

## The Role of Narratives in Consumer Information Processing

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Participants estimated the attractiveness of vacations described in 2 travel brochures. The information about 1 vacation was conveyed in a narrative that described the sequence of events that would occur. In contrast, information about the other vacation was conveyed in an ostensibly unorganized list. Vacations were generally evaluated more favorably when they were described in a narrative than when their features were simply listed. Moreover, this difference increased when (a) negative features of the vacations were mentioned, (b) pictures accompanied the text information, or (c) recipients were encouraged to imagine themselves having the experiences described. Although narrative forms of information elicited more extreme affective reactions than list forms, this did not account for the difference in their effectiveness. Rather, the advantage of narratives was attributed to (a) their structural similarity to information acquired through daily life experiences and (b) the use of a holistic—as opposed to a piecemeal—strategy for computing judgments.

Much of the social information we acquire in daily life is transmitted to us in the form of a narrative. That is, it is conveyed in a thematically and temporally related sequence. The representation of this information in memory, and the way it is used to make judgments and decisions, have been the subject of research and theorizing not only in cognitive psychology (Graesser, 1981; Rubin, 1986; Schank & Abelson, 1977, 1995) but also in social cognition (Wyer, 1995), developmental psychology (Miller, 1994; Nelson, 1986), and personality (McAdams, 1988). The importance of these concerns is graphically exemplified by Schank and Abelson's (1995) claim that virtually all of the important social knowledge that people acquire and retain in memory consists of "stories" that they construct from their personal and social

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experiences. These stories provide the basis for (a) comprehending new experiences; (b) making judgments and decisions about the persons, objects, and events to which the stories refer; and (c) developing general attitudes and beliefs concerning these referents. Schank and Abelson's (1995) assertion that all important social knowledge is in narrative form is probably overzealous (Brewer, 1995; Rubin, 1995). Nevertheless, the fact that much of the social information we acquire is represented in memory in this form seems uncontroversial.<sup>1</sup>

This article explores the role of narratives in consumer judgment and decision making. Many theories of consumer judgment implicitly assume that, when people evaluate products, they examine the implications of each piece of information separately and then sum or average these implications to form an overall judgment (Anderson, 1981; Fishbein & Ajzen, 1975). However, purchasing decisions do not always involve a piecemeal computational procedure. Rather, potential buyers may often try to imagine the sequence of events that surround the purchase and use of a product in various situations and the consequences of this use. For example, consumers who are in the market for a camera may imagine themselves visiting several stores, purchasing the camera, reading the manual, experimenting with the camera's special features, taking it on a vacation, and photographing a beautiful sunset. Specific features of the camera (e.g., its size and weight, its price, the types of lenses available, etc.) are likely to come into play in the course of this imagined scenario. For instance, consumers might picture the ease with which it can be carried while they are hiking in the mountains, or they might consider how they can save enough money from their monthly salary to pay for the equipment. Be that as it may, the ultimate decision to make a purchase may be based on the implications of the imagined sequence of events as a whole rather than a mere assessment of the product's individual features.

The way in which product information is presented can either facilitate or interfere with this process. For example, an advertisement for a camera can convey a story that describes how specific features of the camera become useful at different stages of a person's vacation. Therefore, it predisposes recipients to construe the implications of the product information in the context of an imagined sequence of experiences and in a holistic manner. In contrast, the information could be presented as a list of useful features, accompanied by an assertion that the camera is a good one to take on vacation. This presentation format is likely to result in the evaluation of each piece of information independently. The separate implications of these pieces might then be summed or averaged to compute a judgment. Thus, the

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<sup>1</sup>Narrative representations include all knowledge structures that consist of a sequence of thematically and temporally related events. Subsumed under this heading are scripts (routinized series of events such as those involved in going to a restaurant), stories (anecdotes that have a beginning, a plot, and an end), personal histories (e.g., an account of a person's experiences from high school to college), and other information that is thematically and temporally related.

information conveyed in this format might interfere with the construction of a narrative-based representation.

