

COGNITION IN PERSUASION: AN ANALYSIS OF INFORMATION PROCESSING IN RESPONSE TO PERSUASIVE COMMUNICATIONS

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I. Introduction

Many decades of persuasion research have provided insights into the cognitive processes that mediate the impact of a communication (see Wood, 2000). Many of these processes were identified over 30 years ago by McGuire (1968a, 1968b, 1972; for reviews, see Eagly & Chaiken, 1993; Petty, Priester, & Wegener, 1994). He proposed that the impact of a persuasive message depends on the completion of a series of stages, including exposure to the communication, attention, comprehension, yielding, retention, and behavior. In this model, the probability of occurrence of each particular cognitive activity depends on the completion of the previous activities. Consequently, failure at any of these stages implies an interruption of the persuasion process as a whole and of the ultimate impact of the message on recipients' actions.

Perhaps ironically, research following McGuire's seminal analysis has not expanded on the various stages of processing he identified or examined the manner in which they interface. In contrast, it has ignored many of the processes he described originally while failing to specify others, particularly the nature of yielding. In fact, a simplification of his original model, proposed by McGuire (1968a) himself, abandoned the distinction between exposure, attention, and comprehension and proposed a single stage comprising all aspects of message reception. Retention and behavior were excluded as irrelevant to most laboratory studies of persuasion, and yielding remained the other critical processing stage. In the new framework, the probability of actual influence is a joint function of the probability of receiving the message and the probability of yielding to the message recommendation once its content has been received.

Still more recent conceptualizations have ignored reception processes altogether and focused almost exclusively on yielding. According to Greenwald (1968; Petty,

Ostrom, & Brock, 1981), people actively relate the arguments contained in a communication to their beliefs and feelings about these arguments, and prior knowledge is more influential than the content of the persuasive message. The idea of yielding as an active process of cognitive responding had important implications for the persuasion research developed in recent decades. For example, it gave way to the use of thought-listing procedures (see Greenwald, 1968) to study persuasion and often led to a characterization of research that employs this methodology as "process-oriented." It also influenced Petty and Cacioppo's (1986a, 1986b; see also Chaiken, 1980; Chaiken, Liberman, & Eagly, 1989; Chen & Chaiken, 1999) theorizing on the ways in which a communication has an influence. According to Petty and Cacioppo (1986a, 1986b) as well as Chaiken (1980), a persuasive communication can generate issue-relevant thoughts and influence attitudes via these thoughts. However, when people have neither the ability nor the motivation to think about the issues discussed in the message, they may still use information (e.g., number of arguments, their past behavior, or the affect they experience at the time) that can help them make a decision without having to think about the issues at hand with any depth (see Petty & Cacioppo, 1986a, 1986b).

The aforementioned models all contributed to the understanding of persuasion processes to date. However, one limitation of the existing theories of persuasion (e.g., Chaiken, 1980; Kruglanski, Thompson, & Spiegel, 1999; McGuire, 1968a; Petty & Cacioppo, 1986a, 1986b) is that they do not specify how people search for the bases of information they use in judgment. For example, both the elaboration likelihood model (Petty & Cacioppo, 1986a, 1986b) and the heuristic systematic model (Chaiken, 1980) maintain that message recipients who have the ability and motivation to think about the persuasive message base their attitudes on the arguments contained in the message. In contrast, recipients who are unable or do not bother to think about the message content generally use other, less relevant cues as a basis for judgment (Petty & Cacioppo, 1986a, 1986b). What is absent from these models is an articulation of how message recipients determine what information to use. Do people perform a selection of information beforehand? Or are all bases of information examined and some discarded for the sake of simplicity or in light of other standards?

The conceptualization we propose in this chapter, like McGuire's (1968a), assumes that the processing of a persuasive communication occurs in a series of stages. However, it specifies the mechanisms that are involved in the selection of different subsets of information that become relevant as people process a persuasive message. The sequence we propose is consistent with general conceptualizations of information processing (see, e.g., Fiske & Neuberg, 1990; Wyer & Srull, 1989) and comprises interpretation of information, retrieval of information from memory, and selection and use of available information as a basis for judgment. Thus, people need to identify or direct attention to potential information that is

available at the time and assess the extent to which this information is relevant to the judgment they are about to make.

For example, the attitude toward the issue a message advocates is often informed by the affective implications of the message arguments. However, affect deriving from other sources can have strong influences as well. Thus, pleasant music in a commercial may be objectively irrelevant to the merits of a product but can still generate favorable attitudes toward the product provided the positive affect it induces biases recipients' judgments (for a comprehensive review of the influences of affect, see Clore, Schwarz, & Conway, 1994). The mechanisms that underlie the influence of affect in persuasion are most likely to involve the use of affect as information (Schwarz & Clore, 1983; see also Cohen, 1990; DeSteno, Petty, Wegener, & Rucker, 2000; Ottatti & Isbell, 1996; Wyer & Carlston, 1979).¹ When message recipients are able and motivated to think about the information available at the time, they are likely to identify or direct attention to the arguments in the persuasive message and their own affective reactions as potential criteria for judging the validity of the message advocacy. They may then judge the arguments contained in the message to be relevant but discount their extraneous affective reactions as coming from their mood. Both moderate and extreme decreases in ability and motivation are likely to reduce the influence of argument strength. That is, any decrease in ability and motivation is likely to decrease the probability of (a) identifying the arguments contained in the message and (b) deciding that these arguments are relevant. In contrast, the influence of ability and motivation on the use of other, less relevant information may be curvilinear. That is, when people can exert moderate amounts of thought, they may identify their extraneous affective reactions but fail to discount them. In contrast, when ability and motivation are low, they may not identify their affective reactions to begin with, and so their mood may have no influence.

Once recipients of a persuasive message select their decision bases, they are likely to judge the implications of performing the behavior the message recommends. Consider a message that recommends a given course of action and presents

¹People's attitudes toward the behavior advocated in a persuasive message may be informed by affect from two sources. For example, the mere mention of the behavior being advocated may spontaneously elicit affect, and this affect might contribute to one's reported attitude toward the behavior independent of the implications of the message content. Both Bargh (1997) and Fazio (1990) report evidence that mere exposure to an attitude object (e.g., the behavior the message recommends) can be sufficient to stimulate a spontaneous evaluative reaction to it. Transitory situational factors that are objectively irrelevant to the message may elicit affect that recipients experience and attribute to the behavior the message advocates. As several studies by Schwarz and his colleagues indicate (for reviews, see Clore et al., 1994; Schwarz, Bless, & Bohner, 1991; Schwarz & Clore, 1996), people cannot always distinguish between the affect that is elicited by a particular referent and the affect they happen to be experiencing for other reasons (e.g., the weather, music, or a recalled past experience). In those situations, affect can inform attitudes and be reflected in behavioral intentions and actual behavior decisions as well (see Albarracín & Wyer, 2001).

arguments that the behavior will have positive consequences. The present conceptualization asserts that recipients may (a) assess the likelihood that these outcomes will actually occur as a result of the behavior (outcome beliefs) and (b) estimate their desirability (outcome evaluations). The implications of beliefs and evaluations may then be combined to form an attitude in the manner postulated by Fishbein and Ajzen (1975). This attitude, along with other possible elements (e.g., social norms or perceptions of control; see Ajzen, 1991; Ajzen & Madden, 1986; Fishbein & Ajzen, 1975) may influence the recipients' intention to perform the behavior, and this intention may later provide the basis for their actual behavior decisions.

There are two important considerations in relation to the model we propose. Although this model resembles Fishbein and Ajzen's (1975) conceptualization, Fishbein and Middlestadt (1995) have explicitly stated that their approach is not a description of the processes that take place but a convenient computational device for researchers interested in predicting attitudes and behavior. In contrast, the proposed model (just like McGuire's 1985 model) assumes that this sequence does reflect the causal reality of responses to a behavior-related message.

Furthermore, unlike other stage-processing models (e.g., McGuire, 1972), the proposed conceptualization of persuasion assumes that the different stages can be bypassed. For example, people are often influenced by the behaviors they perform (Albarracín & Wyer, 2000). In those conditions, they often infer that they have an attitude that is consistent with a behavior they performed in the past, and this attitude guides their future actions. Similarly, people's attitudes may be based on the extraneous affect they experience at a given time, and these attitudes may then influence their confidence that the behavior will yield positive outcomes. In fact, bypassing stages may lead to greater impact of an intervention because it reduces the likelihood that the processing sequence will be disrupted prematurely. Moreover, impact on stages that are more advanced in the sequence (e.g., attitudes) can lead to greater maintenance of change because such impact provides easy-to-remember information that can be used as a basis for future actions.

In this chapter, we have organized the different implications of the proposed model into seven postulates. These postulates are presented in Table I. The first four postulates define stages of processing and the way in which information from memory is selected and used in persuasion. Postulate 5 describes judgment and behavior processes once the information has been selected. The remaining two postulates concern resolution of cognitive conflict and maintenance and decay of change over time. After presenting each postulate and the evidence that suggests its validity, we review traditional conceptualizations of persuasion and indicate how the proposed model either differs from or extends past research and theory.

TABLE I
POSTULATES

Number	Postulate
1	The processing of a communication occurs in a series of stages that involve information interpretation; retrieval of prior knowledge from memory; and identification, selection, and use of information as a basis for judgment. Decreases in ability and motivation to think about the information can disrupt processing at any stage.
2	Recipients of a persuasive communication interpret the arguments of the persuasive message as well as other information that is available at the time (e.g., characteristics of the source, past behavior, or extraneous affect). Decreases in ability and motivation are likely to first affect the processing of information that is more difficult to interpret and then the processing of information that is easier to interpret.
3	Recipients of a persuasive communication retrieve information from prior knowledge primarily to validate or refute information they receive. Thus, they are more likely to think about the information contained in the message than about issue-relevant knowledge that is not directly related to the message content.
4	Recipients of a persuasive communication identify potential bases for judgment and then select information on the basis of relevance. Consequently, decreases in ability and motivation can lead to a linear reduction in the influence of the arguments contained in the message but to a nonmonotonic impact on the influence of less relevant information.
5	Recipients of a persuasive communication may form beliefs in and evaluations of the content of the message and integrate this and other information (e.g., extraneous affect) into attitudes. They may then develop intentions to engage in the action the message implies. However, these stages can be bypassed and their order altered.
6	When recipients of a persuasive communication detect conflict at the time they process the communication, they may analyze the information contained in the message in a more careful way. When they detect conflict after the message has been received, they may integrate the information to generate an attitude towards the issues of concern.
7	Communications that have a direct impact on a stage closer to the behavior lead to greater change maintenance than communications that have an impact on an early stage.

II. Interpretation, Identification, and Selection of Information in Persuasion

A. PROCESSING OCCURS IN STAGES

Individuals who are exposed to a persuasive message are not passive recipients of information. Instead, they sequentially transform the available information into mental representations (McGuire, 1968a; Srull, 1981; Wyer & Srull, 1989). That is, recipients of a persuasive communication first interpret the arguments contained in the persuasive message and any other information that is available at the time

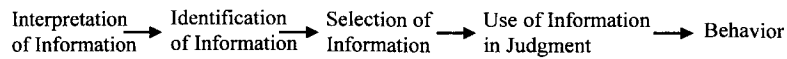


Fig. 1. Stage processing in persuasion.

(e.g., characteristics of the source, their own behavior in the past, or the affect they experience momentarily). In doing so, they retrieve representations from permanent memory that facilitate the interpretation of the information available at the time. They then identify or direct attention to elements among the information they received or retrieved from memory and select those they judge relevant to the judgment they are about to make. A graphic representation of these processes appears in Fig. 1. As is shown in our description of the subsequent postulates in Table I, decreases in ability and motivation can affect information processing at all stages and, consequently, performance of the behavior the message suggests.

Postulate 1: The processing of a communication occurs in a series of stages that involve information interpretation; retrieval of prior knowledge from memory; and identification, selection, and use of information as a basis for judgment. Decreases in ability and motivation to think about the information can disrupt processing at any stage.

In many ways, Postulate 1 is a generalization of subsequent postulates in the model, particularly Postulate 5. Its generality, however, implies that the impact of a persuasive message depends on general principles of information processing (Chaiken, 1980). Thus, recipients of a persuasive message interpret available information and then identify and select information for judgment. Without a doubt, the way in which they perform each activity depends on their ability and motivation to think about the information they receive. However, the effects of decreases in ability and motivation on the interpretation of information differ from their effects on the identification and selection of bases for judgment. We elaborate on these contingencies in reference to other postulates.

B. INTERPRETATION OF INFORMATION IN PERSUASION

Recipients of a communication can be influenced by the arguments of the persuasive message or by other information that is available at the time (e.g., characteristics of the source or the affect they experience for reasons unrelated to the message). However, for information to have an influence, it must first be interpreted. Imagine that people encounter an ad promoting a Christmas sale at a clothing store. After the input information undergoes some low-level, sensory

interpretation, recipients are likely to understand the message arguments in terms of semantic concepts ("sale," "fashion," "designer," "winter," "collection") that are available from permanent memory.

Decreases in ability and motivation may disrupt the interpretation of information. That is, people may interpret information more effectively when they have ability and motivation to think about it than when they do not. However, decreases in capacity and motivation should first affect the processing of information that is more difficult to interpret and then the information that is easier to interpret. For example, greater decreases in ability and motivation may be necessary to disrupt the interpretation of affect than to disrupt the interpretation of the message arguments. In any event, the interpretations of the arguments are readily available to make judgments about the advocacy of the persuasive message. Other information experienced at the time (e.g., extraneous affect) or retrieved from memory (e.g., the recipients' prior actions) may become available as well.

Postulate 2: Recipients of a persuasive communication interpret the arguments of the persuasive message as well as other information that is available at the time (e.g., characteristics of the source, past behaviors, or extraneous affect). Decreases in ability and motivation are likely to more difficult to interpret and then the processing of information that is easier to first affect the processing of information that is interpret.

One important implication of Postulate 2 is that people are likely to need more ability and motivation to interpret complex information than to process easier materials. A recent confirmation of this possibility was provided by Thompson and Kruglanski (2000). They showed that any information is easier to process when presented in simple, short arguments than when presented in more elaborate formats. In the first experiment of their series, participants read either long, detailed arguments advocating a tuition increase at their university or brief, easy-to-comprehend reasons why the policy should be instituted. Participants were more influenced by elaborate arguments when they were able to carefully think about the arguments in the message than when they did not (see Petty & Cacioppo, 1986a, 1986b). Correspondingly, they were more influenced by short arguments when their ability to think about them was low than when it was high.

In their second experiment, Thompson and Kruglanski (2000) found that decreases in ability or motivation could also disrupt the interpretation of descriptions of the message source. Thus, participants were more influenced by elaborate descriptions of the message source when their ability to think about the information was high than when it was low. In contrast, they were more influenced by short descriptions of the source when their ability to think about the information was low than when it was high. Therefore, they concluded that information complexity

can affect comprehension of various types of materials, although it has a higher influence when ability and motivation are low than when they are high.

C. RECALL OF INFORMATION FROM PRIOR KNOWLEDGE IN PERSUASION

Recipients of a communication retrieve information from prior knowledge as they validate the information they receive. Prior knowledge can serve several functions. For example, it can supply evidence to affirm or refute the arguments in the message. Thus, if a message argues that condoms provide 100% protection against HIV (human immunodeficiency virus), recipients who are aware of actual rates of effectiveness are likely to refute the argument. In addition, message recipients may bring up material that the message failed to mention and this material can be either in line with or in opposition to the message advocacy. For example, they may recall that condom use also prevents infection with hepatitis B or that their partner dislikes condoms. Such bolstering and counterarguing based on materials not mentioned in the message could, of course, influence people's attitudes in response to the message.

The two functions of prior knowledge, however, may not be equally important. That is, message recipients presumably retrieve prior knowledge in the process of validating or refuting material they receive (e.g., representations of the arguments contained in the message). Consequently, prior knowledge may be used primarily to validate or refute material received at the time (see Wyer & Radavanski, 1999) and only occasionally as a source of contents that do not directly bear on the validity of the message arguments.

Postulate 3: Recipients of a persuasive communication retrieve information from prior knowledge primarily to validate or refute information they receive. Thus, they are more likely to think about the information contained in the message than about issue-relevant knowledge that is not directly related to the message content.

To reiterate, Postulate 3 implies that people who receive a persuasive communication retrieve prior knowledge, primarily to validate or refute information received at the time. Thus, recipients of a persuasive communication may compare the message arguments about potential outcomes of the behavior with their prior knowledge about those outcomes. If prior knowledge validates the arguments contained in the message, recipients are likely to believe in them. In contrast, people are likely to refute the message when they detect inconsistencies between the information presented in the message and their prior knowledge about the issues.

The implication of this postulate is that prior knowledge that bears on the arguments contained in the message is likely to be more influential than prior knowledge on issues not directly addressed in the message. Although this corollary may appear trivial, other researchers have maintained that prior knowledge about issues that the message fails to mention is more consequential than beliefs in and evaluations of the message arguments (see, e.g., Greenwald, 1968). For example, it is possible that recipients of a persuasive message may suspect that arguments that are contrary to the message advocacy have been left out. In this case, recipients may retrieve prior knowledge and reject single-sided messages.

Two types of research suggest that people are more likely to validate and refute the information received at a particular time than to retrieve material about contents not mentioned in the persuasive message. First, McGuire's (1964) work on resistance to persuasion suggests that people resist a counterattitudinal message most effectively when they are exposed to refutations of the arguments prior to encountering these arguments. In contrast, the sole availability of evidence in support of one's attitudes fails to inoculate message recipients against subsequent attacks. Consequently, they are less able to resist future attacks relative to recipients who were previously exposed to refutations of the message arguments.

