-NFC participants were exposed to inconsistent information. In particular, while we hypothesized that the weakening effect of inconsistency should be prevented for low NFC, the lack of weakening was held to be because of lower vacillation rather than greater reconciliation of inconsistencies (in fact, were low-NFC participants to engage in substantial inconsistency reconciliation, a strengthening effect of inconsistency would be expected, which was not observed). As predicted, the proportion of conflict resolution (coded the same way as in experiment 2) did not differ for inconsistent conditions across high NFC (56%) versus low NFC (50%,  $\chi^2 < 1$ ).

## Discussion

Experiment 3 provided further insights into the weakening effects of inconsistency documented in experiment 2 for accountable participants. We reasoned that the weakening effect in such conditions arises because accountable people tend to vacillate in the face of inconsistent information, thus yielding an attitude with low predictive value. This reasoning suggested that thinking about the inconsistent information, rather than preventing weakening, actually facilitates it. Accordingly, the weakening effect is likely to be observed for people more prone to thought (high NFC) and prevented for people less prone to thought (low NFC). Results from experiment 3 were supportive, both in regard to the attitude-intention link and also attitude persistence.

These results provide further support for our overall theoretical framework, which conceptualizes the effects of inconsistency in terms of the interplay between processing goals and goal-facilitating factors. In particular, this framework predicts that elaborative processing of inconsistencies can lead to either a strengthening or a weakening effect, depending on the goal driving such elaboration. When elaboration is carried out for the sake of reconciliation, a

strengthening effect should be obtained (experiments 1 and 2). However, when elaboration is undertaken for purposes that are inimical to inconsistency reconciliation, a weakening effect should be obtained (experiments 2 and 3).

Experiment 3 findings may be compared with other research in the area of elaboration and attitude strength, which has found that factors that lead to increased elaboration lead to greater attitude strength (Petty et al. 1995). The current results should not be viewed as opposing these very well established findings; rather, they offer evidence for an interesting boundary condition. Under certain specific constraints (accountability goal; evaluatively inconsistent information), more thoughtful processing seems to hurt rather than benefit attitude strength.

Results from experiments 2 and 3 are consistent with the extant literature on accountability and also add to it. Work in this area has shown that the regret-minimization motive induced by accountability can lead to some unexpected effects. In some ways, accountability is akin to manipulations of situational personal relevance in that it generally produces careful information processing (Chaiken 1980). However, contrary to other manipulations of personal relevance, which typically lead to an attenuation of nondiagnostic cues in an information set (Maheswaran and Chaiken 1991; Petty et al. 1983), the greater processing induced by accountability has been found to produce a greater incorporation of nondiagnostic cues during attitude formation (Tetlock and Boettger 1989). This finding (known as the dilution effect) appears to stem from the fear of embarrassment that accompanies processing for accountable people; in order to make their evaluations more defensible, they incorporate all available information in their judgments. The current research highlights another aspect of the unique nature of elaboration for accountable participants. Specifically, the careful processing of inconsistent information for these participants (unless prevented by factors such as low NFC) arises from a wish to reduce later embarrassment rather than to achieve an integrated evaluation. Such a motive is inimical to inconsistency reconciliation and thereby leads to increased structural inconsistency and a lowering in the predictive ability of the resultant attitude.

It should be pointed out that accountability effects are often dependent on whether participants are made accountable before or after they report their attitudes (Tetlock 1992). In the current research, accountability was manipulated before evaluation, and it is this precommitment accountability manipulation that resulted in weakening. If accountability were manipulated after the reporting of evaluations, a process of attitude justification and bolstering is likely to set in, which in turn has the potential to increase underlying structural consistency and produce a strengthening rather than weakening effect (Sengupta and Fitzsimons 2000; Tetlock 1992).

## GENERAL DISCUSSION

This research used a new product evaluation context to examine the effects of evaluative inconsistency in a set of

incoming information on the strength of the resultant attitude, as manifested in its predictive ability. This issue is of theoretical importance because of the opposing predictions made by different streams of research. We suggest that a possible resolution of this dilemma has to do with the likelihood of inconsistency reconciliation—that is, whether people elaborate on inconsistencies with the goal of achieving an integrated evaluation. This conceptualization provides the basis for a two-factor framework that posits that it is the interaction between processing goals and goal-driven elaboration that determines the effects of inconsistency. Specifically, if an integration goal is salient (which is likely to be true in a majority of evaluation settings), and goal-driven elaboration is made possible, a strengthening effect should be obtained. However, preventing such elaboration can produce a weakening effect. Further, if the processing goal encourages the maintenance rather than the reconciliation of inconsistencies, factors that facilitate goal-driven elaboration are likely to promote a weakening effect. Results from three experiments provide support for these predictions.

In offering evidence for the opposing effects of evaluative inconsistencies, our research builds a bridge between differing theoretical perspectives. Prior research on the effects of inconsistencies has favored a resolution perspective, which posits that human beings are motivated to reconcile inconsistencies. This tradition is best reflected in established models of persuasion such as balance theory (Heider 1958), cognitive dissonance theory (Festinger 1957), and expectancy-value models (Fishbein and Ajzen 1975; Rosenberg 1968). However, lately, researchers have allowed for the possibility that people may be capable of maintaining inconsistencies, a premise reflected in the growing body of work on attitude ambivalence (Priester and Petty 1996, 2001; Thompson et al. 1995). The current findings support both these perspectives, suggesting that they are complementary rather than mutually exclusive. Whether inconsistency reconciliation or maintenance is the normatively appropriate strategy under different conditions is an interesting question that is left unresolved for future research.