To determine the impact of information that is presented in these different ways, we chose a domain in which narrative representations were of clear relevance. Specifically, we asked participants to read travel brochures describing two different vacations. In one brochure, the places to be visited were described in the form of a narrative that conveyed the sequence of experiences that vacationers were likely to have on each day of the trip. In the second, the features of each place to be visited were conveyed in a list, with no indication of the sequence of activities that would occur. After reading both brochures, participants made separate judgments of how much they wanted to go on each vacation, followed by a comparative judgment indicating which vacation they preferred.

In the following section, we discuss in more detail the mental representations that are formed from information that is conveyed in different formats and how these representations are used to make judgments. In doing so, we consider several factors that could potentially influence the impact of information presented in these formats. These factors include (a) undesirable aspects of the places to be visited, (b) the presence and salience of pictures depicting the places or situations to be visited, (c) the tendency to form mental images of these places or situations, and (d) the affective reactions that occur in the course of thinking about the information presented. We then report three experiments that evaluate the implications of our analysis.

## THEORETICAL BACKGROUND

The conceptualization proposed in this article was stimulated in part by the "story model" of decision making developed by Pennington and Hastie (1988). Although their work focused on the role of narratives in making juridical decisions, it has potential implications for consumer judgment as well. In Pennington and Hastie's research, participants in the role of jurors received a transcript of a court trial. The order of presenting prosecution and defense testimony varied over conditions. In *story-order* conditions, the evidence was conveyed in the order it became relevant in constructing a narrative about the sequence of events that surrounded the crime. For example, testimony about events that led up to the crime was conveyed first, followed by testimony about the crime itself, and finally, testimony about its aftermath. In *witness-order* conditions, the testimony was organized in terms of the individuals who provided it without any regard to the aspect of the case to which it pertained. When the prosecution and defense testimonies were presented in different orders (i.e., one was in story order and the other in witness order), participants typically favored the side whose testimony was conveyed in story order. When both sets of testimony were conveyed in the same way, participants

avored each side with about equal probability. However, they were more confident of their decisions when the testimonies were conveyed in story order than when they were not.

The greater influence of story-ordered information in Pennington and Hastie's (1988) research could result in part from the fact that so much of the knowledge people acquire in daily life consists of causally and temporally related sequences of events. Consequently, new information that is presented in a temporal sequence, which is structurally similar to their life experience, is easy to understand and seems intuitively correct (for a more general discussion of the facilitating role of structural similarity in reasoning and judgment, see Gentner & Markman, 1997; Markman & Medin, 1995). In this regard, Fiske and her colleagues (Fiske, 1982; Fiske & Pavelchak, 1986; see also Sujon, 1985) suggest that the processing of information in the course of making a judgment occurs in two steps. First, recipients try to match features of the incoming information with their prior knowledge about the category of persons or objects to which it pertains. If the information can be easily understood in terms of this knowledge, then holistic or category-based processing occurs. If it cannot be easily understood in terms of existing knowledge, then piecemeal processing occurs.

Fiske and her colleagues (Fiske, 1982; Fiske & Pavelchak, 1986) assume that the type of processing that occurs is often determined by the consistency of the descriptive implications of the information presented with those of existing knowledge representations. However, the organization of the information presented can play a role as well (Gentner & Markman, 1997; Markman & Medin, 1995). Suppose, as Schank and Abelson (1995) assert, that most of the social knowledge we acquire is represented in memory in the form of a narrative. Then, new information that conveys its temporal and thematic relatedness should be easy to comprehend in terms of this knowledge, and so a holistic processing strategy is likely to be used to construe its implications. That is, recipients may construct a narrative-based representation of the information and evaluate its implications based on the sequence of events as a whole. On the other hand, suppose the structure of the incoming information does not match that of preexisting knowledge representations. In this case, recipients may adopt a more piecemeal processing strategy. That is, they may examine the implications of each piece of information separately and then integrate these implications using computational procedures such as those proposed by Anderson (1971, 1981) or Fishbein (1963; Fishbein & Ajzen, 1975).

