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Maintenance and Decay of Past Behavior Influences: Anchoring Attitudes on Beliefs Following Inconsistent Actions

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Three studies investigated the influence of past behavior on the stability of the attitudes it elicits. In Experiment 1, the effect of a bogus behavior feedback was long lasting when people engaged in biased scanning, presumably because this process elicits behavior-consistent beliefs. In contrast, the effect of the feedback decayed when participants were forced to consider whether the behavior might have undesirable outcomes. A second experiment using a different behavioral paradigm and a field study further supported the interpretation that individuals resolve conflict between a past behavior and subsequent beliefs about it by aligning attitudes with beliefs instead of behavior.

Keywords: *past behavior; behavior outcomes; attitude toward the behavior*

For the attitude change of an audience to be successful, the transformation must generally have a long-lasting effect. For instance, researchers and practitioners interested in preventing HIV infection strive to convince people to use condoms consistently for the duration of their active sex lives. Similarly, marketers have long-term objectives such as promoting brand loyalty during an audience's life span and ensuring transmission of consumer habits to future generations (Baldinger & Rubinson, 1996; Longman, 1997; Moore, Wilkie, & Lutz, 2002). Moreover, the intervention strategy of choice on many occasions is to induce people to try or sample the behavior one wants to instill (Goering, 1985; Kamins, Assael, & Graham, 1990; Kempf, 1999; Kempf & Smith, 1998; Smith & Swinyard, 1988). As a consequence, establishing the conditions under which these strategies promote long-lasting change appears essential (Albarracín, 2002; Cook & Flay, 1978; Eagly & Chaiken, 1993).

One mechanism that underlies the influence of past behavior on the attitudes individuals develop involves a consideration of the outcomes of the behavior (for other mechanisms, see Ajzen, 2002; Albarracín & Wyer, 2000; Ouellette & Wood, 1998). Sometimes the very process of thinking about their behavior leads people to form beliefs that the behavior has desirable outcomes (biased scanning; Albarracín & Wyer, 2000). For example, if one publicly supports a university policy, one may later identify outcomes that further emphasize its desirability (i.e., behavior-consistent outcome beliefs). Because inferring consistent outcomes from a past behavior involves beliefs that are evaluative consistent with the behavior, biased scanning should produce relatively stable attitudes as time goes by. In contrast, the realization that a given behavior has evaluatively unexpected outcomes may elicit conflict resolution processes that in turn precipitate fluctuations in one's attitudes. For instance, if one previously supported a university policy but later finds out that the policy compromises academic freedom, one may change one's attitudes to better align them with the recently uncovered outcomes.

These possibilities were first assessed in a longitudinal experiment in which participants received feedback that indicated they had either supported or opposed comprehensive exams without explicit awareness of having done so (Experiment 1; for a validation of this methodology, see Albarracín & Wyer, 2000). We expected that par-

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ticipants would spontaneously engage in biased scanning, thus developing long-lasting attitudes. In addition, to analyze the effect of inducing people to consider outcomes that conflict with the evaluative direction of their past behavior, we manipulated participants' assessment of both positive and negative outcomes of supporting the policy in an upcoming referendum. People who become aware that their behavior (e.g., voting in support of the policy) promotes both negative and positive outcomes (as opposed to only positive or only negative outcomes in line with the behavior) will likely perceive and attempt to resolve the conflict between the behavior and the expected outcomes. For example, people may become persuaded by the outcomes of the behavior, later changing their behavior-based attitudes to be consistent with the outcomes (Ajzen, 2002; Ajzen & Fishbein, 1980, in press; Fishbein & Ajzen, 1975). Alternatively, people's attitudes may lean more radically toward the prior behavior if the conflict makes it difficult to ignore, and forces them to rationalize, their past behavior (Festinger, 1957).

In addition to examining this problem with artificial behavior feedback methodologies, we conducted a second experiment and then investigated the effects of behavior-belief inconsistency in a field study. The second experiment entailed a choice between two products, followed by instructions to list positive, negative, or both positive and negative attributes of the selected product. We thus analyzed whether our manipulation of biased scanning (listing behavior-consistent cognitions) produced greater or lesser satisfaction with the initial choice later in time, compared with conditions in which participants considered attributes that contradicted their choice. Finally, participants in the field study reported their attitudes toward condom use, their beliefs about positive and negative outcomes of condom use, and their past behavior regarding condom use. Participants had behavior and beliefs that were both consistent and inconsistent with each other. Given this natural variability, we were able to observe whether behavior-belief inconsistencies induce greater attitude instability (see, e.g., Erber, Hodges, & Wilson, 1995) and, if so, whether the change stems from the behavior or the behavior-inconsistent beliefs.

Durability of Biased Scanning Effects

People who have performed a certain behavior often reflect on its consequences. In these situations, they sometimes conduct a biased search of memory for previous knowledge that legitimizes their behavior (Albarracín & Wyer, 2000; for a similar process in the domain of role-playing, see Janis & King, 1954). For example, they may identify reasons for the desirability of

the consequences of their behavior and for the likelihood of these consequences occurring (Albarracín & Wyer, 2000). They may then combine their estimates of the likelihood and desirability of these consequences to form an attitude toward the behavior, which in turn, might influence both their intentions and their actual decision to repeat the behavior (Fishbein & Ajzen, 1975). This mechanism is sometimes termed "biased scanning" (Albarracín & Wyer, 2000; Janis & King, 1954) and occurs in situations that both allow and motivate a person to review prior knowledge about the outcomes of their behavior (Albarracín & Wyer, 2000).[1]

Because prior behaviors exert pervasive influences on future attitudes and behaviors, it is important to determine the durability of the effects of biased scanning. To the extent that thinking about one's behavior induces behavior-consistent cognitions, biased scanning should lead to relatively stable attitudes. Consistent with this possibility, Zanna, Fazio, and Ross (1994) obtained evidence that behavioral persuasion strategies establish more durable attitudes than verbal persuasive messages. In their research, participants exposed to a persuasive communication either recalled behaviors that were consistent with their attitudes or reported these attitudes without recalling their behavior. Results indicated that participants who recalled their past behavior maintained their postmessage attitudes to a greater extent than participants who did not.[2] Similarly, participants' attitudes toward product brands are more stable following their trial of the brand than following exposure to advertising communications (Krishnan & Smith, 1998), and attitudes based on actual experience have a greater impact on future behavior than attitudes based on indirect experience (Fazio & Zanna, 1978; Fazio, Zanna, & Cooper, 1978).

Although the mechanism of biased scanning suggests that behavior should promote relatively stable attitudes, reflection about behavior outcomes that suggest a different course of action should, of course, elicit attitude change. In this regard, research on ambivalence demonstrated that ambivalent attitudes are less persistent than decisive ones (Norman, 1975; Rosenberg, 1960, 1968). To take but one example, Erber et al. (1995) asked a group of participants to report their attitudes and beliefs about Ronald Reagan. Findings indicated that the degree to which participants' beliefs about Reagan were inconsistent with each other and with their general attitudes about Reagan moderated attitude change: More inconsistent attitudes lasted less than more consistent ones (see also Chaiken, Pomerantz, & Giner-Sorolla, 1995; Jaccard, Radecki, Wilson, & Dittus, 1995; Thompson, Zanna, & Griffin, 1995).