Now, consider McGuire and Papageorgis' (1961) inoculation research in the context of our model. In their research, participants received arguments against a deeply held but weakly supported belief (i.e., truism; e.g., brushing one's teeth frequently is beneficial). Prior to the attack, however, recipients received information that (a) refuted these arguments (refutational-same conditions), (b) refuted other arguments in support of the truism (refutational-other conditions), (c) attacked the truism but presented no specific information, or (d) neither attacked the truism nor presented information. Findings indicated that recipients who received a refutation of the arguments in the message (refutational-same conditions) resisted change more successfully than participants who either refuted other arguments or engaged in no refutation prior to receiving the message. To this extent, it appears that prior knowledge confers most resistance when it has direct implications for the interpretation of the content of the message (refutational-same conditions). However, the influence of prior knowledge is presumably weaker when it does not bear directly on the arguments of the persuasive message (refutational-other conditions).

If it is true that recipients of a persuasive communication retrieve prior knowledge to validate information they receive, they should generate more thoughts about the source of the message and the arguments contained in it than about issue-relevant knowledge that is not directly related to the message content. Data collected by Roberts and Maccoby (1973) provide support for this possibility. Participants in their study received a message advocating exclusion of all editorial and persuasive material from the news media. Some of these participants listed their thoughts at the time they listened to the message. Of these thoughts, only 23% were generated on the basis of contents not discussed in the message, whereas the

remaining 77% concerned the message arguments, conclusion and source (62, 4, and 11%, respectively).

Another implication of our understanding of the use of prior knowledge in persuasion is that people's postmessage attitudes should be based to a greater extent on their beliefs and evaluations of arguments contained in the message than on issue-relevant beliefs and evaluations not implied in the message. Data reported by Albarracín and Wyer (2001) shed light on this problem and are summarized in Table II. Participants in this study read a persuasive message advocating support for comprehensive exams in conditions of either low or high distraction. They then reported their attitudes toward the behavior, their intentions to support the policy in an upcoming referendum, and their beliefs in and evaluations of outcomes of comprehensive exams. The outcomes included in the questionnaire comprised (a) those mentioned in the message (message-based) as well as (b) others elicited in an independent group of participants who read the message and then listed their thoughts (knowledge-based). Measures of message-based cognitions were created by weighting each belief in the outcomes mentioned in the message by the corresponding evaluation and then summing these products over outcomes (Ajzen & Fishbein, 1980). Measures of knowledge-based cognitions were created by applying the same procedure to beliefs in and evaluations of outcomes suggested by prior knowledge.

The correlations of attitudes with message- and knowledge-based cognitions appear on the righthand column of Table II. Across the two levels of distraction, the attitudes participants reported correlated mean $r = .65$ ($p < .01$) with cognitions about message-based outcomes, but only $r = .32$ ($p < .05$) with predicted values based on cognitions about knowledge-based outcomes. These differences must be evaluated in relation to analogous data from an independent group of participants who did not read the persuasive message (see control conditions in Table II). The attitudes reported by these control participants were correlated only $r = .18$ (*ns*) with beliefs and evaluations of the consequences discussed in the messages they did not receive, but $r = .47$ ($p < .05$) with cognitions about consequences that were likely to come to mind spontaneously. Thus, relative to message-recipients, participants who had not read a persuasive message and were asked to think about comprehensive exams based their attitudes primarily on beliefs and evaluations concerning outcomes of the policy suggested by prior knowledge.

The finding that knowledge-based cognitions are weakly correlated with attitudes when people receive a persuasive message has been replicated in other studies. For example, Albarracín and Wyer (2001) conducted another experiment (Experiment 3, see Table II) in which participants read different versions of the persuasive message and then reported outcome beliefs and evaluations that could be based either on the message or on prior knowledge. In this study, participants were given 10 min to read the persuasive message (instead of 5 min as in Experiment 1). As before, attitudes were more strongly correlated with message-based cognitions than with knowledge-based outcome beliefs and evaluations.

TABLE II
 PROPORTIONS OF MESSAGE- AND KNOWLEDGE-BASED COGNITIONS AND CORRELATIONS WITH
 ATTITUDES: GREENWALD (1968), ALBARRACÍN AND WYER (2001), AND ALBARRACÍN, KUMKALE,
 AND MCNATT (2000)

Source	%	<i>r</i>
Message-based cognitions		
Albarracín and Wyer (2001; scale-based measures)		
Experiment 1 (Short time)		
Low-distraction	—	.75***
High-distraction	—	.54***
Control	—	.18
Experiment 3 (Long time)		
Low-distraction	—	.31***
High-distraction	—	.49***
Greenwald (1968; all groups, thought-listing measures) ^a		
Message (<i>N</i> = 190)		
Externally originated	15	.14**
Recipient-modified	29	.32***
Control (<i>N</i> = 45)		
Externally originated	07	.15**
Recipient-modified	21	.24***
Albarracín, Kumkale, and McNatt (2000) ^b		
Thoughts about outcomes and attributes mentioned in the message	23	.50***
Scale-based measures of message-based outcome cognitions	—	.55***
Knowledge-based cognitions		
Albarracín and Wyer (2001; scale-based measures)		
Experiment 1 (Short time)		
Low-distraction	—	.26
High-distraction	—	.38**
Control	—	.47*
Experiment 3 (long time)		
Low-distraction	—	.07
High-distraction	—	.40***
Greenwald (1968; all groups, thought-listing measures)		
Message	56	.55***
Control	73	.61***
Albarracín, Kumkale, and McNatt (2000) ^b		
Thoughts about outcomes or attributes of the policy not mentioned in the message	26	.11
Thoughts about attitudes towards the policy	21	.30**
Thoughts about attitudes towards the message	19	.39***
Scale-based measures of knowledge-based outcome cognitions	—	.36**

^a Correlations and proportions represent the average of all groups reported by Greenwald (1968).

^b Thought-listing indexes for each category were created by subtracting number of negative positive thoughts from number of positive thoughts and dividing this difference by the number of total thoughts.

**p* < .05.

***p* < .01.

****p* < .001.

That is, giving participants more time to read the message did not increase the use of prior knowledge as a basis for attitudes.

It is of course possible that familiarity with the message topic and strength of related attitudes may increase the retrieval of prior knowledge that is not directly relevant to the arguments contained in the communication. For example, when people are very familiar with a topic, other material may be readily accessible and come into play as they validate the arguments in the message. In fact, prior research with familiar topics has shown that participants' knowledge of issues not addressed in the message were more influential than the content of the communication (see e.g., Greenwald, 1968). However, as we show presently, these conclusions may be greatly biased by the procedures used to measure thoughts based on prior knowledge.

D. IDENTIFICATION AND SELECTION OF INFORMATION IN PERSUASION

1. Identification and Selection Processes

The model proposed in this chapter assumes that recipients of a persuasive message must first interpret the information that is available at the time. They should then identify or direct attention to pieces of information and select them as basis for judgment. Imagine that the recipients of the Christmas ad in our earlier example need to decide whether to shop at the store promoted in the ad. Their probability of identifying (a) the arguments mentioned in the ad and (b) their extraneous affective reactions increases with the salience of the message information (Higgins, 1996) and the number of affective representations that exist in working memory (Wyer & Srull, 1989). The identification process directs recipients' attention to potential bases for judgments in the context of goal-directed processing and built-in procedures of attitude formation (see, e.g., Wyer & Srull, 1989). These procedures can generally be executed without awareness, although they can also operate under conscious monitoring (see Smith, 1994). In either case, they require some cognitive capacity and motivation to operate. In general, the effects of ability and motivation on the likelihood of identifying each type of information should be similar across different information. That is, decreases in ability and motivation may impede directing attention to the content of the message as well as other information, such as extraneous affective reactions (for related claims, see Gilbert & Hixon, 1991).

Suppose people have enough ability and motivation to identify beliefs in and evaluations of the outcomes described in the communication as well as representations of their extraneous affective reactions. Once they identify this information, they are likely to evaluate it vis-à-vis relevance criteria and to use the material that they deem relevant while they discount subjectively- irrelevant material. Material is likely to appear relevant when the affect it generates can be linked to the persuasive communication. In contrast, information is likely to be judged irrelevant

when the feelings it generates have sources other than the persuasive message. For example, recipients of the Christmas sale advertisement are likely to decide that price and quality information is relevant and form attitudes on that basis. Correspondingly, they may deem affective reactions based on their mood irrelevant and not use them as a basis for attitudes.

It is important to note that, in combination, the mechanisms of information identification and selection imply that decreases in ability and motivation are likely to reduce the influence of the arguments contained in the message in a monotonic fashion. Generally, a decrease in the likelihood of identifying and establishing the relevance of the information contained in the persuasive arguments should decrease the impact of this information. However, the influence of ability and motivation on the use of other information, such as one's extraneous affective reactions, is expected to be curvilinear. That is, moderate decreases in ability and motivation should increase the influence of a less relevant cue to the extent that they prevent message recipients from assessing the low relevance of the information. However, more intense decreases in ability and motivation may decrease the likelihood of identifying the information to begin with, thus disrupting the influence of the cue altogether.

Postulate 4: Recipients of a persuasive communication identify potential bases for judgment and then select information on the basis of relevance. Consequently, decreases in ability and motivation can lead to a linear reduction in the influence of the arguments contained in the message but to a nonmonotonic impact on the influence of less relevant information.

The main implication of this postulate is that people's ability and motivation to think about the information do not produce monotonic effects in all cases. For example, the elaboration likelihood model (Petty & Cacioppo, 1986a, 1986b) assumes that people in high ability and motivation conditions typically pay attention to the arguments in the persuasive message, whereas message recipients in low ability and motivation conditions use peripheral cues as information. According Postulate 4, however, such assumptions may not be warranted.

Another important implication of this postulate is that relevant information is generally associated with the arguments in the persuasive message and less relevant information is broadly related to the concept of peripheral cues to persuasion (see Petty & Cacioppo, 1986a, 1986b). However, this need not always be the case. For example, the expertise of a communication source is typically conceptualized as a peripheral cue. Sometimes, however, source factors are relevant to determine the credibility of the arguments in the persuasive message and their effects can be mediated by changes in outcome beliefs and evaluations (see also Petty & Wegener, 1999). In these cases, the influence of the source may decrease linearly when people cannot identify the information or assess its relevance. In a similar way,

the arguments mentioned in a message may be less relevant than other information the communication contains. For example, if a message contains both weak and strong arguments, recipients may deem weak arguments to be less relevant sources of judgment than strong appeals. Therefore, decreases in motivation and ability could have a curvilinear impact on the influence of weak arguments (see, e.g., Petty, Wells, & Brock, 1976).

In the research we describe presently, message recipients could base their judgment on the arguments contained in the message and on the extraneous affect they experienced at the time. In these conditions, the arguments of the persuasive message are likely to be judged as more relevant than the extraneous affect they happen to experience at the time. We present data bearing on this possibility in the next sections.

2. Empirical Support

Research by Albarracín and Kumkale (2000) explored identification and selection of extraneous affect and the arguments contained in a persuasive message. In their research, participants experiencing a positive or negative affect read a strong or weak persuasive message that either supported or opposed the institution of comprehensive exams. To examine the consequences of ability and motivation, the researchers independently varied both the personal relevance of the message and the distraction participants experienced at the time they read it. They were able to observe if their manipulations had linear or nonmonotonic effects on the influence of extraneous affect and argument strength.

Albarracín and Wyer's (2000) conceptualization of affect as information appears in Fig. 2. They hypothesized that extraneous affect is unlikely to bias judgments unless people who are about to make a judgment identify or direct attention to it first. There are three conditions that may allow people to identify their feelings as a potential source of information. First, people who have both ability and motivation to think about their affective reactions are likely to easily identify the affect they experience. Second, recipients who are distracted by environmental information may need considerable motivation to assess their affective states but may

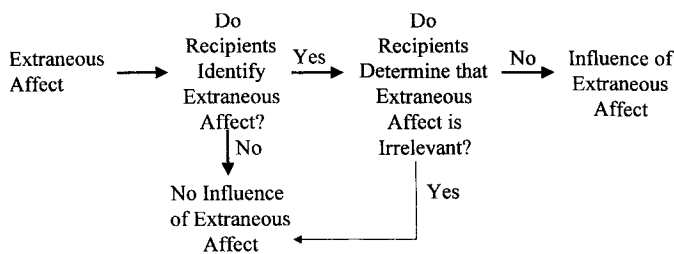


Fig. 2. Influence of affect as information in persuasion.

nevertheless do so successfully. Third, recipients who have ability may identify their affective reactions even in the absence of motivation, as attentional resources would be sufficient to identify the information (Clore et al., 1994).

According to Postulate 4, whether recipients who identify their extraneous affective reactions as potential bases for judgment actually use these reactions as information may also depend on whether they discount these reactions as irrelevant. For example, when people have ability and motivation to think about the information, their attempts to determine the relevance of the affect they experience are likely to be more successful than when they do not. Consequently, they are likely to discount extraneous affect as a legitimate basis for their attitudes. However, when the same recipients have low motivation, they may perform this analysis less carefully and fail to determine the extraneous source of their feelings. Similarly, people who have motivation but lack ability may be interested in determining the relevance of their affective reactions but may nevertheless fail to discount extraneous affect.

The data from the first two experiments reported by Albarracín and Kumkale (2000) are summarized in Table III. In this research, after reading the message,

TABLE III
INFLUENCE OF AFFECT AND ARGUMENT STRENGTH ON ATTITUDES: ALBARRACÍN
AND KUMKALE (2000)

Effects	Influence of affect			Influence of argument strength		
	Positive	Negative	Difference	Strong	Weak	Difference
Experiment 1 (Proattitudinal message)						
High-ability/high-motivation	-0.9	0.3	-1.2*	0.3	-1.0	1.3*
High-ability/low-motivation	-0.8	-2.0	1.2*	-0.8	-2.2	1.4*
Low-ability/high-motivation	-0.3	-1.6	1.3*	-0.3	-1.5	1.2*
Low-ability/low-motivation	-0.4	0.3	-0.7	0.1	-0.3	0.4
Experiment 2 (Counterattitudinal message)						
High-ability/high-motivation	2.5	2.9	-0.4	2.9	2.6	0.3
High-ability/low-motivation	2.4	1.3	1.1*	2.1	1.6	0.5
Low-ability/high-motivation	2.4	1.6	0.8*	2.0	2.0	0
Low-ability/low-motivation	2.1	2.4	-0.3	2.3	2.2	0.1

Note. The message in Experiment 1 argued that the institution of the policy would bring about positive outcomes, whereas the message in Experiment 2 argued that the exams would trigger undesirable effects. Mean attitudes denote agreement with the persuasive message in both experiments. Differences represent the influence of affect and argument strength. The effect of affect is represented with the difference between attitudes when affect was positive and attitudes when affect was negative. The effect of argument strength is inferred from the difference between attitudes when the presented arguments were strong and attitudes when the presented arguments were weak.

* $p < .05$.

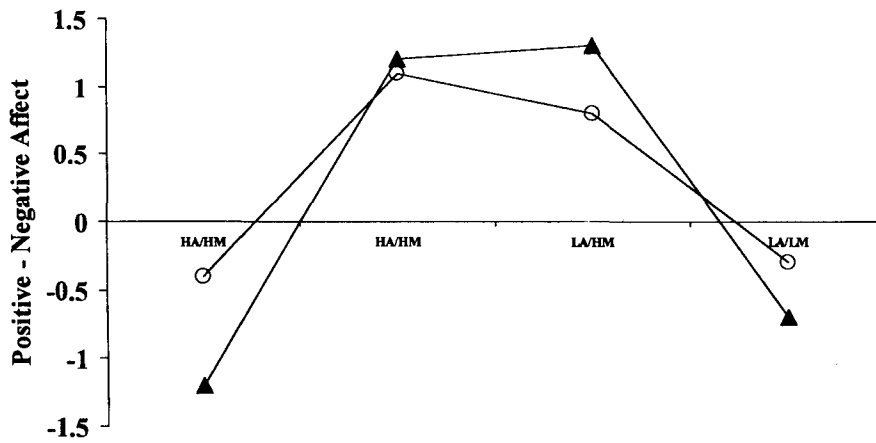


Fig. 3. Findings from Albarracín and Kumkale (2000): Experiments 1 and 2.

participants reported their attitudes, their perception that the policy would lead to the outcomes described in the message (i.e., outcome beliefs), and their evaluations of the desirability of these events (i.e., outcome evaluations). They also reported their beliefs and evaluations of outcomes that recipients of the messages were likely to generate spontaneously on the basis of prior knowledge. (Intentions and actual straw votes in support of the policy were also measured in some of the experiments.) The mean differences that represent the influence of affect in Fig. 3 clearly suggest that affect biased attitudes when either ability or motivation was low but not when both were low or both were high.

The data in Table III imply that the influence of argument strength decreased linearly as motivation and ability decreased. That is, argument strength had an influence when at least ability or motivation was low. However, when ability and motivation were both low, argument strength had no influence on attitudes. This finding suggests that message recipients in low-ability-and-motivation conditions were unable to form attitudes on the basis of information available at the time. Supplementary analyses suggested that this inability was present even when participants had encoded the arguments in the message.

In sum, the data presented in Table III suggest that people's ability and motivation at the time they receive a persuasive message have a curvilinear impact on the influence of irrelevant affect and a monotonic impact on the influence of argument strength. An analysis of findings reported by Albarracín (1997) and Albarracín and Wyer (2001) leads to the same conclusion. A description of the conditions and results of interest appears in Table IV. In both cases, the authors induced a positive or negative mood among participants and then presented strong or weak messages advocating the institution of comprehensive examinations under conditions of high or low ability (i.e., low and high distraction). However, the time and the motivation participants had when they read the messages varied across the experiments in the

TABLE IV
EFFECTS OF AFFECT AND ARGUMENT STRENGTH ON ATTITUDES: ALBARRACÍN (1997) AND ALBARRACÍN
AND WYER (2001)

Conditions	Amount of thought		
	High	Moderate	Low
Arrangement of conditions along thought continuum			
Albarracín's (1997; short time) Experiment 1			
High-ability (high motivation)	x	—	—
Low-ability (low motivation)	—	—	x
Albarracín and Wyer's (2001) Experiment 1 (short time; moderate motivation)			
High-ability	x	—	—
Low-ability	—	x	—
Albarracín and Wyer's (2001) Experiment 3 (long time; moderate motivation)			
High-ability	x	—	—
Low-ability	—	x	—
Effect of affect			
Albarracín's (1997; short time) Experiment 1			
High-ability (high motivation)	-0.40	—	—
Low-ability (low motivation)	—	—	0.2
Albarracín and Wyer's (2001) Experiment 1 (short time; moderate motivation)			
High-ability	-0.73	—	—
Low-ability	—	1.79*	—
Albarracín and Wyer's (2001) Experiment 3 (long time; moderate motivation)			
High-ability	0.28	—	—
Low-ability	—	1.16*	—
Effect of argument strength			
Albarracín's (1997; short time) Experiment 1			
High-ability (high motivation)	1.50*	—	—
Low-ability (low motivation)	—	—	0.3
Albarracín and Wyer's (2001) Experiment 1 (short time; moderate motivation)			
High-ability	2.61*	—	—
Low-ability	—	0.62	—
Albarracín and Wyer's (2001) Experiment 3 (long time; moderate motivation)			
High-ability	1.05*	—	—
Low-ability	—	1.10*	—

Note. Table entries are mean differences representing the influence of affect and argument strength. The effect of affect is represented with the difference between attitudes when affect was positive and attitudes when affect was negative. The effect of argument strength is inferred from the difference between attitudes when the presented arguments were strong and attitudes when the presented arguments were weak. An "x" indicates the amount of thought a given condition represents.