These possibilities have direct relevance to the issues of concern in this research. Suppose persons are asked to evaluate two vacations, one described in the form of a narrative and the other described in a list of features. The previous mentioned considerations imply that the first description will be evaluated more easily than the second and, therefore, will have relatively greater impact (Pennington & Hastie,

1988). Thus, if the information is generally favorable, the first vacation should be preferred to the second. This can be stated more formally as a hypothesis (H):

- H1: Favorable information will lead to more positive evaluations of a target when the information is conveyed in a narrative than when it is conveyed in a list.

### The Impact of Inconsistent Information

A second aspect of the conceptualization we propose concerns the impact of inconsistent information. Specifically, information that does not fit easily into a coherent narrative is less likely to have an effect on judgments because it cannot be understood in the context of the other information to which it is temporally linked. However, if the same information is contained in a list of features and its implications are evaluated independently of its context, it may have a greater impact. In support of this reasoning, Pennington and Hastie (1992) found that evidence from a credible witness that was difficult to reconcile with the remaining testimony had more impact when the testimony was presented in witness order than when it was conveyed in story order.

In this context, these considerations suggest that undesirable (inconsistent) features of a generally attractive vacation will have less impact if these features are described in a narrative than if they are contained in an unordered list. This difference could occur for at least two reasons. First, people who construct a narrative representation of the information may not include inconsistent information in this representation because it does not fit well into the overall theme of the narrative. Consequently, they do not remember this inconsistent information when they later construe the overall implications of the narrative they have formed. A second possibility is that recipients include the inconsistent information in the representations they form but interpret its implications differently than they would if they had considered it out of context, or they consider the inconsistent information to be relatively less important than the generally favorable information that accompanies it. When unfavorable information is presented in the form of a list, it typically is weighted *more* heavily than favorable information (see Birnbaum, 1974; Skowronski & Carlston, 1989; Wyer, 1973, 1974). However, this may not be the case when the information is embedded in a narrative.

It therefore seems reasonable to suppose that undesirable features of a vacation will decrease evaluations of the vacation less when these features are conveyed in a narrative than when they are conveyed in a list. If this is so, the relative preference for vacations described in narrative format over vacations described in list format should be greater when negative features are mentioned than when they are not:

- H2:** The difference between evaluations based on information conveyed in narrative format and evaluations based on information conveyed in a list will be greater when the information contains descriptions of a few undesirable features than when all of the information is favorable.

### Effect of Pictures on Information Processing

As noted previously, the greater effectiveness of information conveyed in the form of a narrative could result in part from its similarity to knowledge that is acquired through direct experience in the course of daily life. This possibility has further implications. For example, the information we obtain through direct experience is often acquired through observation and, therefore, may be represented in memory visually as well as linguistically (Kosslyn, 1980). Thus, suppose the effectiveness of narrative forms of information results from the structural similarity of these forms to the mental representations that people construct of daily life experiences and that these representations include mental images of the experiences as well as verbal descriptions of them. Then, pictures of the situations that are described in narrative format should help readers to imagine the sequence of events that occurs and, therefore, should facilitate the construction of a representation that they can use as a basis for judgments. In other words, the presentation of pictures should increase the impact of the information on these judgments.

However, this may not be true when information about a target is conveyed in a list. In this case, recipients presumably construe the implications of the target's attributes independently of one another and combine these implications analytically to arrive at a judgment. If they base these computations on the text material, pictures may distract them from performing this relatively demanding cognitive activity. Consequently, the pictures may decrease the impact of the information presented in their judgments.