If behavior-attitudes inconsistencies trigger change, then prompting actors to think about both positive and negative outcomes of their past behaviors may lead them to modify the attitudes they previously held. This process should normally not occur when people reflect about the behavior outcomes in a biased fashion but is likely to manifest itself when people reflect on behavior outcomes in an *un*biased fashion. Furthermore, behavior-based attitudes also may change when people experience disastrous or unexpected outcomes.

Assuming that conflict between a past behavior and relevant beliefs promotes attitude change, the direction of the change when beliefs and behaviors conflict (because of thoughts and/or experiences) is still an issue. On one hand, attitudes toward a behavior will change along with changes in beliefs if these beliefs are primary determinants of the attitudes (Ajzen & Fishbein, 1980). On the other hand, cognitive dissonance theory (Festinger, 1957) suggests that people whose overt behavior contradicts their beliefs often end up committing to their behavior instead of their beliefs. To our knowledge, this particular prediction has never been tested in situations in which the behavior precedes the emergence of behavior-inconsistent beliefs. Most tests of cognitive dissonance theory have been restricted to conditions in which participants engaged in a behavior that contradicted a prior belief (for a recent review, see Olson & Stone, in press). It is conceivable that attitude change anchors on whatever element appears last, be that the behavior or the behavior-inconsistent beliefs.

Our work dealt with the often-neglected but real-world situations in which one's present beliefs contradict one's past actions. For example, a person who purchases a product may later become aware of undesirable attributes of it, or individuals who move to a new town may discover that the new situation is surprisingly less favorable than they originally thought. If such conflict encourages maintenance or even entrenchment of attitudes based on the past behavior, then inducing the behavior should have beneficial effects no matter what the subsequent outcomes happen to be. Yet, if performing a behavior only has long-term benefits only when it stimulates desirable outcomes, attempts at changing attitudes should be designed after careful consideration of the outcomes the behavior might provoke.

Present Research

In the present article, we report findings from two experiments and a field study. Participants in the experiment first received feedback indicating that they voted in favor of or against the institution of comprehensive exams at their university. They then reported their attitudes toward the comprehensive exam policy immediately after receiving the feedback and again after 1 and 2 weeks had elapsed. In addition to manipulating the behavioral feedback participants received, we systematically varied the presentation of questions about the outcomes of voting in favor of or against the policy. Half of the participants answered questions about behavioral outcomes at each measurement point, whereas the other half did not. This subtle manipulation allowed us to observe whether consideration of both positive and negative outcomes of the policy could lead people to change their behavior-based attitudes down the line.

The second experiment we report involved a group of participants who were asked to make a choice between two different pens. The choice was followed by instructions to list positive, negative, or both positive and negative attributes of the pen they selected. Unlike the first experiment, in which people had to rate different outcomes but could either agree or disagree with the possibility that they would take place, this manipulation required people to list attributes they believed to be true. As a result, it was useful to create clear-cut conditions in which people reflect on behavior-consistent versus -inconsistent attributes, thereby generating a more appropriate test of our hypothesis about attitude change. Experiment 2 permitted us to determine whether listing behavior-consistent attributes (biased scanning) produced greater or lesser satisfaction with initial choices later in time, compared to listing behavior-inconsistent attributes.

The third study investigated the role of behavior-belief inconsistency in a longitudinal study of condom use funded and organized by the Centers for Disease Control (CDC; Kamb et al., 1998). Participants were surveyed on two occasions about their behavior, beliefs, attitudes, and intentions regarding condom use. We were thus able to classify participants as frequent or infrequent users of condoms and also to determine whether their beliefs were consistent or inconsistent with their past behavior. We then examined the influence of the past behavior and the beliefs about the behavior on changes in attitudes, intentions, and actual condom use. We expected that conflict between a past behavior and the net desirability of the outcomes elicited by that behavior would increase attitude change. According to cognitive dissonance theory (Festinger, 1957), the direction of change is likely to follow the behavior. According to Ajzen and Fishbein (1980), however, individuals should base their attitudes toward a behavior on the expected outcomes of that behavior. Consequently, people who have recently used condoms but fear negative outcomes in the future should decrease condom use, whereas people who expect positive consequences will increase condom use if they have previously failed to use them consistently. Such changes imply that inconsis-

tency between a past behavior and beliefs would produce attitude change corresponding to the beliefs.

EXPERIMENT 1

Method

PARTICIPANTS AND DESIGN

Participants were introductory psychology students who participated in exchange for course credit. They were randomly designated to receive behavior feedback that indicated they either favored or opposed the institution of comprehensive exams at the university ($N = 109$). All participants provided measures of attitudes and intentions at three points in time (immediately after the manipulation, 1 week later, and 2 weeks later). Half of the participants also reported their cognitions about (beliefs in and evaluations of) the outcomes of the policy at each point in time, whereas the other half did not. Thus, the design was a 2 (feedback direction: in favor of vs. against the policy) × 2 (questions about outcome cognitions: present vs. absent) × 3 (time: immediate, 1-week, and 2-week posttests) factorial. There was also a control condition with 59 participants.

EXPERIMENTAL PROCEDURES

Behavior feedback procedures. Participants were informed that the study was designed to test a new computerized procedure for measuring "unconscious" behavioral tendencies (for a validation of these procedures, see Albarracín & Wyer, 2000). The procedure consisted of presenting statements subliminally and having participants respond to them without being consciously aware of the content of the statements. Participants were told that although the stimulus statements would appear to be only flashes of light, they would elicit unconscious feelings that would give rise to a more conscious "intuition." They were informed that, to provide a measure of their behavior, they should "follow their intuition" and generate a "yes" or "no" response to each statement, which would be interpreted by the computer as a vote either "in favor of" or "against" the campus issue to which it pertained. They were further told that the statements might express either support for or opposition to the policy and that the computer program would take this direction into account in determining the implications of their responses. (Thus, a "yes" response to a statement that favored the policy and a "no" response to a statement that opposed the policy would be interpreted similarly.) Because participants did not know the actual framing and order of the statements, they had no way of knowing a priori how their sequence of "yes" and "no" responses translated into endorsing or opposing the subliminal issues (see Albarracín & Wyer, 2000).

Participants were told that they would be exposed to 21 statements concerning seven different university policies and that these statements would be presented in random order. On each trial, a statement about an issue was presented for 50 ms, followed by a 50-ms mask. Immediately afterward, a message appeared on the screen. The first line of the message read, "A phrase was just presented subliminally." The second line read, "yes" and "no" as a reminder to make a choice. Participants responded either "yes" or "no" to the subliminally presented policy by pressing "Y" or "N," respectively. This procedure was followed for 21 trials, with each of seven policies presented three times, in a random sequence. The actual policies presented were the same as the ones about which participants later received feedback—with one exception: The target policy, "instituting comprehensive exams at the university," was replaced with "ensuring fairness in exams at the university." This procedure was a safeguard against the possibility that exposure to the target policy, albeit subliminal, might unconsciously activate cognitions about the target (Bargh, 1997; see Albarracín & Wyer, 2000).

After completing the 21 trials, participants pressed "F" to instruct the computer to provide feedback about their behavior. During the time that the computer took to calculate the contrived feedback, participants saw a wait sign that blinked for several seconds. The next screen informed participants of the ostensible nature of each policy and whether they had voted for or against it, without further explanations of how the actual responses translated into the feedback. Participants all received the same feedback about their vote on each policy except the target policy, which was listed third in the set of policies they had ostensibly considered. Fifty percent of the participants were told that they had voted in favor of instituting the exams and 50% were told they had voted against it. (The assignment of participants to the two feedback conditions was random.)