* $p < .05$.

two series. In Experiment 1 of Albarracín's doctoral dissertation, all participants had 5 min to read the message (short time) and received the communication in conditions of low or high ability (i.e., high or low distraction at the time of the message presentation). However, in this experiment, motivation was confounded with ability. That is, participants in high-ability conditions were told that they would have to take the exams if instituted (high motivation), whereas participants in conditions of low ability were told that they would not have to take the exams if instituted (low motivation). In contrast, in Albarracín and Wyer's series, all participants were told that they would have to vote in a referendum to decide on the institution of comprehensive exams, although they would not have to take the exams if the policy were instituted (moderate motivation). However, the time participants had to read the message was 5 min in Experiment 1 (short time) and 10 min in Experiment 3 (long time). Because of the different time allocations and the different levels of motivation across the three experiments, the data they provide in combination offer evidence about the influence of affect and argument strength over three levels of amount of thought.

The arrangement of conditions from the three experiments along the continuum of amount of thought appears in Table IV. The high level of thought comprises (a) the high-ability condition of Albarracín's Experiment 1 (high motivation, short time), (b) the high-ability condition Albarracín and Wyer's Experiment 1 (moderate motivation, short time) and (c) the high-ability condition of Albarracín and Wyer's Experiment 3 (moderate motivation, long time). The moderate level of thought includes (a) the low-ability condition of Albarracín and Wyer's Experiment 1 (moderate motivation, short time) and (b) the low-ability condition of Albarracín and Wyer's Experiment 3 (moderate motivation, long time). The low-ability condition of Albarracín's Experiment 1 represents the low level of thought (low motivation, short time). A summary of the effects of affect and argument strength across these three levels appears in the second and third sections of Table IV. The mean differences we summarized suggest that, whereas the influence of argument strength was linear, there was a quadratic effect of amount of thought on the influence of affect across multiple levels of amount of thought. However, such a pattern may not become apparent when researchers manipulate ability and motivation over two levels (see, e.g., Petty & Cacioppo, 1986a, 1986b).

III. Stages of Processing in Judgment and Behavior

Once people identify and select potential information, they use it as a basis for judgments. A behavior-related persuasive message usually consists of assertions that the behavior being advocated has personally or socially beneficial consequences and can be expected to give rise to cognitions of the type investigated by Fishbein and Ajzen (1975). For example, they may estimate the likelihood and

desirability of the consequences the message describes, as well as an overall attitude toward the behavior being advocated. They may also form behavioral intentions to either perform or avoid the behavior in the future.

A. INFLUENCES OF AVAILABLE INFORMATION ON ATTITUDES AND BEHAVIOR

Again, a persuasive message designed to modify a target behavior usually presents information that the target behavior will have positive consequences and avoid negative consequences. For example, a communication designed to stimulate consumption of whole-wheat bread is likely to argue that the behavior prevents colon cancer or obesity. According to the present model, recipients of the message may (a) assess the likelihood that these outcomes will actually occur as a result of the behavior (outcome beliefs) and (b) estimate the desirability of these outcomes (outcome evaluations). In addition, recipients could spontaneously think of previously unmentioned consequences of the behavior (e.g., less pleasing taste of whole-wheat bread relative to white bread) and construe the likelihood and desirability of these consequences as well.

The implications of both message-related and knowledge-based beliefs and evaluations may then be combined to form an attitude (A). This may be done in the manner postulated by Fishbein and Ajzen (1975; see also Fishbein & Ajzen, 1974, 1980) as follows:

$$A = \sum b_i \times e_i, \quad (1)$$

where b_i is the belief that the behavior will elicit outcome i and e_i is the desirability of the outcome. This attitude, along with other possible factors (e.g., social norms or perceptions of control; see Ajzen & Madden, 1986; Fishbein & Ajzen, 1975), may influence the recipients' intention to perform the behavior, and this intention may later provide the basis for their future actions (see also McGuire, 1985). Figure 4 graphically depicts these processes.

Figure 4 suggests that beliefs and evaluations of outcomes (i.e., both message- and knowledge-based) can be a basis for attitudes and ultimate behavioral decisions. One question is whether outcome-specific beliefs are formed before the outcomes are evaluated or afterward. On the one hand, message recipients might first assess the plausibility of an outcome and only assess its desirability if they believe that the outcome is likely to occur. In these situations, the salient perceived likelihood of the outcome could bias estimates of its desirability. On the other hand, outcome-specific evaluations could precede outcome beliefs in the sequence (see, e.g., Bargh, Chaiken, Gollwitzer, & Pratto, 1992). Then, participants' attitudes and ultimate behavioral decisions might be based on perceptions that the outcomes are desirable independent of their likelihood of occurrence (for related issues, see Killelea & Johnson, 1998).

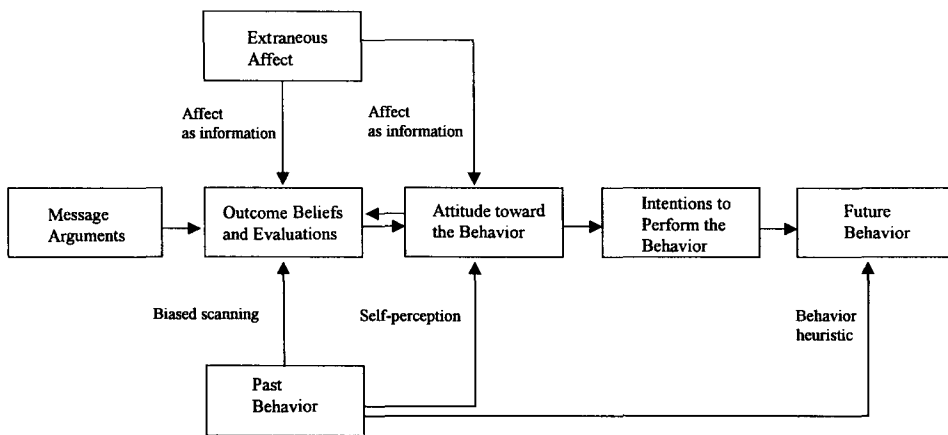


Fig. 4. Judgments and behavior.

When recipients of a strong persuasive message process its arguments, they are likely to form strong beliefs in them as well as favorable evaluations of their content. Consequently, the attitudes they form should also be influenced by the strength of the arguments in the message. However, other information available to recipients when they think about the issues can exert direct (and mediated) influences on attitudes (see Fig. 4). For example, message recipients may consider the affect they happen to experience at the time and attribute to their feelings about the position (Petty, Schuman, Richman, & Strathman, 1993; for a more general conceptualization of the use of extraneous affect as an informational basis for judgment, see Schwarz & Clore, 1983).² By the same token, recipients of a persuasive message may simply retrieve information that they have performed a given behavior in the past and infer that they have a positive attitude toward the behavior (see, e.g., Bem, 1965, 1972).

As shown in Fig. 4, people may base their attitudes on information other than the message and independent of outcome beliefs and evaluations. In these situations, however, their attitudes could have reciprocal effects on their cognitions about the behavior's specific outcomes (Rosenberg, 1960). McGuire and McGuire (1991), for example, identified tendencies to engage in both wishful thinking (i.e., increasing one's perception that a desirable event will occur or that an undesirable event is unlikely) and rationalization (i.e., increasing one's perception that a likely event is desirable or that an unlikely event is undesirable). Thus, participants in one of their studies received information that experts judged an event (e.g., development of a vaccine) to be either positive or negative. They then judged the likelihood of

²Forgas (1995; see also Forgas & Bower, 1987) has proposed that affect could also influence the retrieval of material from prior knowledge. However, a recent review by Wyer, Clore, and Isbell (1999) concluded that these effects are more adequately explained as informational.

the event to be higher when they had received information that the event was desirable than when they were told that it was undesirable ($M = .50$ vs $.37$, $p < .001$). These findings suggest that although outcome beliefs and evaluations may be determinants of attitudes under some conditions, outcome cognitions could also be the result of previously formed attitudes.

Postulate 5: Recipients of a persuasive communication may form beliefs in and evaluations of the content of the message, and integrate this and other information (e.g., extraneous affect) into attitudes. They may then develop intentions to engage in the action the message implies. However, these stages can be bypassed and their order altered.

Clearly the model in Fig. 4 resembles Fishbein and Ajzen's conceptualization. However, Fishbein and Middlestadt (1995) have explicitly said that their approach is not a description of cognitive processes. Even if it were, they never considered the possibility that people may rationalize their attitudes by adjusting their outcome beliefs and evaluations to be consistent with these attitudes. In contrast, the proposed model assumes that attitudes can be based on information other than outcome beliefs and evaluations and that these attitudes can exert reciprocal influences on these cognitions at a later time.

B. EMPIRICAL SUPPORT

There are two series of studies that support the plausibility of the model in Fig. 4. First, Albarracín and Wyer (2001) conducted three experiments in which they investigated the cognitive sequence that people engage in when they receive a persuasive message. They found that people who are able to think about the arguments contained in the message formed beliefs and evaluations of behavioral outcomes first and then integrated the implications of these cognitions into their attitudes. However, this sequence was interrupted when message recipients were distracted, and there were reciprocal influences of attitudes on outcome beliefs and evaluations. In addition, Albarracín and Wyer (2000) investigated the informational influences of past behavior on people's attitudes. In this research, they induced participants to believe that they had performed a behavior outside of awareness and measured the effects of this information on beliefs in and evaluations of the outcomes of the behavior as well as attitudes, intentions, and overt actions. In both series of experiments, Albarracín and Wyer manipulated the distraction participants experienced. By inducing distraction, they were able to observe the extent to which people were able to form outcome beliefs and evaluations and to distinguish this process from more direct influences of affect and past behavior on attitudes (see Fig. 4).

1. Responses to a Persuasive Communication

In Albarracín and Wyer's (2001) research, participants who had been induced to feel either happy or unhappy by writing about a past experience were asked to read a persuasive communication urging support for the institution of comprehensive examinations. The communication contained either strong or weak arguments that the adoption of the policy would have positive outcomes. It was moderate in relevance because it suggested that only future students would have to take the exams if instituted, but that current students would nevertheless vote on a referendum to decide whether the policy should be adopted. Some participants were distracted while listening to the message, whereas others were not. They then reported their attitudes toward voting in favor of the exams on the referendum and their intentions to do so, as well as the likelihood and desirability of consequences of this behavior. Attitudes were reported on a scale from -5 (e.g., *unpleasant*) to $+5$ (e.g., *pleasant*), intentions and beliefs were reported on a scale from 0 (*not at all likely*) to 10 (*extremely likely*), and evaluations were reported on a scale from -5 (*dislike*) to $+5$ (*like*). Both experiments were identical in all respects except that the time participants had to read the message comprised 5 or 10 min, respectively.

Albarracín and Wyer (2001) gained insight into the cognitive activities that mediated attitudes and intentions by investigating the effect of distraction on judgments, by examining the time participants took to make these judgments, and by employing path analyses to infer the causal relations of the cognitions participants reported. For example, they reasoned that the introduction of extreme levels of distraction may disrupt all cognitive activities. However, when distraction is not sufficiently high to prevent processing of the message altogether, it may still decrease the completion of some activities. Arguably, people who are distracted could complete the first stage of the sequence but may be unable to perform subsequent activities. For example, recipients of a persuasive message may use the arguments contained in the message as a basis for their beliefs and evaluations. Once they have formed beliefs and evaluations, they may summarize this information into more general attitudes. In these situations, distraction could decrease the influence of argument strength on attitudes but not its influence on beliefs and evaluations. By examining whether distraction moderates the impact of argument strength on different variables, the authors gained insight into the sequence of processes that mediate the formation of attitudes in the absence of distraction (for similar criteria in other domains, see Festinger & Maccoby, 1964; Gilbert, 1991; Martin, Seta, & Crelia, 1990; Petty, Wells, & Brock, 1976; Petty, Priester, & Wegener, 1994, 1990; Srull, 1981; Swann, Hixon, Stein-Seroussi, & Gilbert, 1990; Wyer & Martin, 1986).

a. The Influence of Argument Strength and Distraction. The effects of argument strength in Albarracín and Wyer's (2001) first experiment appear on the left side of Table V, organized by different levels of distraction. The table contains mean

TABLE V
EFFECTS OF ARGUMENT STRENGTH ON BEHAVIOR-RELATED COGNITIONS: EXPERIMENTS 1 AND 3 (ALBARRACÍN AND WYER, 2001)

Variables	Experiment 1 (Short time)				Experiment 3 (Longer time)			
	Distraction		<i>F</i> (1, 73)		High		<i>F</i> (1, 153)	
	High	Low	Main effect	Interaction	High	Low	Main effect	Interaction
Message-based								
Beliefs	2.10	2.08	25.89***	0.02	1.48	2.34	52.80***	2.71
Evaluations	3.22	4.33	88.45***	2.23	3.48	3.75	191.07***	0.25
Predicted attitudes	104.06	70.95	71.97***	0.29	76.28	43.75	133.23***	1.35
Knowledge-based								
Beliefs	-0.84	-1.63	11.03***	2.97	-0.33	2.29	0.01	1.20
Evaluations	-0.50	1.02	9.67***	5.30*	-0.29	-0.67	2.90	0.38
Predicted attitudes	-24.06	20.35	0.12	0.04	-40.33	-5.6	2.99	0.03
Attitudes	0.62	2.61	15.39***	5.82*	1.10	1.05	10.72***	0.01
Intentions	1.77	3.91	25.93***	3.69*	2.05	3.16	29.17***	1.34
Behavior ^a	0.38	0.51	21.42***	0.47	.26	.46	23.79***	1.67

Note. Motivation was moderate in all conditions. Mean differences are based on cases with complete data. The effect of argument strength is inferred from the difference between judgments or behavior when the presented arguments were strong and judgments or behavior when the presented arguments were weak. *F*_{Main effect} indicates the influence of argument strength, whereas *F*_{Interaction} indicates the combined influence of argument strength or affect with distraction.

^a Behavior is expressed as proportion of participants who voted in favor of the institution of comprehensive examinations.

* $p < .05$.

*** $p < .001$.

differences that represent the influence of argument strength. Greater numbers indicate stronger influences of argument strength on the dependent measure of interest. In addition, the table presents the statistical tests for the main effect of argument strength and the interaction between argument strength and distraction. As the table shows, argument strength had an effect on both outcome beliefs and outcome evaluations. However, the effect of argument strength on outcome beliefs was not at all influenced by distraction. Moreover, although the effects of argument strength on outcome evaluations were somewhat less when distraction was high than when it was low, this difference was also not significant ($p < .10$).

As shown in the last rows of Table V, argument strength also influenced attitudes, intentions, and behavior. However, distraction decreased the impact of argument strength on the attitudes and intentions participants reported. Although this interaction did not reach significance for behavior, supplementary analyses of standard scores indicated that the impact of distraction on the influence of argument strength on behavior was not significantly less (standardized effects = 1.10 and 0.81 under low- and high-distraction conditions, respectively) than its impact on the influence of argument strength on intentions (1.33 vs 0.57, respectively), $F < 1$.

The differential effects of distraction on the impact of argument strength were assessed more carefully. Analyses indicated that the influence of argument strength on attitudes was adversely affected by distraction to a significantly greater extent (mean standardized effect = 1.26 vs 0.32 under low- and high-distraction conditions, respectively) than was the effect of argument strength on either outcome beliefs (1.15 vs 1.05) or outcome evaluations (1.75 vs 1.20); in each case, $F(1, 77) > 3.80$, $p < .05$. Therefore, Albarracín and Wyer (2001) concluded that beliefs and evaluations were computed before attitudes and intentions. However, the interactive effects of distraction and argument strength on outcome beliefs and evaluations did not differ from one another, $F < 1$. To this extent, the order in which beliefs and evaluations were formed was unclear.

If the interpretation of the influence of distraction observed in Experiment 1 is correct, this influence should be overridden by giving participants more time to think about the message received, thus compensating for the cognitive load that the distraction otherwise induced. To examine this possibility, Albarracín and Wyer (2001) replicated the first experiment with one exception. That is, whereas participants in Experiment 1 were given only 5 min to read the persuasive communication they received, participants in this experiment were given 10 min to do so. In all other respects, the procedures and measures used in the two experiments were identical.

A preliminary analysis of the data obtained in this experiment, like the comparable analyses in Experiment 1, yielded no significant interactions involving both affect and argument strength and affect, argument strength, and distraction, therefore justifying a consideration of the effects of each factor independently. The

right side of Table V shows the effects of argument strength (the difference between responses when the arguments were strong and responses when they were weak) on each dependent measure as a function of distraction. As the table indicates, the effect of argument strength on each behavior-related index was significant. Unlike Experiment 1, however, none of these effects were contingent on distraction. These data therefore suggest that providing participants more time to think about the persuasive message allowed them to form attitudes on the basis of the quality of the arguments contained in the message.