Little previous research bears directly on this possibility. However, the effect of pictures on the processing of verbal product information has been investigated in several previous studies of consumer behavior (Childers & Houston, 1984; Costley & Brucks, 1992; Edell & Staelin, 1983; Miniard, Bhatla, Lord, Dickson, & Unnava, 1991). In general, this research suggests that, when pictures were presented with nonnarrative text, they do not have much impact on judgments over and above that of the text information alone.

For instance, Costley and Brucks (1992) varied the relative dominance of picture and text information about a product's attributes. In some cases, a highly favorable attribute was presented in the form of a picture, and a mediocre attribute was described in the text. In other cases, the highly favorable attribute was described verbally, and the mediocre attribute was pictured. Picturing the highly favorable attribute did not enhance judgments relative to conditions in which it was described

verbally. Edell and Staelin (1983) also found little evidence that pictures increased the effectiveness of ads relative to conditions in which only verbal information was presented. Finally, research by Miniard et al. (1991) suggests that pictures increase evaluations of the products only when recipients have little personal interest in the information presented. When the participants are more motivated to process the information, pictures have little impact over and above the verbal information.

These experiments do not indicate that pictures actually interfere with the processing of verbal material. However, participants in these studies were generally required to consider only a single picture-text configuration in making their judgments. In this study, participants were required to combine the implications of several different picture-text configurations (one for each place visited on the vacation). In this case, the interference of pictures on the processing of nonnarrative text is more likely to be detected.

If pictures facilitate evaluations based on information that is conveyed in a narrative but interfere with the computation of evaluations based on information conveyed in a list, the effects of format on these evaluations should be greater when pictures accompany the text information than when they do not:

- H3:** The difference in evaluations based on favorable information conveyed in a narrative format and evaluations based on the same information conveyed in a list will be greater when pictures accompany the text than when they do not.

### The Role of Self-Generated Images in Information Processing

The mental images that individuals form of various situations might be influenced not only by pictures of these situations but also by explicit instructions to imagine them. When the information about a situation is conveyed in narrative form, these self-generated images may have a positive influence on judgments. Research by Deighton, Romer, and McQueen (1989) indicates that, when the information presented in television ads was more "narrative-like," participants reported greater feelings of empathy and of being drawn in. To the extent that imagery stimulates these feelings, it is likely to increase the effectiveness of the information conveyed (MacInnes & Price, 1987).

Mental images may often be formed spontaneously in the course of comprehending information that is conveyed in narrative form. However, explicit instructions to imagine the experiences described should increase this tendency and, therefore, should facilitate the construction of the narrative representation. Consequently, to the extent the experience being represented is favorable, judgments based on it may increase in favorableness with the ease of constructing this

representation. Moreover, this increase should be greater when persons imagine the experiences described than when they do not. When the same information is presented in a list, and recipients are disposed to evaluate each feature independently, mental images do not enter the computation of evaluations and are less likely to be formed spontaneously. In this case, specific instructions to imagine the experiences may take away processing resources from the computational task that recipients are attempting to perform. Therefore, these instructions may decrease the impact that the information might otherwise have. In short, the effects of instructing recipients to imagine the experiences they read about may be similar to the effects of presenting pictures of the experiences. Whether the source of the mental images that are formed is external (i.e., photographs) or internal (i.e., self-generated) should not make any difference:

- H4: The difference in evaluations based on favorable information conveyed in a narrative format and evaluations based on the same information conveyed in a list will be greater when participants are explicitly instructed to imagine the situations described than when they are not.

### The Role of Affect in Information Processing

We have postulated that the advantage of narratives over lists is attributable to the different mental representations that recipients form from these types of information and the different computational procedures they use to assess the implications of these representations. However, other factors could also contribute to the differential effectiveness of these types of information. One factor might be the affect that is elicited by the two formats. As suggested earlier, narrative forms of information are more likely than list forms to dispose people to imagine themselves experiencing the sorts of events described (Deighton et al., 1989). If this is so, they may be relatively more likely to elicit affective reactions (Strack, Schwarz, & Gschneidinger, 1985). Consequently, if people use the affect they experience as information about their feelings toward the object being judged (Schwarz & Clore, 1983, 1988), this could account for the greater impact of narrative forms of information over list forms.