Questions about behavior-outcome cognitions. As the other critical manipulation in this experiment, we introduced closed-ended questions about the outcomes of comprehensive exams to half of the participants. These questions had the objective of forcing participants to consider behavior outcomes they were unlikely to think of spontaneously. Because, as described shortly, the questions concerned both positive and negative outcomes, we expected their introduction to induce conflict with the directional feedback participants received beforehand. The participants who received these questions responded to them in every experimental session.

CONTROL CONDITION

There was also a condition in which we made the concept of comprehensive exams salient but did not provide

participants with information about comprehensive exams. The computer ostensibly selected one random campus issue for consideration and informed participants that the target policy would be "instituting comprehensive exams at the University of Florida." Participants were then asked to determine whether a series of words (e.g., exam on major) represented the concept of comprehensive exams. Thus, these conditions allowed for comparison of the effects of the behavior feedback with the effects of receiving no information whatsoever while attempting to control for the salience of the concept relative to the other conditions.

DEPENDENT MEASURES

After performing the computerized task, participants reported their attitudes and intentions concerning voting in favor of the policy in the referendum. All questions were presented on the computer and responses were provided along 10-point scales. We also used this questionnaire in the two follow-up sessions that took place 1 and 2 weeks after the first session. However, depending on experimental conditions, some participants evaluated and reported their cognitions about a series of outcomes of comprehensive exams in addition to their intentions and attitudes toward comprehensive exams. The order in which these outcome cognitions measures and the measure of attitudes were presented was counterbalanced. Because the outcomes were both positive and negative, the inclusion of these questions should have stimulated thoughts about behavior-inconsistent events.

Intentions. Participants reported the extent to which they intended to support the policy at a later point and would vote in favor of the policy in the referendum (*not at all likely* to *extremely likely*). We used the average of these two items ($r = .93$) as a summary measure of intentions.

Attitudes. After reporting their behavioral intentions, participants judged the extent to which voting in favor of the institution of comprehensive exams made them feel (a) good or bad, (b) happy or unhappy, (c) not angry or angry, and (d) an active or passive person.[3] They also reported whether voting in favor of comprehensive exams was (e) something they liked or disliked, (f) good or bad, (g) pleasant or unpleasant, (h) a good or terrible idea, (i) wise or unwise, (j) useful or useless, (k) consistent or inconsistent with their goals, and (l) smart or foolish. We averaged the 12 attitude statements as an overall index of attitude ($\alpha = .97$).

Behavior outcome cognitions. Half of the participants reported the likelihood that certain events would occur and the perceived desirability of these outcomes at each measurement point, whereas the other half did not. Negative events included, "It would imply a lot of stress and

pressure for students"; positive events included "UF [University of Florida] graduates would be offered larger salaries and better positions." The position of positive and negative outcomes was such that the mean serial order of each type of outcome was about the same. Participants provided their beliefs on a scale from *not at all likely* (1) to *extremely likely* (10) and their evaluations of policy outcomes on a scale from *dislike* (1) to *like* (10). Measures of evaluations were recorded by mapping the original scale on a bipolar scale from –4 to +4; because the scale lacked a middle point, responses of 5 and 6 on the original scale were assigned 0 (see also Albarracín & Wyer, 2000). We then multiplied the beliefs and each outcome by the corresponding evaluation and averaged each of the products (Ajzen & Fishbein, 1980; $\alpha = .87$).

Behavior. After participants completed the last computerized questionnaire, we indicated that because participants had thought about comprehensive exams, we wanted to take the opportunity to see how students might vote on the actual referendum. Participants received an instruction sheet with two detachable ballots and were asked to select the slip of paper that represented their choice and to place it in a box that was in the room. Participants' votes were ostensibly anonymous. However, we were able to record their behavior on the basis of the ballot that was left on their instruction sheet. A vote in favor of comprehensive exams was scored as 1 and an unfavorable vote as 0.

Results

We first analyzed attitudes and intentions as a function of (a) the direction of the feedback (in favor of vs. opposition to comprehensive exams) and (b) the presence of questions about behavior outcomes (presence vs. absence).[4] These analyses were followed by an examination of longitudinal change in attitudes and intentions as well as cognitions about the policy outcomes (when measured) and effects on the straw vote.

Effects of the behavior feedback on attitudes and intentions. An important question is whether the behavior feedback produced changes in participants' attitudes and intentions. The means across the posttest 1 columns of Table 1 suggest that participants who thought they unknowingly voted in favor of the policy had more favorable attitudes than those who thought they voted against the exams ($Ms = 5.54$ vs. 4.05), $F(1, 85) = 13.94$, $p < .001$. Furthermore, participants who thought they unconsciously voted in favor of the policy had stronger intentions to support it again in the future than those who thought they had voted against it ($Ms = 4.61$ vs. 2.68), $F(1, 85) = 14.41$, $p < .001$.

We also examined whether the two feedback conditions led to attitudes and intentions at Time 1 that dif-

TABLE 1:   Attitudes, Intentions, and Behavior as a Function of Time and Manipulated Cognitions: Experiment 1

Dependent Measure and Behavior Feedback	Presumably Behavior-Consistent Cognitions (No Questions About Outcomes)			Behavior-Consistent and -Inconsistent Cognitions (Questions About Positive and Negative Outcomes)		
	Posttest 1	Posttest 3	M Change	Posttest 1	Posttest 3	M Change
Attitudes						
Propolicy feedback	5.79	5.81	0.02	5.28	4.31	–0.83[a]
Antipolicy feedback	3.98	3.66	–0.15	4.11	4.02	0.09
Intentions						
Propolicy feedback	4.38	4.62	–0.02	4.84	3.56	–1.40[a]
Antipolicy feedback	2.56	2.30	–0.16	2.81	3.11	0.38

NOTE: Because there were no significant differences between Time 2 and Time 3 scores, we averaged change scores. Thus, M_{change} is the mean of change scores from Time 1 to Time 2 and from Time 1 to Time 3.
a. Change is significantly different from zero.

fered from those of control participants ($M = 4.38$, $SE = 0.33$; $M = 2.75$, $SE = 0.27$, for attitudes and intentions, respectively). Planned comparisons of the means for behavior feedback in favor of and against the policy with control conditions indicated that most of the attitude means were significantly different from control ($p < .05$). The only exception was the attitudes of recipients of feedback in opposition of the exam when participants received questions about outcome cognitions ($M = 4.11$), which were not significantly different from the control means ($M = 4.38$). The same comparisons for intentions showed that regardless of whether outcome questions were present, intentions differed significantly from control conditions when participants received feedback that they voted in favor of the policy ($Ms = 4.38$ and 4.84 in Table 2 vs. 2.75 for control conditions) but not when they received feedback that they voted against it ($Ms = 2.56$ and 2.81 in Table 2 vs. 2.75 for control conditions).

Evidence of outcome consideration. To confirm that a scanning of behavior outcomes took place at Time 1, we performed a mediation analysis, which is summarized in Figure 1. This analysis could only be performed in the conditions that included measures of outcome cognitions and indicated that these cognitions correlated positively with the feedback received and with attitudes at Time 1. Of importance, the influence of past behavior was only partially mediated by outcome-related cognitions, because past behavior continued to have a significant influence after controlling for the weighted belief index; Sobel $z = 1.69$, $p < .09$. This finding closely replicates earlier reports by Albarracín and Wyer (2000).