The causal relations implied by the sequence of processes in Fig. 4 were evaluated on the basis of path analyses. In this model, argument strength influenced message-based cognitions. Once formed, these cognitions may stimulate the message recipient to generate other cognitions based on prior knowledge (e.g., counterarguments). Both message-based and knowledge-based cognitions may be the basis for attitudes when distraction is low.³ Maximum likelihood techniques indicated that this model was not adequate under low-distraction conditions. However, with the addition of a direct path from message-based evaluations to intentions, the fit became satisfactory [CFI = 1.00; IFI = 1.02; SRMR = .00; $\chi^2(21) = 20.07$, *ns*].⁴ This model appears in the top panel of Fig. 5. In contrast, the fit of this model to the data obtained under high-distraction conditions was significantly less satisfactory [CFI = .84; IFI = .86; SRMR = .17; $\chi^2(21) = 49.66$, $p < .001$].

b. Insights from Response Times. Although the first experiment conducted by Albarracín and Wyer (2001) suggested that distraction disrupted the influence of argument strength on message-based outcome evaluations to a greater extent than on message-based outcome beliefs (see Table V), this pattern received no statistical support. Therefore, the researchers performed a supplementary experiment to see if having participants provide these judgments online (as opposed to after the message content has been processed) would clarify the order in which these two cognitions are formed.

In Experiment 1, participants reported their attitudes, presumably after assessing the likelihood and desirability of the outcomes specified in the message. However, in Experiment 2, the researchers used response-time techniques to observe how the online computation of one type of outcome-specific cognition (e.g., beliefs) facilitates the report of the others (e.g., evaluations) when participants were unlikely to have considered the outcomes involved at an earlier time. They asked a group of

³The Comparative Fit Index (CFI) and Bollen's fit index (IFI) are considered adequate when they exceed .90 (Bollen, 1989). The Standardized Root Mean Residual (SRMR) represents reasonable fit at .08 or less. The chi-square index is a measure of poor fit with higher numbers indicating less adequate models and/or higher sample sizes, and allows for between-model comparisons (Bollen, 1989). Differences in chi-squares are distributed as $\chi^2(1)$, and values greater than 3.84 indicate that the model with the lower index is superior in fit ($p < .05$). In all cases, this criterion was applied in deriving conclusions about model differences.

⁴This path is consistent with prior suggestions of syllogistic influences of outcome beliefs on intentions (see Jaccard & King, 1977).

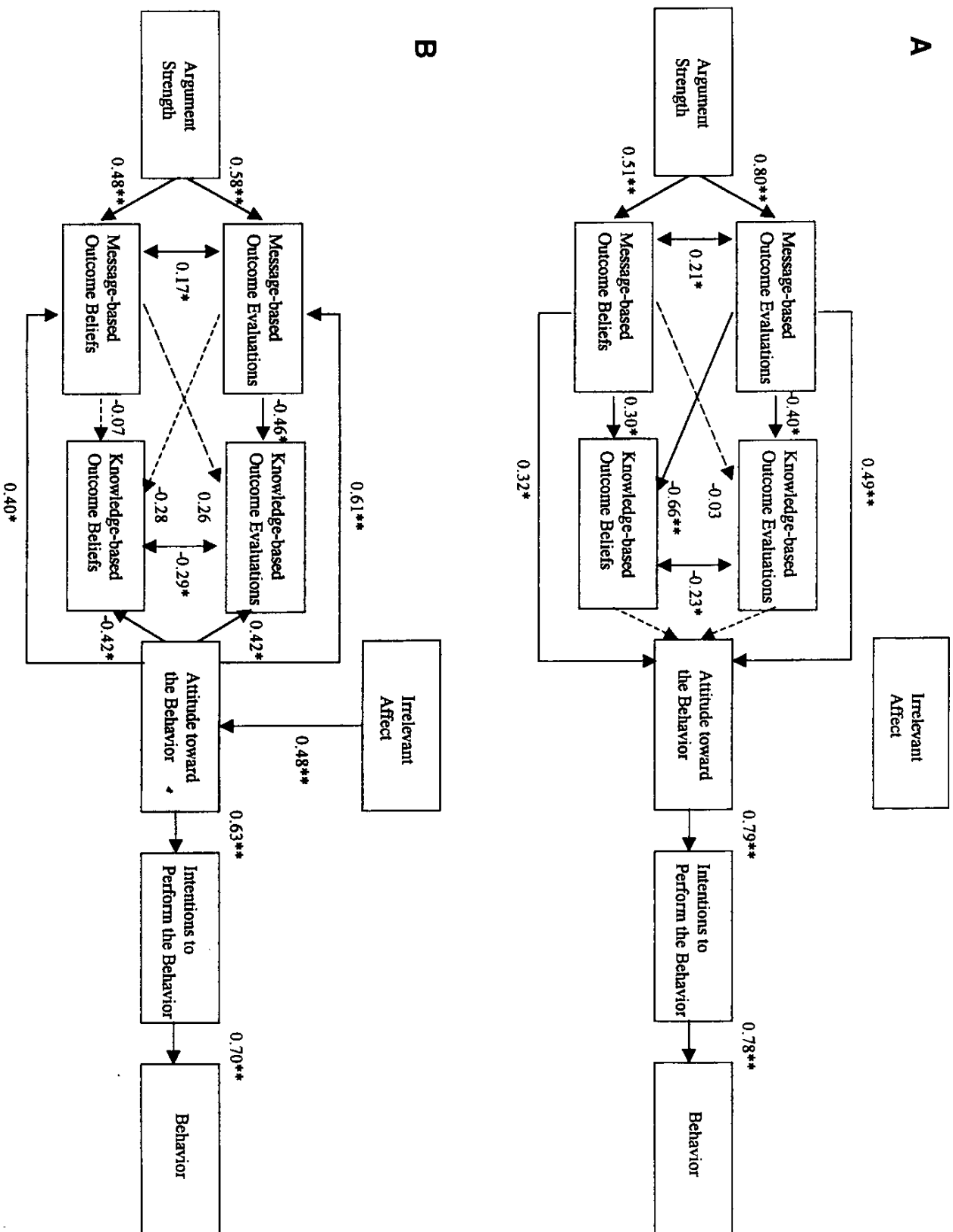


Fig. 5. Path analyses: Albarracín and Wyer (2001). (A and B) The best fitting models under conditions of low and high distraction, respectively.

participants to fill out a computerized questionnaire that included questions about beliefs in and evaluations of outcomes of comprehensive exams. These outcomes were selected from the persuasive messages presented in the other experiments of the series. However, participants in this experiment were exposed to no message and were thus unlikely to have estimated the likelihood and desirability of these outcomes before being asked to do so. Suppose that participants who consider these outcomes estimate their likelihood of occurrence before assessing its desirability. Then, they should report their evaluations of an outcome more quickly when they have already reported their belief in its occurrence than when they have not. In contrast, suppose participants spontaneously evaluate outcomes before estimating their likelihood. Then, reporting evaluations first should decrease the time to report beliefs. Finally, if the two types of cognitions are computed in parallel, reciprocal facilitation should be similar across order conditions.

The time taken to report outcome-specific beliefs and evaluations was analyzed as a function of presentation order and type of cognition (beliefs vs evaluations). Averaged over the two order conditions, outcome beliefs and outcome evaluations were reported equally quickly ($M = 0.94$ s in each case). Therefore, neither type of cognition was inherently easier to compute than the other. However, evaluations were made more quickly when beliefs had been reported beforehand ($M = 0.73$ s) than when they had not ($M = 1.15$ s). This difference ($M_d = 0.42$ s) was significantly greater than the difference in time required to report beliefs when evaluations had and had not been reported earlier ($M_s = 0.89$ s vs 0.99 s, respectively; $M_d = 0.11$ s); $F(1, 123) = 4.52$, $p < .01$. Thus, these findings provided some support for the hypothesis that outcome beliefs are formed prior to outcome evaluations (see also Gilbert, 1991).

c. Influence of Affect and Distraction. Albarracín and Wyer (2001) reported that moderately motivated participants who were distracted at the time of receiving the message based their attitudes on the message-irrelevant affect they were experiencing at the time they thought about the behavior. Data bearing on this possibility appear in Table VI (see also Table III). When distraction was high, induced affect had a positive influence on not only the attitudes that participants reported but also their behavioral intentions and their actual behavior. This effect was also evident on outcome beliefs and evaluations. In contrast, the impact of affect on cognitions and behavior in low-distraction conditions was, if anything, negative in direction.

The data from path analysis provided convergent evidence concerning the influence of affect. These data appear in the bottom panel of Fig. 5. Under high-distraction conditions, participants who experienced positive affect were more likely to develop favorable attitudes toward the policy than participants who experienced negative affect. Thus, the data from high-distraction conditions suggest that certain factors, such as one's irrelevant affective reactions, can have direct influences on attitudes. Furthermore, when affect influenced attitudes, these

TABLE VI
EFFECTS OF MESSAGE-IRRELEVANT AFFECT ON BEHAVIOR-RELATED COGNITIONS: EXPERIMENTS 1 AND 3 (ALBARRACÍN AND WYER, 2001)

Variables	Experiment 1 (Short time)				Experiment 3 (Longer time)			
	Distraction		<i>F</i> (1, 73)		High		<i>F</i> (1, 153)	
	High	Low	Main effect	Interaction	Low	Main effect	Interaction	
Message-based								
Beliefs	0.75	-0.92	0.40	4.87*	1.48	2.34	0.04	5.08*
Evaluations	1.48	-0.52	1.67	6.80*	3.49	3.75	0.17	0.01
Predicted attitudes	-0.19	144.45	0.30	9.64**	2.09	41.31	0.20	3.99*
Knowledge-based								
Beliefs	-0.56	0.38	0.59	3.71*	0.41	-0.68	0.24	3.73*
Evaluations	0.87	-0.16	1.18	2.43	0.94	-0.38	1.38	5.69*
Predicted attitudes	-4.18	89.95	0.24	1.58	-49.43	-85.04	0.81	9.19***
Attitudes	1.79	-0.73	1.68	9.39*	1.16	-0.28	1.82	4.76*
Intentions	2.09	-0.60	1.78	5.79*	0.99	-0.58	0.18	2.62
Behavior ^a	.33	-0.01	2.72	3.13	0.17	-.09	0.35	2.88

Note. Motivation was moderate in all conditions. Mean differences are based on cases with complete data. The effect of affect is inferred from the difference between judgments or behavior when affect was positive and judgments or behavior when affect was negative. *F*_{Main effect} indicates the influence of affect, whereas *F*_{Interaction} indicates the combined influence of affect and distraction.

^aBehavior is expressed as proportion of participants who voted in favor of the institution of comprehensive examinations.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

attitudes determined outcome beliefs and evaluations. This conclusion was suggested by an improvement in the goodness-of-fit of the model when attitudes determined outcome beliefs and evaluations relative to the analysis in which attitudes were determined by outcome-related cognitions (for procedures to test for directionality, see McCallum, Wegener, Uchino, & Fabrigar, 1993).⁵

It is important to note that Fig. 4 incorporates the possibility that affect could inform not only attitudes, but also the outcome beliefs and evaluations that people form (see Pham, Cohen, Pracejus, & Hughes, 2001). In fact, some studies have shown influences of affect on probabilistic judgments. Thus, DeSteno et al. (2000; see also Wegener, Petty, & Klein, 1994) found that emotions biased judgments of events when the emotion was relevant to the judgment participants had to make. Thus, if asked to report the probability of a frustrating event, participants were more likely to use anger as information than to consider sadness. However, when different kinds of information are available, as in the research by Albarracín and Wyer (2001), it seems only natural for people to use affective reactions as a basis for attitudes because attitudes often recruit affective reactions themselves. Correspondingly, the arguments in the message, which are propositional, are likely to be a basis for outcome-related cognitions. In any case, the effects of affect on attitudes may still influence probabilistic judgments at a later point (see Albarracín & Wyer, 2001; Experiment 1).

2. Influence of Past Behavior

People who have behaved in a certain way at one point in time are likely to do so again (Bentler & Speckart, 1981; Budd, North, & Spencer, 1984; Mittal, 1988; Ouellette & Wood, 1998). In many instances, the consistency of a person's behavior over time is the result of personality and motivational factors that are common to the situations in which the behavior occurs (Eagly & Chaiken, 1993). For example, it might reflect the influence of a priori beliefs about the consequences of the behavior that are independently activated each time the behavior is contemplated. Alternatively, a causal influence of one behavior on another can also occur, and this influence might develop in a particular cognitive sequence. Sometimes, for example, people who have performed a certain behavior might later think about its possible consequences, and these postbehavior cognitions could guide their future actions. In other instances, people might assume that their attitudes are consistent with their past behavior (Bem, 1965; Fazio, Zanna, & Cooper, 1977). Thus, the influence of past behavior on future decisions can also be mediated by attitudes.

The model in Fig. 4 is useful to conceptualize the influence of past behavior on outcome-related cognitions and attitudes. Thus, Janis and King (1954) postulated that after people have engaged in a particular behavior they often conduct a biased

⁵Correspondingly, reversing the paths linking outcome beliefs and evaluations with attitudes led to decreases in goodness-of-fit when distraction was low.

search of memory for previously acquired knowledge that confirms the legitimacy of their act. For example, they may identify reasons why desirable consequences of the behavior are likely to occur (and reasons why these consequences are, in fact, desirable). They may then combine their estimates of the likelihood and desirability of these consequences to form a new attitude toward the behavior (Fishbein & Ajzen, 1975), and this attitude, in turn, might influence both their intentions to repeat the behavior and their actual decision to do so when the occasion arises.

The biased-scanning hypothesis implies that the effects of past behavior are mediated by the recall of prior knowledge about the behavior's consequences and a reassessment of its implications. However, according to our stage-processing model (see Fig. 4), this mediating cognitive activity may not be necessary for the effects to occur. Self-perception theory (Bem, 1965, 1972), for example, postulates that when persons are called on to report an attitude, they often infer this attitude from the implications of a past behavior that happens to be salient to them at the time. Moreover, they may engage in this process with little if any conscious deliberation, simply reasoning that if they have performed the behavior voluntarily, they must consider it to be desirable (Bem & McConnell, 1970). The processes that underlie these effects, unlike those that characterize biased scanning, require little mediating cognitive activity and should be easier to perform than those that involve computation or recall of outcome beliefs and evaluations. Thus, the effects of self-perception are likely to be evident even when people are either unmotivated or unable to think about the reasons of a given course of action.

Self-perception theory has generally been applied in conceptualizing the effects of past behavior on attitudes. However, similar considerations suggest that persons' past behavior might have a direct influence on their future behavior that is independent of their attitudes toward the behavior. That is, people who are called upon to make a behavioral decision when a relevant past behavior is salient to them might simply assume that the reasons they performed the behavior at an earlier point in time are likely to apply in the present as well. To this extent, they might use their past behavior as a heuristic basis for a decision to repeat it without considering their attitude toward it at all (Bentler & Speckart, 1979; Cialdini, 1988). However, the possibility of this mechanism occurring in this research was somewhat unclear because the behavior that participants ostensibly performed in the conditions investigated by Albarracín and Wyer (2000; voting in favor of comprehensive examinations) was fairly novel (Ouellette & Wood, 1998; see also Triandis, 1977, 1980).

These alternative possibilities are not incompatible with each other and were each verified by Albarracín and Wyer (2000). They observed that the lack of prior evidence on these issues reflects the difficulty of separating the informational effects of a person's past behavior *per se* from the effects of situational and motivational factors that accompany and influence the decision to engage in it (Eagly & Chaiken, 1993). To avoid this ambiguity, they manipulated people's past behavior (or, at least, their perception that they performed it) independent of any

prebehavior cognitive activity that could potentially influence their decision to engage in it. Specifically, they induced participants to believe that, outside of awareness, they had either supported or opposed the institution of comprehensive examinations at their university. They told participants that they would be taking part in an investigation of a new technique for assessing their unconscious reactions to social policies that were presented subliminally. After generating each response, participants received feedback that they had unconsciously either supported or opposed the policy in question. Because the feedback was experimentally manipulated, the researchers were able to examine the causal influence of participants' past behavior on both their later behavior decisions and the cognitive processes that mediated these decisions.

As in the research we reviewed previously, Albarracín and Wyer (2000) considered two factors that theoretically influence the magnitude of the effects presented in Fig. 4. First, biased scanning requires the recall and reassessment of the implications of prior knowledge about the behavior they have performed and its consequences. To this extent, distracting participants from thinking about their behavior should decrease the effects of the behavior feedback on their attitudes and, therefore, on their decision to repeat the behavior at some later time. In contrast, self-perception processes and the use of past behavior as a heuristic, which do not require extensive cognitive deliberation, should be less influenced by distraction. Therefore, the effect of the situational distraction on the impact of behavior allowed the researchers to distinguish the alternative processes in Fig. 4.

After receiving the feedback on their ostensible past behavior, response items were presented on the computer screen and participants responded to the questions by typing a number on the keyboard. Thus, participants reported their attitudes and intentions concerning voting in favor of the referendum in the future, as well as their beliefs in and evaluations of outcomes derived from prior knowledge. There were seven belief statements about the outcomes that participants had spontaneously generated in an independent study. These outcomes were all negative. All variables were measured along a scale from 0 (e.g., *not at all likely*) to 9 (e.g., *extremely likely*). To create a composite measure of outcome-related cognitions, the researchers mapped the evaluation measures onto a scale from -5 to $+5$ with no neutral point, weighted these measures by the corresponding beliefs, and summed the products over the set of outcomes being considered. In the end, participants also cast an ostensibly anonymous ballot that either favored or opposed the institution of comprehensive exams.

a. Effects of Past Behavior on Judgment. As expected, participants reported more favorable attitudes toward comprehensive examinations when they perceived they had voted in favor of the exams ($M = 5.5$) than when they thought they had voted against them ($M = 3.7$), $F(1, 92) = 24.23$, $p < .01$. Moreover, behavior feedback had similar effects on participants' reports of their intentions to repeat the behavior ($M_s = 5.3$ vs 3.0), $F(1, 92) = 28.07$, $p < .01$, and their likelihood of

TABLE VII
 JUDGMENTS AND FUTURE BEHAVIOR AS A FUNCTION OF BEHAVIOR FEEDBACK
 AND DISTRACTION: ALBARRACÍN AND WYER, 2000, EXPERIMENT 2

Variables	Behavioral feedback		
	In favor	Against	Difference
Attitudes			
Low-distraction	6.1	3.3	2.8
High-distraction	5.3	4.1	1.2
Intentions			
Low-distraction	5.7	2.5	3.2
High-distraction	5.0	3.6	1.4
Behavior			
Low-distraction	.54	.04	.50
High-distraction	.35	.13	.22
Outcome-related cognitions [Eq. (1)]			
Low-distraction	-37.2	-76.5	39.3
High-distraction	-38.1	-55.1	17.0

Note. The differences represent the effect of the behavioral feedback. They were calculated by subtracting mean judgment or behavior when participants were told that they had voted against the policy from judgments or behavior when they were told that they were in favor of the policy.

actually doing so ($M_s = .45$ vs $.09$), $F(1, 92) = 22.86$, $p < .01$. These overall effects are compatible with the three hypotheses being considered concerning the effect of past behavior on future behavior decisions. The contingency of these effects on distraction permitted the hypotheses to be more effectively evaluated.