Apart from providing a resolution of opposing viewpoints, we also extend each of these individual streams of research. Thus, while the reconciliation perspective has been used to document the increased elaboration and recall produced by the presence of inconsistencies in an information set (Hastie 1980; Srull and Wyer 1989), researchers have neglected to examine the effects of this process on attitude-strength outcomes. This omission is somewhat surprising, given the substantial body of work that establishes a positive connection between elaboration and strength. Along with recent work by Jonas et al. (1997), the current findings show that the increased reconciliatory elaboration that can be produced by the presence of inconsistencies has a positive impact on attitude strength, as documented by improved predictive capability.

The current research also adds to the literature on the structure-strength relationship. Work in this area has primarily concentrated on how existing inconsistencies (i.e., in

the context of established attitudes) in attitude structure can affect attitude strength outcomes; evidence has been obtained for a weakening effect (Bargh et al. 1992; Norman 1975; Sparks et al. 1992). Our research departs from this tradition by examining the effects of incorporating inconsistencies, in the context of new attitudes, and finds evidence for both strengthening and weakening effects. It should be noted, however, that the strengthening effect may be unique to the attitude formation context and might not translate to the domain of inconsistencies in preexisting attitudes. In the latter case, the fact that inconsistencies remain in an established attitude structure implies that reconciliation was not possible (or not attempted); thus, as has been documented in the literature, a weakening effect should be expected.

In addition to providing theoretical implications for extant research on the relationship between information inconsistency and attitude strength, the current research makes a contribution in extending these issues to the consumer context. While several studies in the consumer arena have focused on attitude strength issues—in particular, the predictive ability of an attitude (Berger 1992; Petty et al. 1983)—the effects of information inconsistency have received relatively little attention. Given that evaluative inconsistencies in product information are quite prevalent (it is rare to find a product with only positive or only negative attributes), investigations in this area have the potential to offer interesting implications for both consumer researchers and practitioners.

Some limitations of this research should be acknowledged. For example, the use of a single product category limits the generalizability of our findings; future work in this area should strive to replicate these results with other products. Similarly, it would be useful in future investigations to measure the predictive ability of attitudes in relation to actual behavior, in addition to the behavioral intentions measured in the current research. More important, the literature in this area can benefit from more fine-grained measures of inconsistency reconciliation, which would provide greater insights into the various mechanisms by which such reconciliation might occur. For instance, in examining the processing of inconsistent trait information about persons, Asch and Zukier (1984) identified seven possible reconciliation strategies (enabling, segregation, inner-outer, cause-effect, common source, means-end, and interpolation). A similar typology in the context of product attribute inconsistencies would help to further clarify the nature of inconsistency reconciliation as it relates to the consumer context.

Another interesting agenda for further research lies in investigating other variables (in addition to those studied here) that might affect the likelihood of inconsistency reconciliation and thus moderate the effects of evaluative inconsistency on attitude-strength outcomes. One particularly intriguing moderating influence on the extent of inconsistency reconciliation has to do with the nature of the attitude object itself; it seems possible that people possess richer knowledge structures for inconsistency reconciliation for some attitude objects as compared with others. For example,

individuals may be particularly adept at inconsistency reconciliation in the product domain, given that product judgments usually involve a trade-off between desirable (e.g., high quality) and undesirable (e.g., high cost) attributes and that these judgments are often made in a choice context (which inherently promotes a trade-off mind-set). In contrast, individuals may have less experience with reconciling inconsistencies in the context of people judgments, because these judgments are usually less likely to involve such inherent trade-offs. Consequently, the use of persons as target objects (rather than products) may reduce the ability to reconcile inconsistencies (see also Kardes [1986]; Menon and Johar [1997] for perspectives on the differences between product and person perceptions).

While purely speculative at this juncture, we note that this reasoning might explain an apparent discrepancy between results obtained in the current research and some earlier results. In particular, experiment 1 of our research found no differences in structural inconsistency (e.g., attitude ambivalence) for inconsistent versus consistent attribute information about a product, under conditions conducive to reconciliation (nonaccountable evaluation goal; high information accessibility). In other words, given suitable conditions, participants were able to engage in substantial inconsistency reconciliation, to the extent that the underlying attitude structure was as consistent as that produced by completely consistent information. In contrast, research by Priester and Petty (1996) documented greater ambivalence for inconsistent versus consistent trait information in the context of person judgments, under similar reconciliation-friendly conditions. While this discrepancy in the extent of inconsistency reconciliation (and, thus, the amount of ambivalence) might arise from other differences between the two studies (e.g., the current research used a thoughts-based index of objective ambivalence, whereas Priester and Petty's [1996] work employed closed-ended subjective measures of ambivalence), it can also be explained by the notion that individuals find person-trait inconsistencies harder to reconcile than product-attribute inconsistencies. Further investigation, of course, is required to provide empirical support for this argument, for which we are indebted to a reviewer.

In addition to the nature of the attitude object, other influences on the likelihood of inconsistency reconciliation include set size, cognitive load, delay between exposure to the stimulus information and the judgment task, and so forth (see Stangor and McMillan 1992 for a comprehensive review of factors affecting inconsistency reconciliation). According to our conceptualization, each of these factors, by influencing the extent of reconciliation, can affect whether inconsistent information produces a strengthening or a weakening effect. For instance, greater cognitive load (e.g., time pressure) should detract from reconciliation even under an evaluation goal, thereby facilitating a weakening effect. Future work in this area that examines the effect of such moderating variables on the relationship between inconsistent information and attitude strength will help to further

resolve the conflict between opposing theoretical perspectives that has been addressed in this article.

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