Decay and maintenance of change over time. We hypothesized that the effect of the behavior feedback would decay to a greater extent when participants are forced to think about behavior-inconsistent outcomes of the behavior than when they are not. To test this prediction, we calculated change in attitudes and intentions from
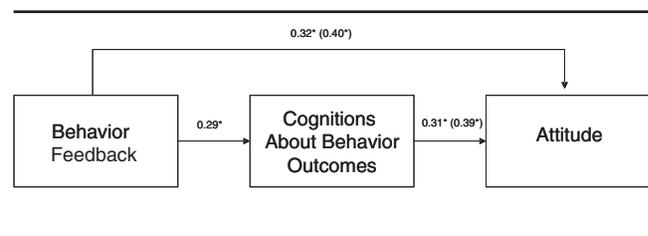
Figure 1   Path analysis.
NOTE: Measurements were taken at Time 1. Path coefficients appear next to each directional arrow, followed by simple correlation coefficients between parentheses.
*$p < .05$.

Time 1 to Time 2 and Time 3 by subtracting Time 2 and Time 3 scores from Time 1 scores. Analyses indicated no difference between the two change scores. Therefore, Table 1 presents average change over time (collapsed across the two delayed follow-ups).

The relevant means in Table 1 suggest that, as expected, introducing measures of outcome-related cognitions decreased the maintenance of the initial change in attitudes and intentions. This change was most apparent in significant decay of the attitudes and intentions of participants who received feedback in favor of comprehensive exams. The different slopes across conditions were confirmed by significant interactions between the feedback direction and the presence of the questions about behavior outcomes for both attitudes, $F(1, 85) = 5.04$, $p < .03$, and intentions, $F(1, 85) = 5.75$, $p < .02$.

We also compared attitudes and intentions reported at Time 3 in experimental and control conditions as evidence of change. The measures of attitudes and intentions in control conditions averaged 4.26 ($SE = 0.30$) and 2.65 ($SE = 0.34$), respectively. Of importance, attitudes were significantly different from experimental conditions in all cases except when outcome cognitions were measured, whereas intentions were significantly differ-

ent from experimental conditions in all cases (see means in Table 1). These findings provide sufficient reassurance that the decay observed in Table 2 could not have been return to baseline attitudes and intentions.

The influence of the behavior feedback on the votes participants cast at the end of the last session also provided an indication of the longitudinal effects of the behavior feedback and the questions about the outcomes of the behavior. As was the case with changes in attitudes and intentions, the voting behavior at the end of the experiment was a function of the direction of the feedback and whether participants responded to questions about the behavior outcomes, $F(1, 85) = 9.30$, $p < .003$. When participants did not report their cognitions about behavioral outcomes, their voting behavior was consistent with the feedback they received during the first session (M proportions = .38 and .04 for pro- and antiexam feedback).[5] In contrast, when recipients of behavioral feedback answered questions about behavior outcomes, those who thought they previously supported the policy voted against it, whereas those who thought they previously opposed the policy voted in favor of it (M proportions = .08 and .44 for pro- and antiexam feedback). Altogether, these findings imply that introducing questions about behavior-inconsistent outcomes altered behavioral responses to the point of reversing the biasing effect of the behavior feedback.

Finally, we analyzed whether changes in outcome cognitions paralleled changes in attitudes and intentions. Among participants who thought they voted in favor of the exams, the index of outcome cognitions became significantly more negative as time went by ($M_{change} = -6.25$), thus replicating the decay described for attitudes ($M = -0.83$) and intentions ($M_{change} = -1.40$). The index of outcome cognitions also presented a nonsignificant increase in favorableness when participants were initially informed that they voted against the comprehensive exam policy ($M_{change} = 0.34$), which replicated the nonsignificant increase of attitudes ($M = 0.09$) and intentions ($M = 0.38$) in those conditions. Because these findings were suggestive of mediation, we first compared change in attitudes and intentions across the pro- and antipolicy feedback participants who received questions about outcome cognitions to see if the change in outcome cognitions was in fact associated with the changes in attitudes and intentions. The effect of feedback was significant, confirming that the change in each of the cells had significantly different directions, $F(1, 36) = 10.81$, $p < .001$, for attitude change; $F(1, 36) = 4.10$, $p < .05$, for intention change. Both of these effects, however, became nonsignificant when change in outcome cognitions was introduced as a covariate, $F(1, 35) = 3.71$, $p < .06$, for attitude change, $F(1, 35) = 2.25$, $p < .14$, for intention change.[6]
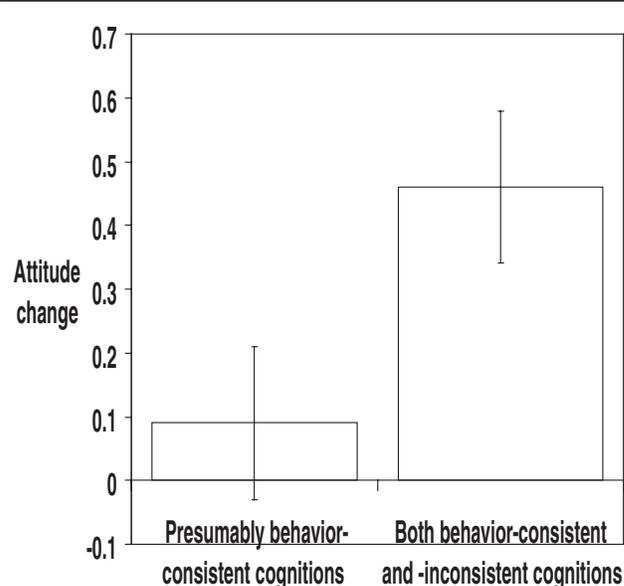
Figure 2   Summary of results from Experiment 1.

Discussion

As in Albarracín and Wyer (2000), Experiment 1 suggested that biased scanning mediates the influences of the behavior perceptions (see Figure 1). Participants who formed attitudes based on feedback that they unknowingly supported or opposed comprehensive exams formed outcome cognitions that were at least partially in line with the feedback.

The most important finding of Experiment 1 (for a summary, see Figure 2), however, was that the biased scanning effects of a past behavior can be long lasting. When participants spontaneously thought about their past behavior, they were likely to maintain their behavior-based attitudes even 2 weeks after receiving the behavior feedback. However, attitudes changed when participants considered outcomes that conflicted with having performed the behavior they thought they performed. In this case, the effect of the behavior feedback was overridden by the desirability of the outcomes, leading to more negative attitudes when participants previously thought they voted in favor of the policy and to more positive attitudes when they thought they opposed the policy.

Despite support for stability of the effects of biased scanning and for a belief-based resolution of conflict between beliefs and prior behaviors, there are several ambiguities surrounding Experiment 1. First, the behavior feedback effectively biases attitudes and circumvents the interpretational problems of studying the effects of behavior on cognition because it guarantees that no cognitive activity at the time the behavior is performed could be producing changes in attitudes (Albarracín &

Wyer, 2000). However, the manipulation is undoubtedly artificial and thus may not resemble a real behavior.