Affect could influence the processing of narrative and list forms of information in another way as well. People who experience positive affect are inclined to process information holistically rather than attending to specific features (Bless et al., 1996; Bodenhausen, 1993; Gardner & Hill, 1989; Mackie & Worth, 1989). If this is the case, the positive affect that is elicited by narrative forms of information might facilitate the holistic processing that these forms typically stimulate. In contrast, the positive affect that is stimulated by list forms of information could interfere with the piecemeal processing that is normally performed. If this is so, positive



affect from extraneous sources might magnify the difference in effectiveness of the two types of information relative to conditions in which the affect experienced is less favorable:

- H5: The difference in evaluations based on information conveyed in a narrative format and evaluations based on information conveyed in a list will be greater when participants are experiencing positive affect than when they are experiencing negative affect.

## EXPERIMENT 1

According to H1, travel brochures should be generally more effective if they convey information in narrative form than if they present it in a disorganized list. According to H2, the differential effectiveness of narrative and list forms of information should be more evident when the vacations being described have negative features than when they do not. Experiment 1 investigated these hypotheses and also provided data bearing on H3. Almost all travel brochures that people encounter outside the laboratory contain pictures. Therefore, to make our stimulus materials as realistic as possible in this initial study, we accompanied the text material by pictures that were either large or small compared to the text. Based on H3, however, we expected that the differential effectiveness of narrative and list forms of information would increase with the dominance of the picture information. This expectation was confirmed. Nevertheless, a more direct test of the hypothesis was performed in Experiment 2.

### Method

#### *Overview*

Participants were given two travel brochures. One described a vacation in India, and the other described a vacation in Thailand. Each brochure contained favorable descriptions of 12 different places or situations to be encountered on the trip. In some conditions, however, two relatively undesirable aspects of each trip were described as well. The written description of each place or situation was accompanied by a color photograph that was either large relative to the written material (*picture-dominant* condition) or small relative to the text (*text-dominant* condition). The two brochures considered by a given participant were similar with respect to the relative dominance of the picture and text and the presence or absence of undesirable features. However, the descriptions in one brochure were presented in narrative form (i.e., they conveyed the thematic relatedness of the features of each

situation and place and indicated the temporal sequence in which the situations would be encountered over the course of the trip), whereas the descriptions in the other were listed in the form of "bullets," and no indication was provided of their temporal relatedness.

Counterbalancing procedures were used to ensure that the stimulus materials pertaining to each vacation were conveyed an equal number of times in narrative and list format. Moreover, the order in which the two brochures were presented was also counterbalanced in a manner to be described. After receiving information about both vacations, participants evaluated how much they would like to go on each trip, indicated their relative preference for the vacations, and, finally, recalled the places to be visited on each trip.

### *Participants and Design*

Eighty undergraduate marketing and psychology students participated to fulfill a course requirement. Each participant received one brochure in narrative format and one brochure in list format. Ten participants were assigned randomly to one of eight combinations of picture-text dominance (picture dominant or text dominant), feature desirability (only desirable features vs. undesirable as well as desirable features) and format presentation order (narrative first vs. list first). Within each presentation order condition, the two vacations (India vs. Thailand) were described the same number of times in each format.

### *Stimulus Materials*

**Text.** Under conditions in which only positive features were presented, each travel brochure contained 13 pages (1 introductory page and 12 descriptions of various places in the country). Each page described a different place to be visited or situation to be encountered on the trip. The information conveyed in each format condition was similar in content, but varied in the way it was presented. In *narrative-format* conditions, the temporal and thematic relatedness of the situations and places to be encountered was made apparent. For example, the brochure pertaining to India began with a synopsis of the vacation as a whole:

On your vacation, you will start out from the capital of India, Delhi, and move on to see the Taj Mahal. Later, you will go west, and see the palaces and temples in the colorful deserts of Rajasthan ... before heading south. Further south, you will visit the beaches of Goa, tropical forests and backwaters of Kerala and ... complete your trip at the southernmost tip of India.