Suppose the impact of behavior feedback on attitudes, intentions, and future behavior is partly the result of cognitive activity of the sort implied by the biased-scanning hypothesis. Then, distracting participants from performing this activity should decrease the effect of the behavior feedback. Results, summarized in Table VII, were marginally consistent with this prediction. That is, distraction decreased the effect of behavior feedback on not only attitudes, $F(1, 92) = 3.27$, $p < .07$, but also intentions, $F(1, 92) = 3.23$, $p < .08$, and actual behavior, $F(1, 92) = 2.58$, $p > .10$. However, none of these effects depended on distraction ($F < 1$).

According to the biased-scanning hypothesis, the influence of behavior feedback on participants' attitudes is mediated by the behavior's effect on participants' cognitions about specific consequences of this behavior. However, this effect should be less when participants are distracted from thinking about these consequences and from retrieving prior knowledge that bears on their likelihood and desirability. Support for this hypothesis was equivocal. The effects of feedback on the

composite index of outcome-related beliefs and evaluations are shown in the last section of Table VII. The generally negative values of the index reflect the fact that the outcomes used to compute the index were all undesirable. As expected, the index was relatively more favorable when participants were told they had voted in favor of comprehensive exams ($M = -37.7$) than when they were told they had voted against them ($M = -65.8$), $F(1, 92) = 5.83$, $p < .05$. Nevertheless, although this difference was somewhat less when distraction was high (-38.1 vs -55.1) than when it was low (-37.2 vs -76.5), the difference was not significant ($p > .10$).

To identify the independent contributions of the cognitive sequences implied by the hypotheses we considered, Albarracín and Wyer (2000) used path analyses. The model they evaluated was guided by the models presented in Fig. 6. That is, it assumed that participants' perceptions of their past behavior (as well as their prior attitudes measured at the beginning of the semester) potentially influence their decisions to repeat the behavior either directly (as implied by the behavior-heuristic hypothesis) or indirectly through its mediating impact on attitudes. The impact of past behavior on attitudes could also be either direct (as implied by the self-perception hypothesis) or mediated by its influence on outcome-specific cognitions. The figure presents the path diagrams for data obtained in each distraction condition, with solid and dashed lines denoting significant and nonsignificant pathways, respectively.

As shown in Fig. 6, the significant paths connecting participants' outcome-specific cognitions, attitudes, intentions, and ultimate behavioral decisions are consistent with the model we proposed and suggest that the processes implied contributed to the behavioral decisions participants made. Participants' perceptions of their past behavior had a substantial effect on their outcome-related cognitions when distraction was low. However, this effect was reduced to nonsignificance when distraction was high. This finding is consistent with the notion that participants spontaneously reevaluated the consequences of their behavior, but introducing distraction prevented them from engaging in this postbehavior cognitive activity. However, some caution should be taken in drawing this conclusion because the paths linking behavior feedback and outcome-specific cognitions did not differ significantly as a function of distraction ($p > .10$).

The implications of the path analyses for self-perception processes are less equivocal. Specifically, participants' past behavior had a direct impact on their attitudes that was independent on their cognitions about specific outcomes. Although this impact was less when distraction was high than when it was low ($p < .06$), it was significant in both cases. This effect is consistent with the self-perception hypothesis.

b. Effect of Feedback on Response Times. Albarracín and Wyer (2000) obtained further insight into the effects of behavior feedback (see Fig. 4) by comparing the judgment response times of participants who received this feedback with those of

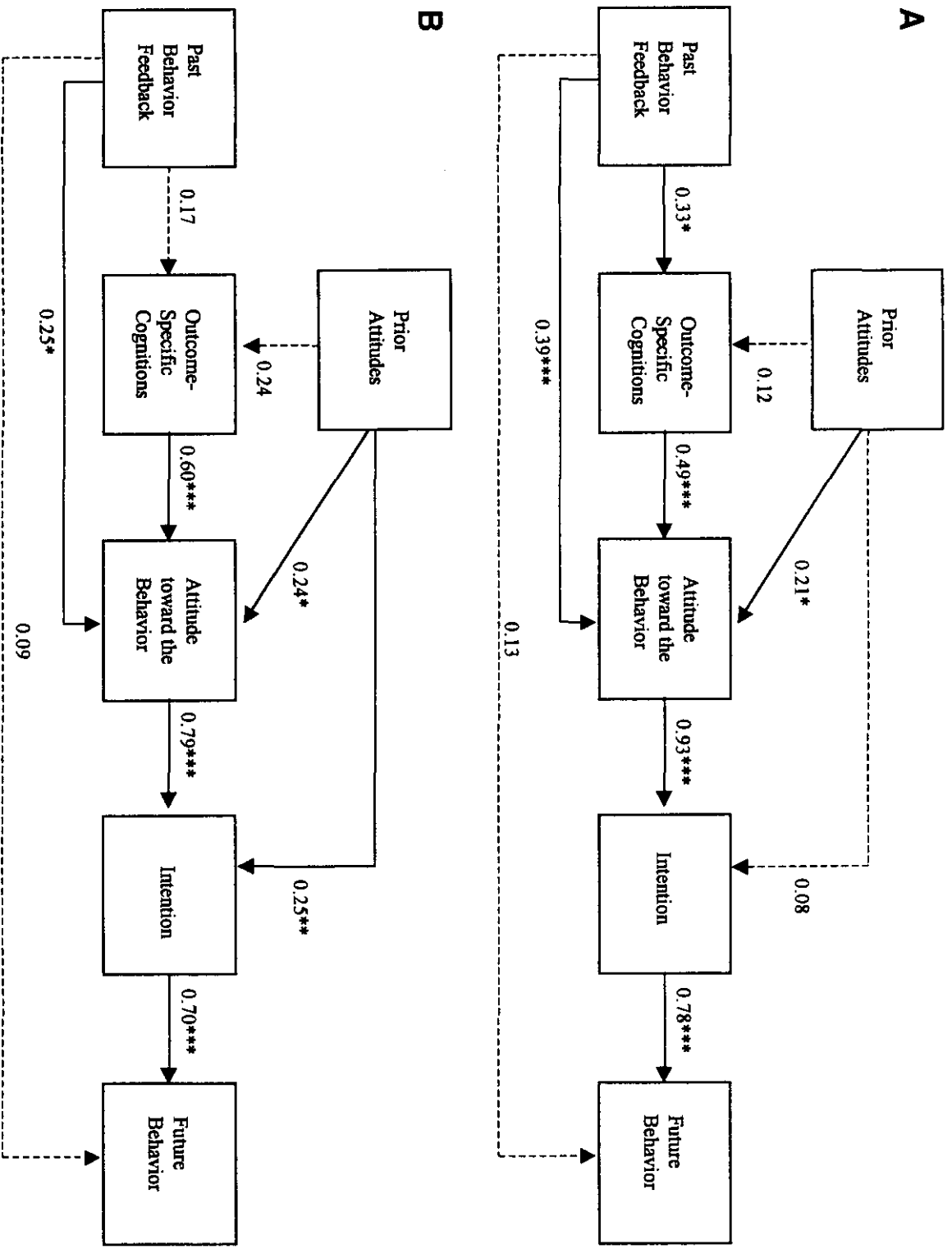


Fig. 6. Path Analyses: Albarracín and Wyer (2000). (A and B) The best fitting models under conditions of low and high distraction, respectively.

control participants who completed the same questionnaire but did not receive feedback about their behavior. First, suppose participants who became aware of their behavior spontaneously assessed the implications of its possible consequences, as implied by the biased-scanning hypothesis. Then, these participants should report the likelihood and desirability of these consequences more quickly than participants who did not receive this feedback. This possibility was evaluated under conditions in which outcome-specific beliefs and evaluations were assessed first in the questionnaire (before attitudes and intentions). As expected, participants took less time to report these cognitions when they received feedback about their past behavior ($M = 0.96$ s) than when they did not ($M = 1.37$ s), $F(1, 153) = 39.91$, $p < .01$. However, this difference was similar regardless of whether participants were distracted (M s = 0.69 s vs 1.38 s) or not (M s = 0.95 s vs 1.36 s).

Path analyses suggested that participants based their attitudes on both outcome-specific cognitions and their past behavior. This conclusion was confirmed by differences in the time participants took to report their attitudes when each criterion was or was not salient. Specifically, participants who received no feedback about their past behavior reported their attitudes much more quickly when they had estimated their outcome-specific beliefs and evaluations earlier in the questionnaire ($M = 0.95$ s) than when they had not ($M = 1.53$ s), $F(1, 143) = 37.51$, $p < .01$. Thus, participants who received no feedback appeared to base their attitudes on the implications of the behavior's possible consequences, taking less time to integrate these implications when they had estimated the outcomes' likelihood and desirability earlier in the questionnaire. When participants had received feedback about their behavior, however, they reported their attitudes quickly regardless of whether they had considered the behavior's consequences beforehand (M s = 0.91 s vs 1.12 s). Although this latter difference was reliable, $F(1, 143) = 14.24$, $p < .01$, it was significantly smaller than the same difference when participants did not receive behavior feedback, $F(1, 143) = 12.36$, $p < .01$. In combination, therefore, these data suggest that participants based their attitudes primarily on whatever informational bases happened to be salient to them at the time they were asked to report these attitudes. That is, they used the implications of salient outcome-specific beliefs and evaluations if they had formed and reported these cognitions earlier in the questionnaire. However, when outcome-specific cognitions were not easily accessible but an attitude-relevant past behavior was salient, participants based their attitudes on the implications of this behavior, as implied by the self-perception hypothesis.

3. Summary

The model in Fig. 4 suggests that people who process information contained in a persuasive message are likely to engage in a series of cognitive activities that begin at the point of assessing the likelihood and desirability of behavioral

outcomes and end at the point of behavioral performance. Thus, when people have the ability and motivation to complete all stages of processing, they base their attitudes on the outcome beliefs and evaluations suggested by the message. However, when decreases in ability and motivation reduce people's likelihood of integrating outcome beliefs and evaluations into their attitudes, their attitudes can be based on other factors. For example, they may use the otherwise irrelevant affect they experience when they think about the message.

The stage-model in Fig. 4 is also useful to understand the influences of past behavior on subsequent judgments and behavior. That is, people who think about their past behavior are likely to form attitudes that are consistent with those actions. Albarracín and Wyer's (2000) research also suggests that participants who think about their past behavior may occasionally retrieve knowledge about potential outcomes of the behavior and form beliefs in and evaluations of these consequences. This effect, however, is likely to be small at best and absent when distraction is high.

IV. Resolution of Informational Conflict in Persuasion

Recipients of a persuasive communication are likely to interpret the information the message presents. They may then identify and select information to use as a basis for judgment, and this information can influence various cognitions. For example, it may influence their beliefs in the outcomes of the behavior the message advocates, their attitudes toward the behavior, and their behavioral intentions. In most conditions, the arguments contained in a persuasive message are likely to be consistent with each other. Sometimes, however, the arguments in the communication may have different implications. Furthermore, one's beliefs in and evaluations of the outcomes of a behavior may conflict with an attitude one forms later on the basis of other information. Therefore, an important question is how people resolve such inconsistencies.

A. EFFECTS OF CONFLICT IN PERSUASION

People who receive a persuasive message process information from different sources. Sometimes they may form attitudes on the basis of the arguments contained in the message as well as their affective reactions. Other times they may dismiss one factor and use other informational basis or seek further information to decide how much weight to attribute to each of the elements.

The processing of conflicting information has received considerable attention. For example, Festinger (1957) suggested that cognitive conflict elicits emotional

arousal and this arousal motivates people to resolve the conflict. Prior research in the area of persuasion has suggested that this hypothesis is plausible. For example, Maheswaran and Chaiken (1991; see also Baker & Petty, 1994) found that people who receive consensus information that conflicts with the features of a product engage in greater amounts of processing than people who receive nonconflicting information. The model we propose draws from this research and suggests that conflict that becomes apparent during the online processing of a persuasive message motivates a careful analysis of the information presented in the message. However, when the conflict becomes salient later, people are likely to reduce the inconsistency by simply integrating the inconsistent information being considered.

The way in which individuals integrate conflicting pieces of information has received considerable attention in social psychology (see, e.g., Anderson, 1981). For example, if the arguments in a persuasive message have different implications and also vary in quality, stronger arguments may be weighted more heavily than weak ones. Similarly, information presented by an expert source may be weighted more heavily, whereas information presented by a weak source could be rejected. In some circumstances, however, the way in which people integrate information may depend on specific knowledge about social behavior. Thus, certain schemas or inferential rules may be available to resolve conflict by means of a causal attribution (see Kelley, 1967; Eagly, Wood, & Chaiken, 1978). For instance, people who perform a behavior that contradicts a persuasive message they received at an earlier time may infer that they have a stronger attitude toward the behavior than people who did not receive conflicting information. That is, they may attribute their behavior to internal causes in the face of obstacles.

Postulate 6: When recipients of a persuasive communication detect conflict at the time they process the communication, they may analyze the information contained in the message in a more careful way. When they detect conflict after the message has been received, they may integrate the information to generate an attitude toward the issues of concern.

Postulate 6 thus specifies the conditions in which conflicting information is likely to (a) influence how recipients process a persuasive communication or (b) become integrated into attitudes toward the issues being considered. When conflict is detected online, message recipients are likely to pay more attention to the information the message presents and to integrate this information in a careful way. However, when conflict is detected after the message has been processed, recipients are generally unable to reexamine the information presented in the persuasive message. Instead, they may average the implications of the different pieces of information or make an attribution that allows them to resolve the inconsistency.

B. EMPIRICAL EVIDENCE OF ONLINE DETECTION OF CONFLICT IN A PERSUASIVE MESSAGE

People who are in the process of forming beliefs in and evaluations of the content of the persuasive message can sometimes conclude that these cognitions have opposite implications for the message's conclusion. When this occurs, cognitive conflict may maximize integration of the implications of the message into attitudes. There is considerable support for this hypothesis. For example, Maheswaran and Chaiken (1991) informed participants that either a majority or minority of consumers liked a new product, an answering machine. After receiving this information, participants read a persuasive message that described the answering machine as either superior or inferior to competing brands. The authors reasoned that participants should have lower confidence when consensus and message information disagree than when they agree. Low actual confidence, in turn, should motivate message recipients to scrutinize the arguments presented in the message.

Maheswaran and Chaiken (1991; Jonas, Diehl, & Brömer, 1997) found support for their predictions when participants were told that their responses would be "preliminary" and "unimportant" (low-motivation conditions). Thus, unmotivated participants who received consistent information applied a consensus heuristic and reached their desired confidence through that mechanism. In contrast, recipients of inconsistent information presumably started at a lower confidence level. Thus, to attain their desired confidence, these participants scrutinized the information contained in the message as well as the consensus cue. Furthermore, Maheswaran and Chaiken (1991) found that when unmotivated participants read consistent information, their attitudes were influenced by the consensus information and mediated by the valence of consensus-related thoughts. In contrast, when the information was inconsistent, their attitudes were based on the valence of product-related thoughts.

A study by Baker and Petty (1994) also rendered support for the idea that there are motivational influences of conflict. In their research, participants received a communication arguing that a majority or a minority supported a pro- or counterattitudinal position. They reasoned that proattitudinal positions endorsed by a minority as well as counterattitudinal stands endorsed by a majority would elicit conflict. In contrast, proattitudinal positions endorsed by a majority and counterattitudinal positions endorsed by a minority would elicit perceptions of consistency. The researchers found that when the combination of source and message was unexpected, participants' attitudes were more strongly influenced by the strength of the arguments in the message than when the combination was expected.

People sometimes perceive conflict between two cognitions processed at different times. For example, they may first evaluate a course of action as negative on the basis of the information contained in the persuasive message but later perform the behavior. When this situation takes place, individuals may be unable

to go back to the arguments and reassess their implications in detail. Instead, they are more likely to attempt to integrate the conflicting information. Without a doubt, message recipients may often average the information after weighting each element according to its perceived relevance (Anderson, 1970). Other times, however, they may apply schemas to integrate the information they receive. Thus, when people engage in a behavior that is inconsistent with the recommendation of a persuasive message they received earlier, self-perception theory suggests that people will engage in an attribution. Thus, if they observe that they have performed the behavior despite receiving a compelling message that opposed it, they will attribute their behavior to a favorable attitude. This pattern, however, should not be the case when participants do not perform the behavior.

Relevant data were obtained in a study by Albarracín, Cohen, and Kumkale (2001). In this research, the experimenter informed participants that the study concerned an alcohol-substitute product. She explained that although the effects of simulated alcohol were similar to those of alcohol, the product was not legally alcohol and therefore was going to be available to people of all ages. Following this preamble, participants read several short ads and a longer, more elaborate message, all recommending recipients to either abstain from the product or use it in moderation. After reading these prevention materials, half of the participants tried the ostensible product, whereas the other half performed a filler task. They then reported their intentions to use the product in the future.