A second problem is that greater decay observed in response to the outcome cognition questions we introduced might be due to the differential dissolution of the influence of experimental demand elicited by our behavior feedback procedure. For example, it seems possible that during the first experimental session, participants might have purposely demonstrated attitudes that lined up with the feedback they received. Later, however, participants who were asked detailed questions about the outcomes of the exams may have perceived that they were given permission to convey their true, antiexam opinions, thus regressing to their baseline attitudes. Although the control data provided weak support for this alternative interpretation, additional evidence of the decay we observed seemed warranted.

A related limitation of Experiment 1 is that measuring attitudes at two points of time can sometimes create effects that are more dependent on changes in the measurement context than in any real transformation of spontaneous cognitive activity (e.g., see Cook & Campbell, 1979). For that purpose, in Experiment 2 we implemented a one-time measurement design, with participants first choosing an object between two alternatives, then reflecting about the characteristics of that object, and finally reporting their satisfaction with the selected one.

A final limitation of Experiment 1 is that the evidence that biased scanning was operating at Time 1 was only correlational. In addition, somewhat ironically, the only evidence that biased scanning is at stake comes from an analysis of the associations with outcome cognitions that themselves serve to induce a more bilateral consideration of positive and negative outcomes of the behavior being considered. Thus, we designed a follow-up study in which we orthogonally manipulated the valence of the thoughts participants developed immediately after performing an overt behavior. The new manipulation also was stronger because rather than allowing people to agree or disagree with behavior-consistent and -inconsistent outcomes (see Experiment 1), participants in Experiment 2 were only asked to list attributes they believed to be true. Thus, it was not possible for participants to simply discredit behavior-inconsistent outcomes as they could in Experiment 1.

EXPERIMENT 2

Participants in this follow-up study were given a choice between two ordinary pens and then listed characteristics of the pen they selected. The characteristics they listed, however, depended on the conditions to which participants were assigned. Whereas some of the participants were instructed to list positive characteris-

tics of the selected pen, thus artificially creating a process similar to biased scanning, a second group was instructed to list only negative attributes, and a third both negative and positive attributes. This simple manipulation allowed us to cleanly generate conditions in which, after performing a behavior, participants have predominantly positive thoughts, both negative and positive thoughts, or predominantly negative thoughts. We expected satisfaction with the initial behavioral decision to be greater when participants listed only positive thoughts than when they listed negative thoughts.

Method

PROCEDURES AND MEASURES

Participants in this experiment ($N = 52$) were introduced to the study with the explanation that we were investigating consumer reactions to pens that were currently on the market. Under this pretense, they were presented with two pens of different brands, which differed in various features but were of similar price and quality. Participants were asked to choose the preferred pen and to place stickers that read "keep" or "leave" on either of the pens, learning that they would be taking the chosen pen home with them.

Following this decision, we indicated that we wanted to know more about participants' thoughts about the pen and that we would be obtaining different types of information about it. We then asked participants to list their thoughts about the selected pen. Depending on random assignment, participants were asked to list the (a) four positive, (b) four negative, or (c) two positive and two negative attributes of the pen they selected. Participants were told not to worry about grammar and to list their thoughts in the space provided.

DEPENDENT MEASURES

Following this manipulation, all participants reported their satisfaction with their earlier choice of pen. Specifically, they were asked, "How happy are you with the pen you chose?" and were presented with a response scale from 1 (*not at all*) to 11 (*extremely*). In addition, we recorded the time participants took to provide a response as evidence of the amount of decision revision occurring after the experimental manipulation.

Results

This experiment was designed to precisely manipulate the direction of the thoughts that people generate immediately after performing a behavior. We expected that individuals would be more satisfied with their decision after listing positive attributes of the selected pen than after listing negative ones or both negative and positive ones. Thus, we analyzed reports of satisfaction with the pen as a function of the thought-listing condition

and the pen they selected. This analysis yielded the expected main effect of thought-listing condition, $F(2, 51) = 3.63$, $p < .03$. As suggested from the means in Panel A of Figure 3 and verified through planned contrasts, participants who listed only positive thoughts were more satisfied with their decision than participants who listed either negative thoughts or both positive and negative thoughts, $F(1, 51) = 7.11$, $p < .01$, whereas participants who listed negative thoughts did not differ significantly from participants who listed both positive and negative thoughts, $F < 1$.[7]

The other analysis we performed concerned the time participants took to report their satisfaction with the selected pen as a function of the thoughts they were asked to list. As can be seen from Panel B of Figure 3, participants who listed only positive thoughts took less time to report their satisfaction with the pen they selected than participants who listed either negative thoughts or both positive and negative thoughts. This pattern of findings was confirmed by a significant main effect of the thought-listing condition, $F(2, 51) = 3.25$, $p < .05$. In addition, there was a significant difference between participants who listed only positive thoughts and the other two conditions, $F(1, 51) = 5.28$, $p < .03$, whereas the other two conditions did not present statistically significant differences, $F < 1$.

Discussion

Experiment 2 provided further support for our earlier finding that thinking about aspects of a behavior that suggest its undesirability promotes alignment of one's attitudes with those thoughts rather than with the behavior. Thus, as summarized in Figure 3, thinking about choice-inconsistent attributes of one's decision triggered greater dissatisfaction with that decision as well as slower responses to the questions measuring satisfaction. This evidence was particularly strong because it was produced by an experimental demonstration of the role of biased scanning relative to more unbiased considerations of behavior-consistent and inconsistent outcomes. Whereas in Experiment 1 the evidence for the effects of biased scanning (see Figure 1) came from measures that were themselves introduced to increase an unbiased assessment of the negative and positive aspects of supporting the policy in question, Experiment 2 incorporated a more reassuring manipulation of the kinds of thoughts that follow the performance of a behavior.

STUDY 3

One limitation of Experiment 1 that Experiment 2 did not resolve was that despite the general strength of
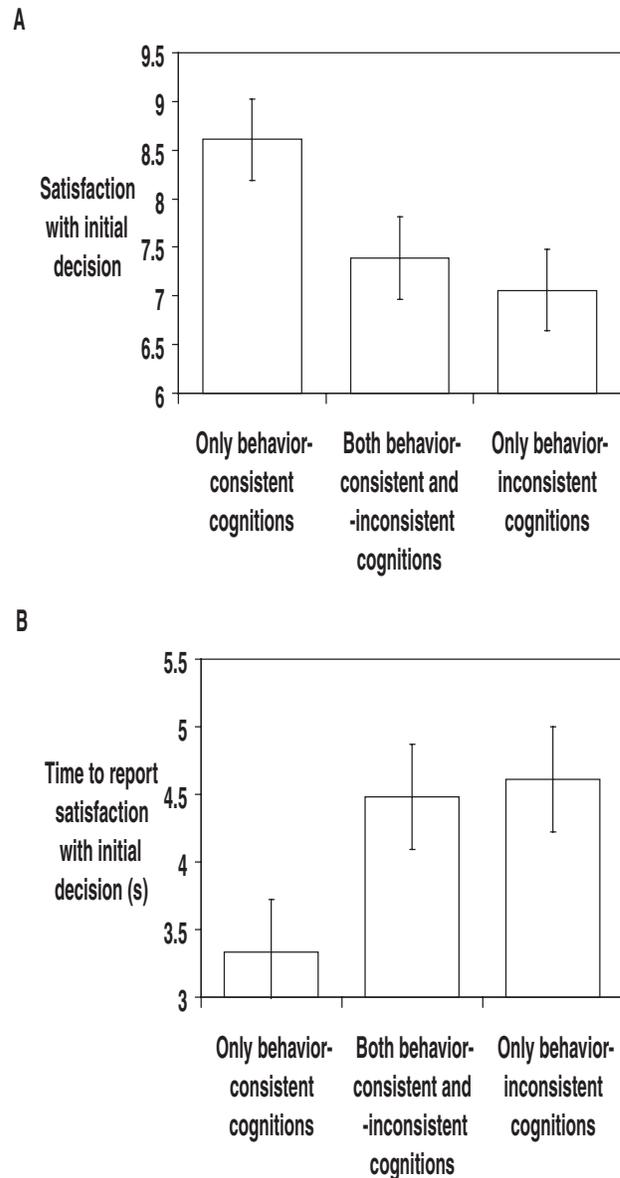
Figure 3   Summary of results from Experiment 2.