This was followed by written descriptions of the places to be visited that were conveyed in a similar format. One example is the following:

Only a short trip from Delhi is Agra, home of the Taj Mahal. A mausoleum built by Shah Jahan for his empress, the Taj is widely regarded as the most beautiful man-made structure in the world. Remarkable at all times of the day, you can visit as the sun rises above the early morning mists, and return on a moon-lit night when the Taj seems to float unattached above the blue-green pools in front of it.

In contrast, the brochure under *list-format* conditions described aspects of the vacation without indicating their interrelatedness or the order in which the situations would be encountered. This brochure began with a simple listing of events:

Some features of your vacation experience are:

- visit to the capital, Delhi
- the cool mystery of the forests
- the forest tribes
- the Taj Mahal at Agra
- palaces and temples in Rajasthan, etc.

Moreover, the individual places and situations were described in a similar manner. One example is the following:

- Agra, home to one of the most beautiful man-made structures in the world.
- the Taj Mahal—a mausoleum built by Shah Jahan for his empress.
- a beautiful spectacle both when the sun rises above the early morning mists, or on moonlit nights when the Taj seems to float above the blue-green pools in front of it.

The 12 places to be visited were described in the same order in both format conditions. Under *undesirable-feature* conditions, however, two additional pages (describing negative aspects of the vacation) were inserted. In the brochure on India, these pages came after the 5th and 10th sets of desirable features, and in the brochure on Thailand, they followed the 4th and 6th sets of desirable features.<sup>2</sup> These pages described relatively undesirable aspects of the trip. For example, passages in the India brochure indicated that accommodations often were “not luxurious” and that travelers would often have to sleep on straw mats; it also alluded to limited restaurant facilities in the desert and warned against drinking water. The corresponding descriptions of Thailand also referred to food and accommodation facili-

<sup>2</sup>The relative location of these negative features varied to make them fit into the overall story being created.

ties as "quite modest" and noted that bus rides often were "long and somewhat difficult." These descriptions were conveyed in the same format as other descriptions in the brochures and were accompanied by pictures illustrating these negative aspects.

*Photographs.* The written text presented on each page of the brochure was accompanied by a high-quality photograph of the place or situation to which it pertained. The photos were reproduced on laser printers to preserve the color and detail of the originals. However, the size of the pictures in relation to the text was varied. In picture-dominant conditions, the pictures were 15 cm × 15 cm, and the text was in 10-point font size. In text-dominant conditions, however, the pictures were reduced to 8 cm × 8 cm, and the text was in 18-point font size.

*Presentation order.* Although each participant received one brochure in narrative format and the other in list format, the relative dominance of the pictures and text was the same in both brochures. Moreover, undesirable features were either mentioned in both brochures or omitted from both. The particular vacation that was conveyed (India or Thailand) in each format, and the order in which the vacations were presented, were counterbalanced within each combination of picture-text dominance and feature desirability. Specifically, 5 participants in each set of conditions first read a brochure describing India in narrative format followed by a brochure describing Thailand in list format. Five others read the same brochures in the reverse order (Thailand first and India second). A third group of 5 participants read a brochure about Thailand in narrative format followed by a brochure about India in list format, and a fourth group read these latter brochures in reverse order. Therefore, the proportion of times that the two vacations were conveyed in each format, and the proportion of times they were conveyed first or second, was the same.

### *Procedure*

Participants were introduced to the experiment with instructions that the South Asian Association for Regional Cooperation (an existing organization) was interested in promoting tourism in Southeast Asia and wished to determine what Americans thought about the brochures they were designing for this purpose. The materials had ostensibly been given to a consulting group in the university business school for pretesting. With this preamble, participants were given two envelopes, each containing a different brochure. They were told to examine the brochures in the order in which they received them and, after examining both brochures, to

answer the questions contained in a "brochure evaluation form" that was placed face-down beneath the two envelopes.