The results of this experiment are shown in Fig. 7 and were consistent with predictions. That is, among participants who tried the product, those exposed to the moderation message had weaker intentions to use the product in the future than

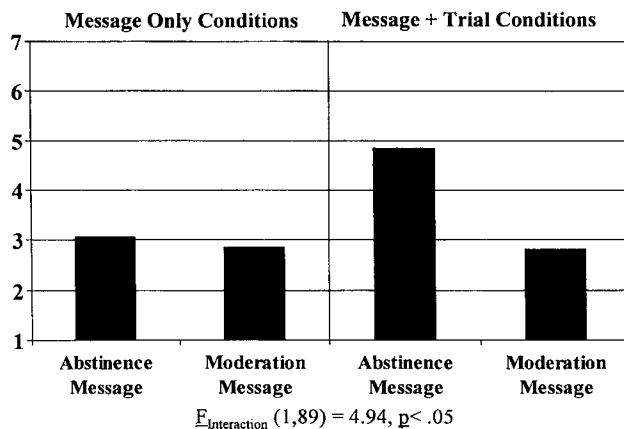
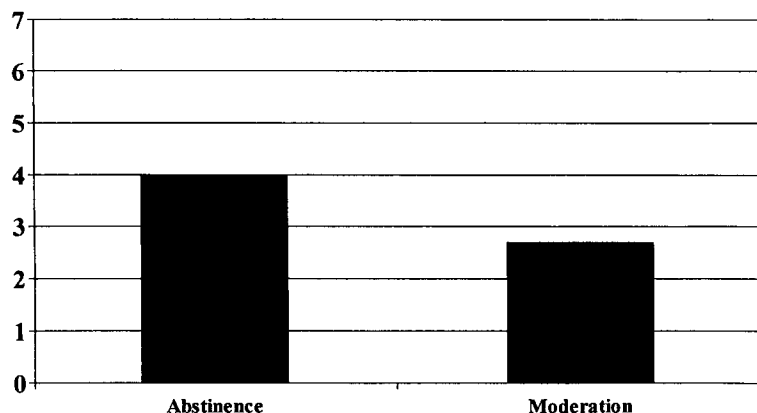


Fig. 7. Intentions to drink as a function of type of message and presence of trial: Albarracín, Cohen, and Kumkale (2001).



$$F(1, 40) = 5.75, p < .05$$

Fig. 8. Intentions to drink after exposure to counterpropaganda: Albarracín, Cohen, and Kumkale (2001).

those exposed to the abstinence message. In contrast, the intentions of participants who did not try the product were not contingent on the type of persuasive message they read.

It is important to mention that participants in trial conditions came back for a follow-up session in which they were exposed to industry ads promoting the product. After seeing the counterpropaganda, they reported their intention to drink the product in the future. These data appear in Fig. 8. As can be seen from the figure, the reverse, boomerang effect of the abstinence message was still present after participants were exposed to the counterpropaganda messages. Presumably, participants continued to infer that they had a more positive attitude toward simulated alcohol when they had tried it after receiving the abstinence message than when they had tried it after reading the moderation appeal. This attribution is consistent with self-perception processes of the kind described by Bem (1965).

V. Maintenance of Change as a Function of Stage of Impact

A theory of persuasion processes must account for large and diverse amounts of evidence concerning the impact of a persuasive message on cognitive, motivational, and behavioral responses. In addition, such a theory should be useful in making predictions about attitude and behavior maintenance and change and in explicating the mechanisms underlying change and maintenance of change. That is, the way

in which people interpret, select, and integrate the information they receive or retrieve from memory may have implications for the persistence of these attitudes over time.

A. IMPACT OF DIFFERENT PERSUASIVE STRATEGIES AND MAINTENANCE OF CHANGE

The different strategies people engage in when they receive a persuasive message or think about their past behavior are likely to have implications for maintenance of change over time. Our conceptualization of the processes that underlie attitude-change maintenance and decay derives directly from the model in Fig. 4. To change the behavior of an audience, one can present a verbal persuasive message that conveys structured data in support of a given behavior. In the domain of HIV prevention, for example, a typical message describes HIV, its modes of transmission, and pathological mechanisms as well as how to prevent it. A communication may also elaborate on the health and social consequences of engaging in the behavior. Without a doubt, strong persuasive messages of this kind will be effective provided people (a) interpret the information, (b) estimate the likelihood and desirability of the consequences that can be inferred from the information, and (c) integrate the implications of these beliefs and evaluations into an overall attitude toward the behavior being advocated. The attitude, once formed, is likely to be used as a basis for recipients' (d) intentions to perform the behavior and (e) their actual decisions to do so.

However, real-world persuasive interventions frequently include other components and may influence attitudes directly, without affecting outcome beliefs and evaluations (see Fig. 4). For example, HIV-prevention strategies to increase condom use often induce actual experience with the behavior. Thus, clients in these programs may practice condom use or role-play convincing their partners to use condoms. In addition, HIV-prevention campaigns also induce behavioral experience by providing the audience with condoms at no cost. One reason that these approaches work is that people who engage in a behavior may later infer that they have an attitude that is consistent with this behavior (see Bem, 1965).⁶

The stage model in Fig. 4 predicts that, other things being equal, an intervention will be more successful when it has an impact at a later stage than when it has an impact at an earlier stage. That is, the greater the number of stages between the

⁶Of course people's actions contribute to their thoughts and motivation in various ways. For example, performing a behavior can increase the (a) accessibility of one's attitudes and, consequently, the possibility that one would carry on with these attitudes (see Fazio, 1986). Behavioral facilitation strategies can also influence future behavior because they induce (b) habits (Ouellette & Wood, 1998) and (c) perceptions that one can control the behavior (Ajzen, 1991).

cognitive activity induced by the intervention and the behavior, the more likely distraction or decreases in motivation may disrupt the process. Even when people have the ability and motivation to think about the content of a persuasive message, change maintenance is expected to be greater for behavioral interventions. In other words, the change decay following communications should be directly proportional to the distance between the stage on which the intervention exerts a direct influence and actual behavior.

There are several reasons why a behavioral intervention may lead to greater maintenance of change over time. One is that people who receive a persuasive message may base their attitudes on memories of the information contained in the message, and the traces of this information are likely decay over time. Information about one's behavior, however, does not depend on the recall of the arguments contained in the message. As a result, the effect of a behavioral strategy may persist more than the effect of a verbal persuasive message.

Postulate 7: Communications that have a direct impact on a stage closer to the behavior lead to greater change maintenance than communications that have an impact on an early stage.

An important implication of this postulate is that people who are called on to report their attitudes engage in some degree of cognitive reconstruction. On the one hand, they are likely to retrieve an attitude, and this attitude may operate independently of the information on which the attitude was based (see Eagly & Chaiken, 1993). On the other hand, in most situations, people may attempt to also recall information that supports their attitudes. Thus, they may retrieve the arguments contained in a persuasive message that gave way to their attitudes or may recall that they performed a behavior that is consistent with their attitudes. To this extent, maintenance of attitude change most likely includes both memory-based and online processes (see, e.g., Wilson, Lindsey, & Schooler, 2000).

B. EMPIRICAL EVIDENCE

Zanna, Fazio, and Ross (1994) obtained evidence that supports the possibility that behavioral strategies may lead to greater change maintenance than a verbal persuasive message. In their research, participants exposed to a persuasive communications 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. However, the evidence from this study is inconclusive. That is, the effect of justifying one's attitudes may lead to

greater persistence independent of whether people recall their past behaviors or the arguments in the message they read.

To compare the effects of verbal and behavioral persuasion, participants in Albarracín and McNatt's (2001) research (a) read a strong persuasive message that advocated support for or opposition to the institution of comprehensive exams in an upcoming referendum; (b) were informed that, outside of awareness, they had either supported or opposed the policy; or (c) were asked to determine whether a given word or string of words referred to the concept of comprehensive exams. Whereas the first two conditions tested the influence of a verbal persuasive message and behavioral feedback, respectively, the latter condition allowed the researchers to compare the effects of receiving information about the policy with the effects of receiving no information whatsoever.

Participants then reported their attitudes and intentions concerning voting in favor of the policy in the referendum. Thus, all participants reported the extent to which they (*not at all likely* or *extremely likely*) intended to support the policy at a later point. After reporting their behavioral intentions, participants judged the extent to which the institution of comprehensive exams (a) made them *feel good* or *bad* and whether it was (b) *wise* or *unwise*, (c) *useful* or *useless*, (d) *consistent* or *inconsistent with their goals*, and (e) *smart* or *foolish*. All these questions were presented on the computer and responses were provided along scales from 0 to 9. In addition to the judgment data, the computer collected the time participants took to report intentions as well as the mean time to report their attitudes toward voting in favor of the policy. The same computerized questionnaire was used in the two follow-up sessions that took place 1 and 2 weeks after the first session.

The last questionnaire used in the experiment also included questions about outcome beliefs and evaluations. Thus, all participants reported the likelihood that certain positive and negative events would occur and the perceived desirability of these outcomes. The events were the same mentioned in the persuasive messages some participants received. Positive events were derived from arguments in favor of the policy developed by Petty and Cacioppo (1986a, 1986b) and are unlikely to be available in memory unless people read the persuasive message in advance. Negative arguments were developed on the basis of outcomes that participants in an independent study generated in response to Petty and Cacioppo's messages. These negative outcomes can come to mind spontaneously, even in the absence of a persuasive message. Measures of beliefs and evaluations of both sets of outcomes were used to create overall measures of outcome-related cognitions by multiplying the belief that an outcome would occur by the desirability of the outcome [Eq. (1)]. At the end of the last questionnaire, participants also cast an ostensibly anonymous ballot that either supported or opposed the exams.

An important question is whether the message and behavior feedback produced changes in attitudes. The findings summarized in Table VIII suggest that

TABLE VIII
ATTITUDES, INTENTIONS, AND BEHAVIOR AS A FUNCTION OF TIME
AND EXPERIMENTAL CONDITION

Conditions	Time 1	Time 2	Time 3
Attitudes			
Persuasive Message			
In favor	7.4	6.9	7.0
Against	3.7	4.0	4.0
Difference	3.7***	2.9***	3.0***
Behavioral feedback			
In favor	5.8	5.8	5.8
Against	4.1	4.0	3.8
Difference	1.7***	1.8**	2.0**
Concept salience			
In favor	5.2	5.5	5.4
Against	5.2	5.3	5.1
Difference	0	0.2	0.3
Intentions			
Persuasive message			
In favor	6.1	6.4	6.2
Against	1.9	2.1	2.5
Difference	4.2***	4.3***	3.7***
Behavioral feedback			
In favor	4.4	4.1	4.6
Against	2.6	2.5	2.3
Difference	1.8**	1.6**	2.3***
Concept salience			
In favor	4.0	4.0	3.7
Against	2.9	3.6	3.6
Difference	1.1	0.4	0.1
Behavior			
Persuasive message			
In favor	—	—	.47
Against	—	—	.04
Difference	—	—	.43***
Behavior perception			
In favor	—	—	.38
Against	—	—	.04
Difference	—	—	.34**
Concept salience			
In favor	—	—	.30
Against	—	—	.24
Difference	—	—	.06

** $p < .01$.

*** $p < .001$ for contrasts.

participants who received a message in favor of the exams had more favorable attitudes toward the policy and stronger intentions to vote for the policy than participants who read a message against the institution of the policy. The behavioral feedback also had an influence. That is, participants who thought they had voted in favor of the policy outside of awareness were more likely to have favorable attitudes and intentions than those who thought they had voted against the exams. In contrast, there was no initial change in salience conditions. Simply making the concept salient did not produce changes in attitudes or intentions. (As can be seen from the last panel of Table VIII, the pattern of influence of each manipulation was also apparent in the ballots participants cast at the end of the experiment.)

Consistent with Postulate 7, Albarracín and McNatt (2001) hypothesized that the effect of a persuasive message would decay more than the effect of a perception that one has performed a behavior. To test this hypothesis, they analyzed attitudes and intentions reported longitudinally as a function of time and condition using a mixed analysis of variance. Time was a within-subjects factor, whereas direction (in favor or against) and type of intervention (salience, persuasive message, and behavior feedback conditions) were between-subject factors. The interaction between time, advocacy direction, and type of intervention was statistically significant ($p < .05$), both when the effects of a persuasive message were contrasted with those of behavioral feedback and when salience conditions were included as well. As shown in Fig. 9, the effect of the persuasive message suggests decay over

Effect of Information on Attitudes Across Experimental Conditions

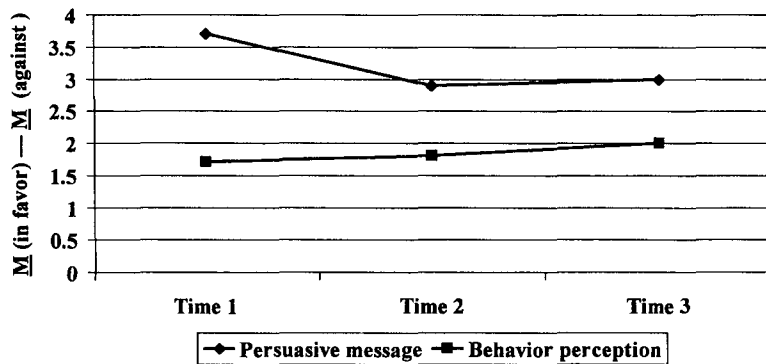


Fig. 9. Findings from Albarracín and McNatt (2001). Entries on the y axis are mean differences to represent the effect of message and behavior feedback.

time, whereas the effect of the behavior feedback was stable across experimental sessions.⁷

If it is the case that decay is accelerated by reliance on information about the outcomes the message described, outcome-related cognitions should be more influential for recipients of a message than for participants who received behavioral feedback. Albarracín and McNatt (2001) compared the correlations between outcome-related cognitions and actual voting behavior in these two conditions. They found that the correlation between outcome-related cognitions and behavior was significant and strong when participants received a persuasive message but weak and nonsignificant in behavior-feedback conditions ($r = .70$ vs $.17$). Of course it may seem obvious that people who received a persuasive message that discussed the outcomes of the policy would be more likely to consider these outcomes in deciding what vote to cast. However, the correlations between participants' behavior and outcome beliefs and evaluations based on prior knowledge were nonsignificant when participants received behavioral feedback. Therefore, these data rendered support for the idea that decay of memory for message information may represent a disadvantage over time, whereas behavior feedback may exert direct effects on attitudes that are not mediated by outcome-related cognitions. In turn, these direct effects persist as time goes by.

VI. Our Model in the Context of Prior Research and Theorizing

Several decades of persuasion research have made clear that recipients of a communication actively transform and select the information they are presented with. The idea of stage processing in persuasion is therefore not news. For example, Hovland (1959), McGuire (1968a, 1985) and Wyer (1974) all contributed to the current understanding of the sequence of activities that take place when people process a persuasive message. However, stage-models proposed in the past have not explicated the construction of judgments in response to a persuasive communication. Instead, research on these models concentrated on broadly construed processes, such as reception and yielding. The model we propose thus expands prior research by providing a detailed account of cognitive and behavioral responses to

⁷To rule out regression to the mean, the researchers conducted two supplementary analyses. First, they excluded extreme scores from the condition in which participants received a persuasive message. The exclusion of these cases yielded almost identical effects of the persuasive message and behavior feedback conditions at Time 1. An examination of the effects of the treatments over time when only moderate cases were considered led to the same conclusion reached in the main analyses. In addition, they conducted analysis to see if "reversed" regression to the mean was present. That is, they took participants with extreme scores at the end of the study and examined whether these participants had moderate scores at the beginning of the study. However, there was no evidence for this statistical artifact.

a persuasive communication. Our model also explores implications of conceiving persuasion as a series of processing stages that have remained unexplored to date.

A. PRIOR STAGE-CONCEPTUALIZATIONS OF PERSUASION

The stage models proposed by McGuire (1968a) and Wyer (1972) were important in advancing our understanding of the conditions that facilitate and inhibit persuasion. For example, McGuire observed that intelligent individuals are more likely to receive the content of the persuasive message but less likely to yield to the message recommendation relative to unintelligent people. As a result, recipients of moderate intelligence might be the most susceptible to the influence of a persuasive communication. What these models did not specify was how reception of and yielding to the content of the persuasive message influenced recipients' judgment and behavior after exposure to a communication. In contrast, the model we propose explicates how cognitions are formed as a result of the arguments contained in the communication as well as other factors that can ultimately influence behavior (e.g., one's past behavior).

Hovland (1959) proposed that the processing of a persuasive message involves three phases, namely (a) attention, (b) comprehension, and (c) acceptance of the message content. Attention and comprehension concern learning or content retention. Acceptance involves motivation to accept or reject the conclusion of the message and its source, as well as anticipatory responses to expectations of reward or punishment associated with the rehearsal of the message content. Hovland's (1959) distinction of these three phases of influence was critical to analyze a number of phenomena. For example, according to Janis and Milholland (1954), extreme fear appeals increase attention to the content but defeat themselves because of the punishment associated with accepting and rehearsing anxiety-provoking contents. Consequently, moderate fear appeals may be more effective than both low and high emotional contents.

McGuire (1968a, 1972) developed Hovland's (1959) theorizing by capitalizing on a cognitive perspective and excluding consideration of incentives in learning. He argued that the impact of persuasive communication is the result of a series of information-processing stages, including (a) exposure (i.e., *E*), (b) attention (*A*), (c) comprehension (*C*), (d) yielding (*Y*), (e) retention (*R*), and (f) behavior (*B*). Messages can be effective only if presented to potential recipients who themselves attend to and comprehend the conclusions and arguments discussed in the message. Recipients must also agree with the conclusion of the communication and, for the attitude change to persist, retain this yielding over a period of time. Ultimately, recipients may or may not behave in the manner recommended by the communication, so success also depends on the behavioral decisions they make.

Thus we have the following:

$$P_I = P_E \times P_A \times P_C \times P_Y \times P_R \times P_B, \quad (2)$$

where P_I is the probability of influence of the persuasive message and the remaining probabilities are associated with the preceding stages defined previously.