the statistical support we obtained, the increase in the favorableness of the initial negative attitudes in Experiment 1 did not reach significance. It is possible that people are simply difficult to convince that something is positive when they already possess information implying that it is indeed negative (Rozin & Royzman, 2001). However, because Study 3 had a larger sample of participants, we expected that decay of an initial negative attitude would be significant even if the size of that decay is small.

Another limitation of Experiment 1 that Study 3 helped to clarify was that the low number of partici-

pants who listed their thoughts prevented us from performing separate analyses of participants who endorsed mainly behavior-consistent outcomes or both behavior-consistent and -inconsistent outcomes. Because of the larger sample size and the presence of measures of outcome cognitions for all participants, we were able to break down our sample of participants (all of whom were asked about behavior-consistent and -inconsistent outcomes) into those who believed in outcomes that were predominantly consistent or inconsistent with their behavior. These analyses served to further examine the amount and direction of attitude change when behavior-belief inconsistencies occur in a natural setting.

Participants

We analyzed the data collected by Project RESPECT, a multisite study funded by CDC. Project RESPECT (Kamb et al., 1998; Kamb, Dillon, Fishbein, Willis, & Project RESPECT Study Group, 1996) was a randomized controlled trial comparing three separate face-to-face HIV/STD prevention interventions with follow-ups over a year. From this data set, we selected 164 men and 270 women who provided measures of their beliefs, attitudes, intentions, and behaviors on the last two occasions separated by a 3-month interval. Ethnically, participants were distributed as follows: 21% European American, 61% African American, 11% Latino, 2% Asian, Filipino or Pacific Islander, 1% American Indian, 4% other, and 1% unidentified.

Study Measures

The study included measures of beliefs, attitudes, intentions, and behavior concerning condom use during vaginal sex.

Outcome cognitions. The study questionnaire contained measures of salient outcome cognitions identified previously in a qualitative study about the perceived advantages and disadvantages of condom use. These measures followed attitude measures and included such outcomes as, "Using condoms would protect my partner from getting AIDS" (positive) and "Using condoms would ruin the mood" (negative). In all cases, participants provided their assessment of the likelihood that each outcome would occur along scales from 1 (*strongly disagree*) to 5 (*strongly agree*). To use these measures as an index of the valence of cognitions, we subtracted the mean of all negative outcomes from the mean of all positive outcomes. In the analysis to be reported, this overall measure of outcome cognitions allowed us to determine conflict with past behavior. A positive measure of outcome cognitions was assumed to conflict with a low frequency of past condom use, whereas a negative measure

of outcomes was assumed to conflict with a high frequency of past condom use.

Past condom use. Participants were asked whether, during the past month, they had used condoms never, almost never, sometimes, almost always, or always on a scale of 1 (*never*) to 5 (*always*). The Time 1 measure of condom use was used as an index of past behavior. In addition, we computed a change score subtracting behavior at Time 2 from behavior at Time 1.

Attitudes. Attitudes were measured by asking participants, "Would you say that using a condom every time you have vaginal sex would be . . . " and allowing them to respond on scales of 1 to 7 with the ends labeled *very unpleasant* versus *very pleasant, very bad* versus *very good, very difficult* versus *very easy,* and *very uncomfortable* versus *very comfortable.* In addition, items asking, "How sure are you that you can get your partner to use a condom every time you have vaginal sex?" and "How much would you like or dislike getting your partner to use a condom every time you have vaginal sex?" were used. Participants provided their response to these two questions on a scale of 1 (i.e., *very unsure* and *dislike very much*) to 7 (*very sure* and *like very much*). Responses to these six items were highly intercorrelated (mean αs = .87 and .88 at each time point) and were therefore averaged as a single measure of attitudes. Change scores were computed by subtracting attitudes at Time 2 from attitudes at Time 1.

Intentions. To measure condom use intentions, participants were asked, "How likely is it that you will use a condom the next time you have vaginal sex with your partner?" Participants responded on a scale of 1 (*very unlikely*) to 7 (*very likely*). We computed a change score by subtracting intention to use condoms at Time 2 from intention to use condoms at Time 1.

Results

The main analyses in this study involved a consideration of the effects of holding behavior-inconsistent beliefs on the stability of a past attitude. We thus regressed attitude change scores on past behavior at Time 1, the outcome cognition index at Time 1, and the interaction between the two. For display purposes, the mean change scores for attitudes, intentions, and behavior appear in Table 2, organized as a function of the outcome cognitions index (positive = greater than 0 vs. negative = smaller than 0) and past behavior (low = score of 1 or 2 vs. high = score of 3 or greater). The first column of the table includes cells in which there was no conflict between the past behavior and the cognitions about the outcomes of the behavior, whereas the second corresponds to cases in which there was conflict between the past behavior and the outcome cognitions. Given our

TABLE 2:   Changes in Attitudes, Intentions, and Behavior as a Function of Past Behavior and Spontaneous Cognitions: Study 3

	Behavior-Consistent Cognitions	Behavior-Inconsistent Cognitions
Attitudes at Time 1		
High condom use behavior	2.25	0.57
Low condom use behavior	0.64	–0.99
Attitude change		
High condom use behavior	0.13	–1.34[a]
Low condom use behavior	–0.05	0.20[a]
Intention change		
High condom use behavior	–0.60[a]	–1.20[a]
Low condom use behavior	–0.18	0.41[a]
Behavior change		
High condom use behavior	–0.87[a]	–1.00[a]
Low condom use behavior	0.08	0.41[a]

NOTE: High and low condom use behavior represent cells with high and low frequency of past condom use. Behavior-consistent cognitions pertain to participants with predominantly negative beliefs when their condom use behavior was low and with predominantly positive beliefs when their condom use behavior was high. Behavior-inconsistent cognitions pertain to participants with predominantly positive beliefs when their condom use behavior was low and with predominantly negative beliefs when their condom use behavior was high.
a. Change is significantly different from zero.

theoretical hypotheses, we expected greater change in the conflict than the no-conflict cells. In addition, given the findings from the first two experiments, we expected that conflict would be resolved in the direction of the outcome cognitions rather than in the direction of the past behavior.

As can be seen from the second section of the table, when past condom use and outcome cognitions were consistent (behavior-consistent cognitions), attitudes did not change. This finding was in accord with the expectation that behavior-consistent outcome cognitions would induce attitude maintenance. Intentions and actual condom use, however, decreased when frequency was high and participants held positive outcome cognitions. Although this change was not predicted, it possibly reflects regression to the mean because the means of attitudes and intentions in that cell were more extreme than all other cells (as an illustration, see mean initial attitudes in Table 2).