### *Dependent Measures*

The ordering of questions in the brochure evaluation form that participants received corresponded to the order in which the brochures were read. Thus, participants who read the brochure about India first answered questions about India before analogous questions about Thailand, whereas those who read about Thailand first answered these questions in the reverse order.

*Overall evaluations.* Participants first estimated the extent to which the brochure describing each country made them want to go there. These estimates were reported along scales from 1 (*not at all*) to 10 (*very much*).

*Comparative judgments.* After rating each vacation separately, participants indicated which of the two places they would most want to visit, based on the information contained in the brochures. They then indicated the strength of their preference along an 11-point scale. On this scale, 0 (*no preference*) was the midpoint, and values from 1 to 5 on each side of the midpoint denoted the strength of preference for either India over Thailand or Thailand over India. (To eliminate any implications that the experimenter considered one country more desirable than the other, negative numbers were not used.) However, responses along the scale were subsequently converted to values from 0 to 10, in which higher numbers denoted a greater relative preference for the vacation that was described in narrative format.

*Supplementary ratings.* After reporting their judgments, participants made a number of ratings that helped us to interpret their reasons for making these judgments. They estimated how difficult it was to imagine what they would do on each vacation on a day-to-day basis along a scale from 1 (*not at all difficult*) to 10 (*very difficult*).

*Recall.* Finally, participants were told that in understanding how people make judgments, it sometimes is helpful to know what aspects of the information they can recall. They were then asked to consider each brochure separately and to list as many of the places or situations described as they could remember. They were told

to list them in the order they came to mind and to list as many as they could regardless of whether they took them into account in making their judgments.

Recall data were subsequently scored for accuracy by trained judges according to a gist criterion. That is, a place was scored as correctly recalled if the participant's description of it uniquely identified a situation that occurred on the specific vacation being remembered. However, descriptions of situations that either occurred on the other vacation or were not mentioned in either brochure were scored as intrusions. Finally, descriptions that were too vague to be identified as pertaining to either vacation were not coded at all.

## Results

With a few exceptions to be noted, data were pooled over India-narrative/Thailand-list and Thailand-narrative/India-list conditions.<sup>3</sup> Then the data were analyzed as a function of one within-subject variable (format) and three between-subjects variables: the relative dominance of the pictures and text (picture-text dominance), the presence or absence of undesirable features (feature desirability), and format presentation order (narrative first vs. list first). The effect of format presentation order is alternatively interpretable as an interaction of format (narrative vs. list) and whether the brochure being evaluated was presented first or second. The effects of this variable are interpreted in this manner in the analyses to be reported. When relevant, these analyses are supplemented by more specific contrasts between the conditions being evaluated.

### *Liking for the Vacations*

**Overall evaluations.** Participants' evaluations of each vacation are summarized in Table 1. These data are consistent with all three hypotheses we considered. First, vacations were evaluated more favorably when their features were described in a narrative ( $M = 6.5$ ) than when they were simply listed ( $M = 5.8$ ),  $F(1, 63) = 6.27, p < .01$ , as implied by H1. Second, the advantage of narrative format over list format was greater when undesirable features were mentioned ( $M = 6.5$  vs. 5.3 under narrative-format vs. list-format conditions, respectively),  $F(1, 63) = 7.62, p < .01$ , than when they were not ( $M = 6.5$  vs. 6.2, respectively),  $F < 1$ . This difference, which is consistent with H2, is due to the fact that undesirable features decreased evaluations of vacations that were described in list format ( $M = 6.2$  vs. 5.3 when undesirable features were present vs. absent, respectively) but had no effect on vacations that were described in narrative format ( $M = 6.5$  vs. 6.5, respectively).