McGuire (1968a) generated a simpler version of his stage model. He averted difficulties in measuring attention and comprehension as separate processes and synthesized these processes as well as exposure under the overall label of "reception" (R). With this reduction we have the following:

$$P_I = P_R \times P_Y, \quad (3)$$

where the probability of influence is a multiplicative function of the probability of receiving the message and the probability of yielding to the content one has received. This two-step model has important empirical implications. Thus, if a situational or personal factor has uniformly positive or negative effects on reception and yielding, its ultimate impact should be correspondingly positive or negative. However, if the same situational or personal variable increases reception but decreases yielding, such a variable should bear a curvilinear relation to persuasion. The nonmonotonic influence of certain situational and personal factors characterize a "compensatory" pattern by which a trait or event that makes a person vulnerable to attitude change by one of the mediators protects the person by ways of another mechanism. For example, more intelligent people presumably attend to a message and understand its arguments to a greater extent than less intelligent people. However, yielding is presumably a negative function of intelligence because more intelligent people may counterargue the message content to a greater extent than less intelligent recipients. To the extent that intelligence has additive but directionally opposite influences on reception and yielding, people of moderate intelligence are likely to be more persuaded than people of either low or high intelligence.

Wyer (1974) further elaborated McGuire's (1972) model using conditional probabilities. In the new context, the probability of a potential target being influenced by a communication is a function of the probability of being influenced given that one receives the communication and the probability of being influenced when one does not receive it as follows:

$$P_I = P_R P_{I/R} + P_{R'} P_{I/R'}. \quad (4)$$

The probability of being influenced assuming that one receives the communication can be rewritten as the probability of yielding. Yielding in turn depends on the probability of yielding when one successfully counterargues the communication ($P_{Y/CA}$) as well as the probability of yielding when one fails to refute it ($P_{Y/CA'}$).

Then, Eq. (4) can be restated as follows:

$$P_I = P_R(P_{CA}P_{Y/CA} + P_{CA'}P_{Y/CA'}) + P_{R'}P_{I/R'}. \quad (5)$$

In this equation, the parenthetical term is a function of the strength of the arguments in the message and partially determines the impact of a given communication. Furthermore, it can account for the possibility that people may yield to or resist the message recommendation for reasons other than the arguments the communication contains. Thus, Wyer (1974) argued that one may assume the probability of yielding given that one counterargues the message to be smaller than the probability of yielding in the absence of counterarguing ($P_{Y/CA} < P_{Y/CA'}$). However, other factors may influence these components. For example, recipients may be inclined to agreeing or disagreeing with the message recommendation as a result of the affect they experience for reasons unrelated to the persuasive message (see, e.g., Albarracín & Wyer, 2001). In those situations, they may yield to the persuasive appeal both when they counterargue the message arguments and when they do not ($P_{Y/CA} = P_{Y/CA'}$).

One deficiency of McGuire (1968a) and Wyer's (1974) stage model is its inability to explain the construction and integration of judgments. For example, message recipients may yield to or refute the probabilistic or evaluative implications of a persuasive message. The implications of these processes are then likely to be integrated into more general attitudes. However, their stage model does not distinguish probabilistic and evaluative judgments, nor does it explicate how information from multiple arguments might be integrated. The model we developed in this chapter accomplishes this objective to a greater extent.

B. INTERPRETATION OF INFORMATION IN PERSUASION

For a persuasive communication to have an influence, its recipients must interpret the arguments in the message as well as other information that is available at the time. Eagly's (1974) research manipulating message comprehensibility provided conclusive evidence that the reception of the message content results in not only retention of this content but also attitudes in line with the message. For example, Chaiken and Eagly (1976) found that difficult-to-understand messages were better received when presented in print than when presented on video or audiotapes. (Reception was measured with recall of the message arguments and open-ended answers about these arguments.) Furthermore, attitude change followed the same pattern observed with the reception measures and correlated with these reception measures when the difficult messages were presented in audio or videotaped modality. However, the correlation between reception and attitudes was low when the difficult message was presented in writing. Consequently, the authors concluded that low correlations between the retention of the message content

and attitude change (see, e.g., Greenwald, 1968) may result from ceiling effects like the ones encountered when the media used to present the message facilitates comprehension. Alternatively, message recipients may counterargue communications to a greater extent when presented in writing than when presented in video or audiotape.

On the one hand, there is considerable evidence that changes in ability and motivation to think about the message influence interpretation. We refer the reader to the excellent review of reception issues that Eagly and Chaiken (1993; for examples of empirical research, see Wood & Eagly, 1981) provided. For example, Osterhouse and Brock (1970) asked participants in distracting conditions to monitor a series of lights that flashed 10, 20, or 30 times a minute, whereas participants in nondistracting conditions did not perform this task. The results from a measure of recognition of the message arguments appear in Fig. 10 and show that increases in distraction led to a steady decrease in the retention of the message arguments.

On the other hand, there is virtually no information on the effects of ability and motivation on the interpretation of factors other than the message arguments. Is the interpretation of one's affective reactions disrupted by decreases in ability and motivation? If so, is such disruption weaker than the disruption of the message arguments, as we discussed in reference to Postulate 2? One could argue that Petty and Cacioppo (1986a, 1986b) probably had this question in mind when they proposed the elaboration likelihood model. According to them, recipients of a persuasive message who have the ability and motivation to think about the information the message presents generally rely on the strength of this information. Thus, recipients of strong arguments are likely to form attitudes in line with the message advocacy to a greater extent than recipients of weak arguments. However, when people have neither the ability nor the motivation to think about the information

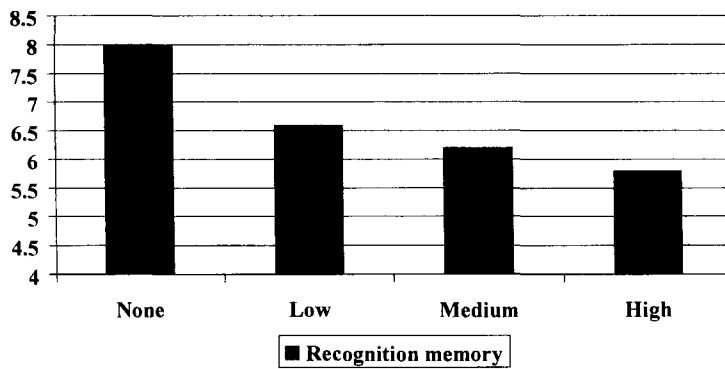


Fig. 10. Influence of distraction on interpretation of message arguments: Osterhouse and Brock (1970).

the message presents, they are more likely to base their judgments on information that is easier to process. For example, they may be influenced by claims that the source is or is not an expert or by the affect they experience for reasons unrelated to the message (e.g., background music). Whereas in the first case, attitudes are based on thoughts about the issues being considered, low-ability-and-motivation conditions induce attitude change via “peripheral” mechanisms, such as thoughts about relatively irrelevant material (e.g., extraneous affect) or the application of a heuristic (see Petty & Wegener, 1999). However, Petty and Cacioppo (1986a, 1986b; see Petty & Wegener, 1999) never specified the cognitive activities that would account for the use of different types of elements under different circumstances. Our analysis of the role of the interpretation of information in persuasion is an attempt to fill this gap.

C. THE ROLE OF PRIOR KNOWLEDGE IN PERSUASION

A persuasive message does not impact a *tabula rasa* (see, e.g., Johnson, Lin, Symons, Campbell, & Ekstein, 1995; Wood, Rhodes, & Biek, 1995). Instead, message recipients bring prior beliefs and attitudes that are relevant to virtually any communication they encounter. It is therefore not surprising that past research has frequently discussed the role of prior knowledge structures in the processing of a persuasive message. There are, however, different perspectives on the relative use of information from prior knowledge versus material they receive at that time. For example, Greenwald (1968) suggested that message recipients bring up material from prior knowledge and that this material from prior knowledge has more impact than the material contained in the message. However, our conceptualization and more recent data imply that the information people receive may be more influential than information from prior knowledge (see also Eagly & Chaiken, 1993; Mackie & Asuncion, 1990; McGuire, 1968a; Ratneshwar & Chaiken, 1991).

1. The Cognitive Response Perspective

Greenwald (1968) postulated that people who are exposed to a persuasive message attempt to relate the information contained in the message to their existing knowledge about the topic. In doing so, they are more likely to rehearse prior knowledge relative to the arguments contained in the message. To this extent, message recipients may consider much cognitive material that is not part of the communication in any way and base their attitudes on this material. When the communication elicits cognitive responses that are in line with the message advocacy, recipients are likely to agree with it. In contrast, refutations of the message arguments and support for alternate positions not mentioned in the message should decrease communication impact or generate a boomerang effect.

To test their ideas, Greenwald and Cullen (unpublished; reported in Greenwald, 1968) conducted research in which participants received a message that discussed different opinions about specialized versus broad education. After reading the persuasive message, all participants were instructed to list their thoughts "pertinent to forming and expressing an opinion on the issue of general versus specialized education." Then, participants reported their attitudes and were instructed to go back to the thoughts they had listed and to indicate whether each thought was favorable to specialized or general education and how favorable each thought was on a scale from 1 to 3. In addition, thoughts were classified by either the participants or the researchers as (a) externally generated (message-based), (b) recipient-modified (message-based), or (c) recipient-generated (knowledge-based). A summary of these data appears in Table II and indicates that 44 and 56% of the thoughts participants listed were classified as message- and knowledge-based, respectively. Moreover, knowledge-based thoughts were more highly correlated with attitudes than either category of message-based thoughts. (This advantage of knowledge-based thoughts, however, was present in control conditions as well.) In any event, Greenwald (1968) concluded that thoughts about contents suggested by prior knowledge had greater influence than thoughts about issues discussed in the message.

2. Acceptance, Yielding, and Impact

Fishbein and Ajzen (1981) conceptualized the role of prior knowledge in persuasion with processes similar to the ones identified by McGuire (1968a) and Wyer (1972). According to Fishbein and Ajzen (1981), people may believe in the arguments presented in the message (i.e., "acceptance"). "Yielding" occurs when these primary beliefs are novel or different in strength, relative to the ones recipients held prior to coming into contact with the message. In addition, a persuasive message may have indirect, "impact" effects on other beliefs that were not explicitly mentioned in the message. Both yielding and impact can result in behavioral change.

To examine the importance of acceptance, yielding, and impact, Fishbein, Ajzen, and McArdle (1980) developed messages to persuade alcoholics to participate in a rehabilitation program. The two messages of concern for this chapter advocated signing up for the program and described the consequences of this behavior. The arguments contained in the two messages were the same. One of them, however, was framed positively and concerned the reduction in negative outcomes and increase in positive outcomes that would follow enrollment. The other one was framed negatively and argued that not signing up for the program would lead to an increase in negative consequences and a decrease in positive ones.

The two messages used in the study allowed for an examination of acceptance, yielding, and impact. Acceptance was measured by measuring beliefs in the

arguments of the persuasive message after message exposure. Yielding was represented by the difference between beliefs in the outcomes the message described across experimental and control conditions. Impact was represented as the difference between beliefs in outcomes not described in the message across experimental and control conditions. For example, a belief to measure acceptance and yielding was that not signing up for the program would lead to a “poorer relationship with family and employer.” The impact counterpart stated that signing up for the program would facilitate a “better relationship with family and employer.”

The data from Fishbein, Ajzen, and McArdle’s (1980) study suggested that both messages produced acceptance. That is, participants reported strong beliefs in the arguments presented in the communication regardless of message framing. The messages also appeared to produce yielding because participants’ beliefs in the message arguments were stronger after listening to the message than before. Furthermore, participants who developed beliefs that not signing up for the program would hinder positive outcomes and facilitate negative ones also developed beliefs that signing up would result in positive consequences and prevent negative ones.

Finally, in Fishbein, Ajzen, and McArdle’s experiment, beliefs in both mentioned and unmentioned outcomes correlated highly with attitudes toward signing up for the program. This finding was interpreted by the authors as evidence that message recipients spontaneously generated cognitions that the message did not present. It is important to remember, however, that the measures of yielding and impact included the same outcomes with either a positive or a negative frame. In fact, the two measures correlated $r = -.83$ ($p < .001$; see McArdle, 1973). In our view, the nature of the measures and the high correlation between them introduces ambiguity in the conclusions. That is, it is difficult to assume that the measures of yielding and impact were distinct or, consequently, that exposure to the persuasive message produced as strong an impact as it appears.

3. Prior Knowledge in the Proposed Model

The model in Fig. 1 suggests that recipients of a persuasive communication must retrieve prior knowledge to encode and validate the information they receive. To this extent, the information one receives guides the retrieval of prior knowledge and is therefore likely to be critical in persuasion. In fact, Albarracín and Wyer (2001) found that recipients of a persuasive message base their attitudes to a greater extent on their beliefs and evaluations of the content of the message than on their beliefs and evaluations of prior knowledge (see Table II). Similarly, Petty and Cacioppo (1986) have been interested in examining both the influence of the information people receive as well as the influence of existing knowledge on the evaluation of a persuasive communication. However, other researchers, such as Greenwald (1968), concluded that prior knowledge is more influential than the reception of the message content (see Table II).

One reason for the potential discrepancy in the findings summarized in Table II concerns the procedures used to measure responses to a persuasive communication. Thus, Greenwald (1968) employed a thought-listing methodology that probably classified global expressions of attitudes as recipient-generated (knowledge-based) thoughts. If recipient-generated thoughts did include general expressions of attitudes, correlations between recipient-generated thoughts and attitudes could have been inflated artificially. In contrast, Albarracín and Wyer (2001) used scale-based measures of outcome beliefs and evaluations. These measures allowed them to distinguish the content of each type of cognition more precisely. Given the methodological differences across the two reports, Albarracín, Kumkale, and McNatt (2000) conducted a study to determine if the use of thought-listings versus scale-based measures could account for the different findings in Table II.

The study Albarracín, Kumkale, and McNatt (2000) conducted was very simple. Eighty-eight undergraduate students read a strong or weak message advocating the institution of comprehensive exams at their university. They then reported their intentions and attitudes toward supporting the policy in an upcoming university referendum. Immediately after reporting their attitudes, participants were asked to list their thoughts and to then go back and categorize each thought as positive, negative, or neutral relative to the message advocacy. The researchers coded the thoughts participants listed according to a schema that allowed them to distinguish detailed thoughts based on the message from thoughts about events suggested by prior knowledge from global expressions of attitudes. Specifically, thoughts were classified according to whether a given thought (a) either affirmed or denied the plausibility of a message argument (*message-based thoughts*; e.g., “It is true that graduates may have better salaries” versus “Who cares about the student who now owns a restaurant? Maybe UF graduates have higher aspirations!”) or (b) was *knowledge-based*. Knowledge-based thoughts in turn included (a) references to outcomes or attributes of the policy not mentioned in the message (e.g., “These exams would cause students a lot of stress”), (b) expressions of attitudes toward the policy (e.g., “I do not like these exams”), and (c) expressions of attitudes toward the message (e.g., “I liked the newsletter”). The interrater agreement was 92%.

In addition to listing their thoughts, participants completed measures of outcome beliefs and evaluations. That is, they reviewed the outcomes described in the message as well as the knowledge-based outcomes identified by Albarracín and Wyer (2001). To measure beliefs, participants indicated the likelihood that each outcome would occur if the policy were instituted on a scale from 0 (*unlikely*) to 10 (*likely*). To measure evaluations, they reported how desirable each outcome would be on a scale from -5 (*dislikable*) to $+5$ (*likable*). Measures of outcome-related cognitions were computed by multiplying each outcome belief by the corresponding evaluation and obtaining the sum of all products corresponding to a given category of cognitions [i.e., message-related vs knowledge-related; see Eq. (1)].

The data from Albarracín, Kumkale, and McNatt's (2000) study appear in Table II. As in Greenwald's (1968) work, participants in this research were more likely to list thoughts that did not specifically discuss the content of the persuasive message (i.e., knowledge-based; 56% vs 66% in each study). However, the majority of these knowledge-based thoughts were expressions of attitudes rather than a reflection of knowledge about attributes or outcomes of the policy (40% vs 26% respectively).

An examination of the correlations from Albarracín, Kumkale, and McNatt (see Table II) indicates that in this study (see also Albarracín & Wyer, 2001; Fishbein, Ajzen, & McArdle, 1980), message-based thoughts were highly correlated with attitudes. In contrast, among knowledge-based thoughts, only global expressions of attitudes were highly correlated with the attitudes participants reported at the beginning of the questionnaire.⁸ These findings suggest that high correlations between attitudes and thought-listing measures of content from prior knowledge may be the result of low discriminant validity in the way these thoughts were classified. Message-based thoughts, however, appear to be influential across different measures.

D. IDENTIFICATION AND SELECTION OF INFORMATION IN PERSUASION

Consider now what happens to the information once it is interpreted or retrieved from prior knowledge. How is it identified and selected for further use? One would suspect that decades of persuasion research would have facilitated our understanding of these basic processes in persuasion. However, these processes have not been postulated before, let alone investigated empirically.

⁸Albarracín et al. (2000) also tested whether thought-listing or scale-based measures were most predictive of attitudes toward voting in favor of the policy. Thus, they regressed attitudes on scale-based measures of beliefs and evaluations as well as the three thought-listing indexes in Table 4. When all predictors were considered simultaneously, message-based and knowledge-based outcome beliefs and evaluations ($\beta = .44$ vs $.25$, $p < .001$ and $.01$, respectively) as well as thought-listing measures of attitudes towards the message ($\beta = .28$, $p < .01$) all predicted attitudes toward the behavior. However, thought-listing measures of message-based cognitions and of attitudes toward the policy did not contribute to the prediction over and above the other measures (β s = $-.01$ and $.10$, respectively, *ns* in each case). These results strongly suggest that thought-listing measures are an adequate measure of global attitudes (see also Miller & Baron, 1973; Miller & Colman, 1981), but that scale-based measures are more effective indexes of participants' reactions to the content of the persuasive message. Another indication of the superiority of scale-based measures in Albarracín et al. (2000) study can be obtained from data on interpretation and comprehension. As expected, scale-based measures of message-based outcome cognitions correlated $r = .23$ and $.21$ ($p < .05$ in each case) with interpretation and comprehension, respectively. However, thoughts about the outcomes and attributes mentioned in the message were not associated with either interpretation or comprehension ($r = .07$ and $-.03$, *ns* in each case).