Of importance, the second column of Table 2 provided support for the hypothesis that belief-behavior conflict elicits change. As can be seen, participants who had previously used condoms with frequency, but expected more negative than positive outcomes, developed more negative attitudes and weaker intentions to use condoms and actually used condoms significantly less as time went by. Similarly, participants who previously used condoms infrequently, but nevertheless
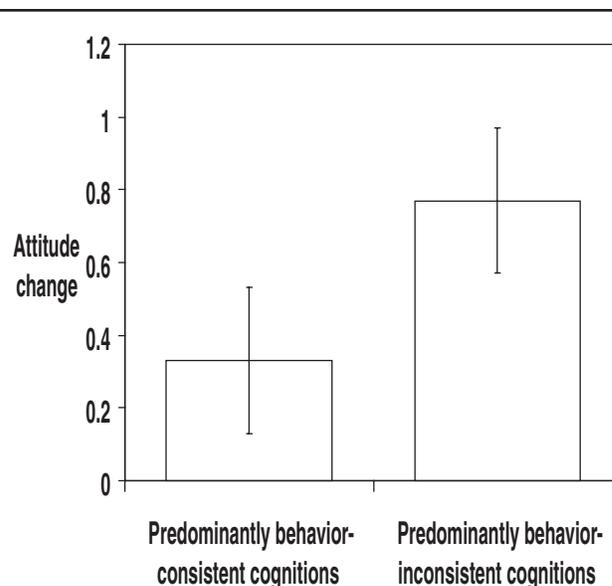
Figure 4   Summary of results from Study 3.

expected more positive than negative outcomes, developed more positive attitudes and stronger intentions to use condoms, and also used condoms more frequently as time elapsed.[8]

GENERAL DISCUSSION

We theorized that the influence of past behavior on current attitudes would be stable when little information conflicts with the behavior. Consistent with this hypothesis, Experiment 1 showed that the mere perception of a past behavior can induce attitudes that persist over a lapse of 2 weeks as long as people reason about their behavior in a spontaneous (probehavior) fashion. However, when participants in Experiment 1 were asked to report their cognitions about (positive and negative) outcomes of the behavior being considered, the initial impact of the behavior feedback decayed and attitudes aligned with the valence of the outcomes under consideration (Ajzen & Fishbein, 1980). The same pattern was observed in Experiment 2 and Study 3, which analyzed the influence of behaviors in which people actually engage. In Experiment 2, participants were less satisfied with their behavioral decisions after listing negative than positive outcomes, even when they listed negative outcomes as well as positive ones. Similarly, participants in Study 3 (see Figure 4) developed more positive attitudes about condom use when they previously failed to use condoms but thought that using them would have more positive than negative outcomes. Participants also decreased condom use when they previously used condoms frequently but concluded that its outcomes were more negative than positive.

Our Research in Light of Past Research on Attitude Ambivalence and Change

The conclusions of our work strongly relate to prior theorizing that attitudes are often reconstructed at the time people are asked to report them (Erber et al., 1995; Judd & Brauer, 1995). As a result, inconsistencies between the information that enters into the reconstruction and the original attitude can produce changes in prior attitudes, whereas consistency between these elements often elicits stability in prior attitudes. For instance, people's attitudes toward a politician are stable when their beliefs and evaluations of the candidate lead to the same conclusion but change when they lead to different conclusions (Erber et al., 1995). The work reviewed in this chapter confirms and advances this finding by showing its applicability in the domain of belief-behavior inconsistencies. Furthermore, the use of an experimental approach in Experiments 1 and 2 circumvents the possibility that the stability of attitudes might reflect confounds with other individual differences rather than true causal connections, a threat that is omnipresent in correlational research on this problem (e.g., Chaiken et al., 1995; Jaccard et al., 1995; Thompson et al., 1995).

Anchoring Attitudes on Beliefs Following Behavior-Belief Conflict

In addition to estimating the likely stability of the effects of past behavior, the present research points to conditions in which individuals resolve conflict between a behavior and subsequent beliefs by aligning their attitudes with their beliefs instead of their behavior. For some time, researchers have assumed that invalidation of a past behavior stimulates people to become more entrenched in their probehavior attitudes (Festinger, 1957). However, the research we presented suggests that postbehavior conclusions can take precedence. All together, these studies imply that although performing a behavior that contradicts a prior belief often negates that belief (Festinger, 1957), thoughts about (Experiments 1 and 2) and experience with (Study 3) consequences that are inconsistent with a prior behavior also can override the effects of behavior, thus reducing the stability of the initial effects of biased scanning.

Resolution of Behavior-Belief Conflict in the Formation and Change of Attitudes

Whereas the first two studies induced new attitudes among the participants, the third concerned an attitude object of considerable concern for our research participants: the use of condoms to prevent life-threatening consequences for themselves and others. Because of these differences across the studies, the repeated finding that biased scanning increases stability, whereas unbi-ased scanning decreases it, may be taken as evidence that this process generalizes to situations in which people possess and care about an attitude as well as situations in which they do not. Thus, whereas self-perception has been argued to be more prevalent when people form attitudes and dissonance when people change attitudes (see Fazio, 1987), our findings suggest that the resolution of the cognitive conflict that emerges cuts across these two domains even when the associated affect may only be intense in changing prior attitudes.

The Potential Influences of Self-Perception on the Durability of Attitudes

When individuals think about their past behavior, they not only consider the outcomes that might have driven them to act in a certain way or the actual outcomes of their overt actions but they also make more global inferences that, if they performed a given behavior in the past, they must have liked the behavior and the object toward which the behavior was directed. Such inferential processing, which is known as self-perception (Bem, 1965), appears to accompany the kinds of biased scanning we verified in Experiment 1 (see Figure 1).

Because self-perception has been demonstrated in a variety of circumstances (for a review, see Eagly & Chaiken, 1993), future research should precisely establish the longitudinal stability of attitudes that are established or modified in that fashion. Based on our analysis, one could hypothesize that situations in which self-perception arises while biased scanning does not would likely result in fairly stable attitudes. After all, self-perception is unlikely to elicit inconsistent beliefs that might trigger attitude change at a later point in time.

The Role of Elaboration

Because self-perception involves less cognitive ability than biased scanning and cognitive dissonance, one could also hypothesize that the self-perception influence of behavior will last less than those of biased scanning and cognitive dissonance. Such prediction relies on the rationale that elaboration at the time an attitude is formed is the most important predictor of the stability of that attitude. Associated hypotheses include the possibility that attitudes based on elaborative processing of information have greater cognitive support, display more confidence, and are more accessible in memory than attitudes based on superficial processing of information (Petty, Haugtvedt, & Smith, 1995). Current knowledge about these issues, however, limits the applicability of these claims.