Probably the most systematic analysis of selection of information in persuasion was conducted in the context of the heuristic-systematic model (see Chaiken, 1980; Chen & Chaiken, 1999). This conceptualization explicitly assumes a sequence in which message recipients first engage in nonelaborative (“heuristic”) processing. Thus, Chaiken (1980) maintained that people are cognitive misers who first attempt to apply a heuristic. Consequently, they process the information contained in the arguments only to the extent that a heuristic is not available or is unable to provide as confident a judgment as they desire at the time. However, when recipients have a heuristic available and their level of desired confidence can be easily achieved by the application of the heuristic, they are unlikely to exert the effort that is required to scrutinize the merits of the arguments in the communication. In this sense, the model implies that people are first influenced by information that automatically triggers an influence or that is “easy” to process. Chaiken (1980) probably never implied that message recipients who are distracted would assess the difficulty of processing different kinds of information and then decide to apply a heuristic instead of analyzing the information contained in the arguments. However, the actual mechanisms that are at stake are not entirely clear from her model.

Given the absence of prior research on this topic, our processing model may have considerable advantages. Thus, it assumes that recipients of a persuasive message must first identify or direct attention to potential pieces of information and then determine if these elements are relevant bases for decisions. Like with interpretation, the mechanisms of information identification and selection imply that decreases in ability and motivation are likely to reduce the influence of the arguments contained in the message in a monotonic fashion. However, the influence of ability and motivation on the use of other information, such as one’s affective reactions, is presumably curvilinear (see Albarracín & Kumkale, 2000). That is, decreases in ability and motivation may increase the influence of a less relevant cue to the extent that they can confuse recipients concerning the relevance of the cue. However, more intense decreases in ability and motivation may prevent identification of the irrelevant information and disrupt its influence (see also, Gilbert & Hixon, 1991).

Finally, we investigated the mechanisms of identification and selection of information by considering the influence of affect in persuasion. Thus, like Petty and Wegener (1998), we argue that affect can have different types of influences depending on recipients’ ability and motivation at the time they receive the message. Specifically, Petty and Wegener (1998) maintained that when ability and motivation are high and unless recipients correct for the influence, affect can influence attitudes by biasing the thoughts about the persuasive message (see Petty, Schumann, Richman, & Strathman, 1993; Wegener, Petty, & Klein, 1994). When ability and motivation are moderate, affect can influence the extent of information processing. That is, negative affect is likely to increase elaborative processing and positive affect can increase peripheral mechanisms (but see also, Wegener, Petty,

& Smith, 1995). Finally, when ability and motivation are low, affect can be used as informational input to a simple inference. In contrast, our model assumes that affect is likely to inform attitudes when ability and motivation are moderate instead of low and makes no prediction about motivational influences of affect.

E. BEHAVIOR-RELATED JUDGMENTS AND BEHAVIOR

Our conceptualization of elaborative information processing is based in part on the theory of reasoned action proposed by Fishbein and Ajzen (1975). Although this theory makes no explicit claims concerning the nature of the cognitive processes that underlie attitude formation (see Fishbein & Middlestadt, 1995), the general model is useful in conceptualizing the sequence of cognitive steps that underlie the impact of a persuasive communication on behavior when persons have the motivation and ability to evaluate its implications. At the same time, our findings suggest that when persons are unable or unwilling to devote cognitive resources necessary to extensively process the information they receive, they may base their attitudes on information that is not taken into account by Fishbein and Ajzen's (1975) theory of reasoned action.

It is important to note that although Fishbein and Ajzen's conceptualization had its origins in learning theory (Dulany, 1968), Fishbein has generally stated that they did not propose it as a process model and they do not themselves regard it as a description of the cognitive processes that underlie the influence of beliefs and evaluations on attitudes (see e.g., Fishbein & Middlestadt, 1995). More recently, however, Ajzen and Fishbein (2001) maintained that their theory is a reflection of processes they conceptualized as automatic. That is, it captures learning of the association between a given object or behavior and a given set of attributes or outcomes. Rather than being reasoned, these associations are formed incidentally and may pose no cognitive or motivational demands.

Although beliefs and evaluations may well be formed by association as Ajzen and Fishbein (2001) imply, the use of beliefs as basis for attitudes may be more likely to occur when ability and motivation are low (Albarracín & Wyer, 2001; for similar hypotheses, see Petty & Wegener, 1991). Similarly, our model reflects processes that depend on ability and motivation, such as interpretation, selection, and use of information in judgments. These processes may be unintentional and occur outside of awareness, but they nevertheless require cognitive capacity and motivation (for a conceptualization of properties of automaticity, see Bargh, 1994, 1997). Therefore, they are presumably less automatic than associative learning of the type Ajzen and Fishbein (2001) proposed.

Another difference of the theory of reasoned action and the theory of planned behavior with our model is that theirs are primarily models of behavioral prediction (see Ajzen, 2001), whereas ours concerns persuasion and attitude change. With

their broader scope (see Ajzen, 1996), Fishbein and Ajzen (1975) have considered variables that are excluded from our model, namely norms and perceived behavioral control (for a recent meta-analysis of these models, see Albarracín, Johnson, Fishbein, & Muellerleile, 2001). In many cases, these variables have little influence or may be adequately conceptualized as determinants of attitudes (see Miniard & Cohen, 1981). Other times, however, a more elaborate understanding of persuasion may be justified to explicate the role of norms and perceived behavioral control in attitude change.

F. CONFLICT RESOLUTION

Theories of cognitive consistency have long argued that individuals strive for belief harmony and attempt to resolve subjective conflict (Heider, 1946; Rosenberg, 1960, 1968). Without a doubt, Abelson (1959, 1963, 1968) provided the most elaborate theorizing on these processes. According to him, individuals whose beliefs are under attack may simply reject the new information. They may then attempt to bolster their own position by retrieving supportive prior knowledge. If bolstering fails, people may practice denial again, but possibly in a more effortful fashion on the basis of cognitions they retrieve from prior knowledge.

Thus, theories of cognitive consistency argue that conflict motivates people to restore balance (see, e.g., Festinger, 1957; Heider, 1946). Abelson (1959) also suggested specific ways in which people resolve conflict. In this context, what our model does is to provide a framework for distinguishing the motivational and informational outcomes of conflict. Thus, when recipients of a persuasive message detect conflict at the time they process the message, they may integrate information into attitudes in a more careful way. However, when they detect conflict after the message has been received, they may resolve the informational inconsistency but are unable to alter the reception of the information. To our knowledge, none of the other models make this intuitive prediction.

G. MAINTENANCE AND DECAY OF CHANGE

The elaboration likelihood model assumes that attitudes that are influenced by a thoughtful consideration of information can be more persistent, resistant, or predictive of behavior than attitudes informed by simpler decisions on the basis of one's past behavior or the number of arguments a communication contains (Krosnick & Petty, 1995; Petty, Haugtvedt, & Smith, 1995). Our research suggests that the effect of a communication lasts longer when the communication has an impact on a stage that is closer to the behavior (e.g., self-perception, see Fig. 4). That is, when recipients base their attitudes on the content of the persuasive message, decay in

memory for this content and one's reactions to it will lead to a corresponding decay in attitude change. However, when one's attitudes are not mediated by beliefs and evaluations, change decay depends on memories of one's behavior or affective reactions about the behavior.

On the surface, our data may be in conflict with the findings from Johnson and Watkins (1971) that greater repetition of the arguments of a persuasive message leads to more persistence of attitude change. There are two potential explanations for this apparent conflict. First, the presentation of the message in their research could have increased general perceptions of message validity and these perceptions could have influenced attitudes without specific consideration of the attributes of the issue at hand. To that extent, the effects of repetition do not necessarily imply that greater elaboration of the message content produced greater maintenance of attitude change (Petty, Haugtvedt, & Smith, 1995). In fact, Haugtvedt, Schumann, Schneier, and Warren (1994) showed that the effects of repetition were similar for different types of information. Thus, participants read either the same message with varying source cues or different arguments with the same peripheral cue. Presumably, varying the arguments of a persuasive message should facilitate processing via the "central route," whereas varying the peripheral cue in the message should increase peripheral types of processes (see Petty & Wegener, 1999). Haugtvedt and his colleagues concluded that providing participants with multiple retrieval cues resulted in greater persistence of attitude change than single exposure to the material regardless of whether arguments or sources were repeated.

Unfortunately, a test of Postulate 7 was not possible with the data collected by Haugtvedt, Schumann, Schneier, and Warren (1994). The reason is that source cues like the ones they manipulated are likely to influence beliefs and evaluations. For example, an expert source may increase the impact of the message on beliefs and evaluations of the message content relative to a noncredible source (for a meta-analysis of the sleeper effect, see Kumkale, Albarracín, & Seignourel, 2001). Thus, source factors would only rarely produce direct effects on attitudes. In contrast, the findings by Albarracín and McNatt (2001) provided a strong test of our assumptions. They showed that behavior feedback generated more lasting attitude change than presenting a verbal persuasive message. Furthermore, the superior maintenance after behavior feedback was associated with direct effects of the feedback on attitudes.

It is important to note that Postulate 7 is particularly critical if people's attitudes predict behavior regardless of whether these attitudes are formed on the basis of message arguments or their past behavior. However, Petty and Cacioppo (1986a, 1986b) argued that central processing may strengthen the attitude-behavior relation relative to peripheral processing. In those conditions, attitudes based on one's past behavior may last longer but be less predictive of behavior than attitudes based on the arguments contained in the message.

The hypothesis that central processing increases the attitude–behavior relation has received little attention to date. This neglect stems in part from a failure of communication research to measure overt behavior. In fact, Eagly and Chaiken (1993) mentioned that the only study in support of Petty and Cacioppo’s hypothesis was conducted by Cacioppo, Petty, Kao, and Rodriguez (1986). In this study, participants’ voting preferences correlated with their voting behavior to a greater extent when participants were high on need for cognition than when they were low on this trait. However, it is not possible to determine if need for cognition reflected central processing or, instead, attitude properties that are traditionally associated with greater predictability of attitudes (e.g., confidence; see Fazio & Zanna, 1978a, 1978b; for an excellent analysis of factors that influence the attitude–behavior relation, see Ajzen & Sexton, 1999).

In contrast to the evidence reviewed by Eagly and Chaiken (1993), this chapter considered a number of data sets that reported correlations involving attitudes and behavior. These attitudes were formed on the basis of different elements (i.e., argument strength, affect, and past behavior) and under different conditions of ability and motivation to think about the information. A summary of these data appears in Table IX and includes correlations among attitudes, intentions, and behavior and an indication of the basis for attitudes in each condition.

A visual inspection of the 21 samples in Table IX suggests that the attitude–behavior relation did not vary as a function of ability and motivation to think about the information. Nor was this relation contingent on whether attitudes were based on the message arguments or on other information. Furthermore, a meta-analysis of these data is presented in Table X and led to the same conclusion. That is, the correlations involving attitudes, intentions, and behavior were equal in strength independent of the information on which they were based or of participants’ ability and motivation to think about the information at the time. This finding may contradict previous assertions by Petty and Cacioppo (1986a, 1986b). They imply that inducing a favorable attitude is likely to be effective even when these attitudes are not based on an elaborate consideration of the message arguments.

Finally, our research did not explore the resistance of attitudes based on a persuasive message or based on information that has direct influences on these attitudes (Krosnick & Petty, 1995). It is possible that attitudes based on one’s past behavior will be less resistant to subsequent, counterattitudinal attacks. Or, instead, attitude resistance may depend on the quality of the message people received at an earlier time. Thus, when people form their attitudes on the basis of weak arguments, their cognitive defenses are likely to be rather weak. These individuals may be better off justifying their prior behaviors and using those justifications as a basis for their defense. In contrast, strong arguments may confer a more solid basis for future defenses than weak arguments and past behavior alike.

TABLE IX
THE ATTITUDE-BEHAVIOR RELATION ACROSS LEVELS OF ABILITY AND MOTIVATION
AND BASES FOR ATTITUDES

Basis for attitudes		<i>N</i>	<i>r_{B-I}</i>	<i>r_{B-A}</i>	<i>r_{I-A}</i>
Albarracín and Wyer (2000)					
Experiment 2					
High-ability (low-distraction)	Past behavior	48	.83	.77	.93
Low-ability (high-distraction)	Past behavior	48	.65	.64	.78
Experiment 3					
High-ability (low-distraction)	Past behavior	32	.67	.40	.84
Low-ability (high-distraction)	None detected	32	.66	.62	.86
Experiment 4					
High-ability (low-distraction)	Past behavior	32	.66	.63	.88
Low-ability (high-distraction)	Past behavior	32	.67	.66	.88
Albarracín and Wyer (2001)					
Experiment 1					
High-ability (low-distraction)	Argument strength	10	.78	.68	.79
Low-ability (high-distraction)	Affect	43	.70	.61	.64
Experiment 3					
High-ability (low-distraction)	Argument strength	51	.71	.60	.66
Low-ability (high-distraction)	Argument strength, affect	53	.71	.61	.78
Albarracín and Kumkale (2000)					
Experiment 1					
High-ability/high-motivation	Argument strength, affect	41	.62	.65	.73
High-ability/low-motivation	Argument strength, affect	41	.60	.60	.77
Low-ability/high-motivation	Argument strength, affect	44	.75	.65	.67
Low-ability/low-motivation	None detected	47	.75	.59	.66
Experiment 2					
High-ability/high-motivation	None detected	41	.54	.31	.70
High-ability/low-motivation	Affect	39	.57	.20	.49
Low-ability/high-motivation	Affect	43	.68	.63	.76
Low-ability/low-motivation	None detected	41	.55	.39	.62
Albarracín and McNatt (2001)					
Behavior feedback					
Cognitions measured at Time 1	Past behavior	55	.39	.48	.83
Cognitions measured at Time 2	Past behavior	51	.55	.51	.80
Cognitions measured at Time 3	Past behavior	48	.58	.55	.85
Persuasive message					
Cognitions measured at Time 1	Argument strength	51	.80	.69	.89
Cognitions measured at Time 2	Argument strength	46	.77	.70	.92
Cognitions measured at Time 3	Argument strength	46	.78	.71	.95
Concept Salience					
Cognitions measured at Time 1	None detected	59	.43	.50	.88
Cognitions measured at Time 2	None detected	49	.63	.66	.76
Cognitions measured at Time 3	None detected	48	.62	.56	.82

Note. A = Attitude; B = Behavior; I = Intention.

TABLE X
META-ANALYSIS OF THE ATTITUDE-BEHAVIOR RELATION

	Message arguments			Affect or past behavior		
	r_+	<i>LL</i>	<i>UL</i>	r_+	<i>LL</i>	<i>UL</i>
Effects of ability						
High-ability	.63	.53	.72	.58	.49	.66
Low-ability	.65	.54	.74	.61	.53	.68
Effects of motivation						
High-motivation	.65	.50	.76	.64	.53	.74
Low-motivation	.64	.55	.71	.58	.54	.63

Note. r_+ = weighted mean correlations (see Hedges & Olkin, 1985); *LL* = lower limit of 95% confidence interval; *UL* = upper limit of 95% confidence interval.

VII. Conclusions

No previous model of persuasion (see e.g., Chaiken, 1980; Kruglanski, Thompson, & Spiegel, 1999; Petty & Cacioppo, 1986a, 1986b) has articulated how people determine what pieces of information they use in judgment. In contrast, the proposed model argues that all information available at the time (e.g., arguments, extraneous affect, or past behavior) has an equal chance of being identified. After message recipients identify different pieces of information, they assess the extent to which the information is relevant to the judgment they are about to make. Because of these two stages of judgment, decreases in ability and motivation are likely to have a negative, linear effect on the influence of argument strength. However, the influence of ability and motivation on the use of other, less relevant information is likely to be curvilinear.

McGuire (1968a) and Wyer (1974) provided a conceptualization of how recipients of a message engage in a sequence of cognitive activities. This sequence includes being presented with the content of the message, paying attention, and comprehending its arguments and then yielding to its recommendations. According to them, the success of a persuasive message depends on its ability to elicit each of these cognitive activities. In many ways, the model proposed in this chapter extends McGuire (1968a) and Wyer's (1974) conceptualization. For example, it assumes that the information one receives is critical for the outcome of a persuasive message and, therefore, that the message content is critical.

In other ways, however, the model we discussed in this chapter departs from McGuire and Wyer's formulation. For example, it incorporates other sources of information that more contemporary models of persuasion have identified as critical (see Chaiken, 1980; Petty & Cacioppo, 1986a, 1986b) and proposes conditions in which different types of information can have an influence. It also describes

the contingencies of various judgments (e.g., outcome beliefs and evaluations) and how recipients can integrate these and other cognitions into their attitudes. In doing so, our model exceeds McGuire and Wyer's potential by allowing researchers to conceptualize the influence of multiple pieces of information at a time.

Of course our model bears some resemblance to the elaboration-likelihood model and the heuristic-systematic model. Thus, like these dual-process models, it deals with information coming from the message arguments as well as with competing and often less relevant information, such as the affect one experiences for reasons unrelated to the message. Our model also makes predictions that are in line with (and extend) previous findings from these paradigms that conflicting information can exert motivational effects on the processing of the message. However, the resemblance is in many ways apparent, as several of the predictions in our model are in fact different from the predictions of these dual-processing models. For example, whereas the elaboration likelihood model predicts that attitudes based on a careful analysis of the arguments in a message may last longer than attitudes than are based on peripheral elements, our model assumes that direct impact on attitudes should lead to greater resistance than the analysis of persuasive arguments. Furthermore, whereas the elaboration-likelihood model and the heuristic-systematic model both assume that decreases in motivation and ability should be accompanied by increased influence of irrelevant information, our model assumes that these restrictions will ultimately impair identification and use of any information whatsoever.

As any new formulation, the one we proposed in this chapter should be seen as a conceptual device that may allow researchers to ask new questions in a field that has been somewhat subdued for some time. It is likely an imperfect reflection of reality, but may still illuminate phenomena that researchers may not otherwise investigate.

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