In fact, an analysis of the problem of elaboration vis-à-vis other determinants of attitude persistence suggests a complex picture in which many factors must be present for attitudes to last. Consider the hypothesis that elabo-

ration strengthens the cognitive support of an attitude. Undeniably, attitudes based on substantial elaboration are likely to have associated memories resulting from it. Yet, the consistency between these memories and the attitude may be more important than the number or accessibility of them, which are likely affected by the amount of thought in which a person engages. Clearly, having thought about the outcomes of one's past behavior or about the arguments contained in a persuasive communication may stimulate the storage of arguments in favor of the behavior or the arguments. However, having thought about the reasons why a particular behavior or message might be invalid may stimulate the storage of arguments against the behavior or message advocacy. Over time, elaboration that creates memories in favor of the behavior or the message will produce stable attitudes, but elaboration that creates memories against the behavior or the message will produce unstable attitudes.

As another example of how the consequences of cognitive elaboration on attitude stability are likely to be intricate, consider the results of developing a confident attitude. On one hand, elaboration is assumed to increase attitude confidence and attitude confidence can in turn decrease the probability that one will reconsider one's attitude in light of contradictory information. One also may recruit the cognitive defenses that are necessary if one's attitude comes under attack when one trusts that attitude. Both of these effects of attitude confidence should increase the probability that confident attitudes will be more persistent over time and more resistant to later attacks.

On the other hand, there are reasons why attitude confidence might actually decrease the persistence and resistance of one's attitudes. First, being confident in one's attitudes may prompt one to think about them frequently, increasing the likelihood of uncovering reasons that actually invalidate the attitude. In addition, being confident in one's defensive ability has been shown to increase exposure to counterattitudinal information, which in turn increases the availability of reasons to change one's attitudes (Albarracín & Mitchell, in press). Both of these effects of attitude confidence should actually reduce the probability that confident attitudes will be more persistent over time as well as more resistant to subsequent attack.

The fact that elaboration increases the accessibility of one's attitude is also not sufficient to conclude that greater elaboration will necessarily trigger attitude stability. As Albarracín, Wallace, and Glasman (2004) have argued, understanding and predicting attitude change requires examination of three processes: (a) activating the prior attitude (retrieving it from memory), (b) activating information related to the prior attitude (which can come from memory or an external source), and (c)

comparing the prior attitude with the related information. If one considers attitude activation (e.g., accessibility) separately from comparison, attitude activation promotes attitude maintenance (Fazio, 1989) and comparison promotes change (Pham & Muthukrishnan, 2002). Yet, these processes are not entirely independent because comparing a prior attitude with new information is only possible when one first activates a prior attitude. Consequently, situations in which comparison is likely (e.g., high elaboration, use of comparative information formats, direct instructions to compare) will trigger more change when the prior attitude is easy rather than difficult to access.

Unfortunately, there is no simple test for these problems, and we do not believe that a single answer is correct. In any case, it is unlikely that elaboration is the critical determinant of attitude stability, whereas the internal structure of the relevant representations in memory is less fundamental. At least two of our findings point to problems in a single-handed response to these questions. First, in Experiment 1, having participants reflect about various consequences of a perceived behavior likely induced greater elaboration than not including questions about consequences. Despite this situation, the very presence of the more elaborative questions decreased attitude stability. Furthermore, cognitive conflict has been shown to increase elaboration (Baker & Petty, 1994). In this light, one could hypothesize that conditions of conflict between past behavior and relevant cognitions would show greater attitude stability. In reality, however, the opposite was the case: the elaboration-triggered conflict elicited attitude change rather than attitude maintenance.

Applied Implications of Our Findings

Researchers and practitioners in the areas of health, marketing, and political sciences are aware of various strategies in which facilitating a given behavioral experience changes the attitudes of the target audience. Food marketers dedicate large amounts of resources to promote the free testing of their products at grocery stores. Health practitioners offer free condoms to people who are at risk for HIV or Sexually Transmitted Infections (STIs) in the hope that the mere experience of using a condom once will change their attitudes and behavior in a permanent fashion. Political candidates and campaign managers try to stimulate compliance with small gestures of support (e.g., display of a banner on one's property) because of the expectation that the small gesture will become internalized and strengthen actual support on election day.

With the widespread applicability of inducement of certain behaviors as an intervention to change audiences' attitudes, one might conclude that knowledge on

the duration and effectiveness of these strategies would be vast. Yet, some questions remained unanswered that the present research was designed to tackle. First, we wanted to know whether considerations that follow a behavior influence attitudes in addition to the behavior, and our research suggest that they do. Second, we wanted to know whether the resolution of conflict between a behavior and subsequent conclusions about that behavior will be anchored on the behavior or the conclusions. In response to this question, we concluded that at least in the conditions we studied, people tend to rely on the postbehavior beliefs rather than become polarized in the direction of the initial behavior.

The finding that individuals rely on postbehavior considerations relevant to their behavior has important implications for behavior change interventions. If people were able to perform a behavior without ever becoming aware of the outcomes of that behavior, then inducing a behavioral experience would guarantee changes in the direction of the behavior. The same would be the case if interventionists could ensure that the actor only experiences outcomes that validate the behavior they attempt to facilitate. In the absence of these conditions, however, inducing a behavioral experience in which the outcomes are discouraging may be futile. It might be best to first present the behavior-inconsistent outcomes to people and then encourage them to perform the behavior. This sequence is likely to foster inferences that, for example, one performed the behavior despite knowledge that the behavior could have negative consequences (Albarracín, Cohen, & Kumkale, 2003). These inferences would, in turn, increase compliance with the behavior requested by the interventionist.

NOTES

1. The biased-scanning hypothesis assumes that the effects of past behavior are mediated by the consideration of prior knowledge about behavior's consequences that validate the behavior (accompanied by ignorance of prior knowledge that suggests that the behavior was wrong). However, this mediating cognitive activity is not necessary for past behavior to bias current attitudes. Self-perception theory (Bem, 1965, 1972), for example, postulates that when persons are called on to report an attitude, they often infer it from the implications of a past behavior that happens to be salient to them at the time without consulting any cognitions they might have formed about the behavior and its consequences at an earlier point in time (Bem & McConnell, 1970). Despite the empirical and theoretical relevance of self-perception, the present research only analyzed experimental and natural variations in biased scanning.

2. Of course, the effect of justifying one's attitudes may lead to greater persistence for reasons other than the ones we imply. However, this evidence is suggestive of the processes we analyzed.

3. The active/passive item on the attitude measure was intended to capture Osgood, Suci, and Tannenbaum's (1957) activity dimension of attitudes.

4. The order of introduction of attitude and outcome-related matters had no effects. This finding suggests that the attitudes at posttest 1 reflected the attitudes formed at the time participants evaluated the message (e.g., see Wyer & Srull, 1989).

5. For the acceptability of analysis of variance procedures with proportions, see Huynh and Feldt (1970).

6. As indicated before, an analysis of change versus a zero standard suggested that the decay in the influence of the feedback was significant when participants thought they voted in favor of the policy. However, this difference disappeared when we controlled for changes in outcome cognitions in the same conditions.

7. There also was an unexpected main effect of the pen participants selected, with one of them being associated with higher satisfaction than the other (Ms = 8.52 vs. 6.52), $F(1, 51) = 3.63$, $p < .03$. This effect, however, does not compromise the interpretation of our findings, because the effect of listing positive, negative, or positive and negative thoughts was independent of this unexpected effect.

8. The patterns of findings in Table 2 were reflected in significant main effects of past behavior for all variables (β = –.38, –.26, and –.49 for change in attitudes, intentions, and behavior, respectively, ps < .005 in all cases) when outcome cognitions and the interaction between behavior and outcome cognitions also were entered into the equation.

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