<sup>3</sup>In this and subsequent experiments, preliminary analyses yielded significant effects of the particular vacation being described (India or Thailand). However, none of these effects is of theoretical interest, and none compromises the findings to be reported or the conclusions to be drawn from them.

TABLE 1  
 Evaluations of Vacations as a Function of Format, Picture-Text Dominance, the Presence of Undesirable Features, and Brochure Presentation Order—Experiment 1

	<i>First Vacation Presented</i>		<i>Second Vacation Presented</i>	
	<i>Narrative Format</i>	<i>List Format</i>	<i>Narrative Format</i>	<i>List Format</i>
Only positive features				
Pictures dominant	7.3	4.1	5.7	6.9
Text dominant	6.5	7.9	6.5	5.8
Undesirable features included				
Pictures dominant	6.1	4.1	6.5	6.2
Text dominant	6.6	5.3	6.7	5.6
<i>Mean</i>				
Pictures dominant	6.7	4.1	6.1	6.6
Text dominant	6.5	6.6	6.6	5.7

The interaction of format and feature desirability was not reliable ( $p > .10$ ). However, the pattern of results is quite consistent with our hypothesis and is confirmed by preference data, which is described later.

Finally, H3 assumes that vivid pictures of the places to be visited would facilitate the construction of narrative-based representations of the vacation being described and, therefore, would increase the favorable reactions to it. On the other hand, pictures might interfere with the computation of evaluations based on individual features and, consequently, might decrease the favorableness of the evaluations. Therefore, the advantage of narrative format over list format should be greater when pictures are dominant than when they are not.

This hypothesis was confirmed for the first vacation that participants rated but not for the second. Relative to text-dominant conditions, making pictures dominant slightly increased the effect of narrative format on evaluations of the first vacation ( $M = 6.5$  vs.  $6.7$  under text-dominant vs. picture-dominant conditions, respectively) but decreased the effect of list format on these evaluations ( $M = 6.8$  vs.  $4.1$ , respectively). Thus, as expected, the advantage of narrative over list format was greater when pictures were dominant than when they were not.

However, this was not true of the second vacation that participants rated. Making pictures dominant decreased evaluations of this vacation when it was described in a narrative ( $M = 6.1$  vs.  $6.6$  under picture-dominant vs. text-dominant conditions, respectively), but increased evaluations of the vacation when it was described in a list ( $M = 6.6$  vs.  $5.7$ , respectively). Thus, although narrative format had an overall advantage over list format when this vacation was evaluated, this advantage was *less* when pictures were dominant than when they were not. These differences are confirmed by an interaction of format, picture-text dominance, and whether the brochure being rated was presented first or second,  $F(1, 63) = 6.85, p < .01$ .

The unexpected contingency of format effects on whether the vacation being rated was presented first or second (which was also observed in the second experiment to be reported) has a plausible explanation. People who are asked to compare two stimuli may believe they should use similar criteria in evaluating each. Therefore, the format of the first brochure may have stimulated participants to adopt an information processing strategy that, once activated, was also applied in constructing the implications of the second brochure. For example, when information about the first vacation presented simply was listed, participants evaluated it by assessing the implications of the individual features and then, having done so, applied the same procedure in evaluating the second vacation. Consequently, increasing the dominance of the pictures interfered with the processing underlying evaluations of not only the first vacation but also the second, despite the fact that the second was conveyed in a narrative. Correspondingly, participants who were stimulated to construct a narrative-based representation of the first vacation may have attempted to do likewise in evaluating the second vacation (despite the fact that information about it was conveyed in a list). Consequently, increasing the salience of the pictures had a facilitating effect in both cases. Although this interpretation is somewhat speculative, it is consistent with other results to be reported in both this study and in Experiment 2. (For evidence in other domains that cognitive procedures employed in performing one task persist in performing subsequent ones, see Schwarz & Wyer, 1985; Smith, 1990.)

*Comparative judgments.* After evaluating each vacation separately, participants were asked to choose which vacation they would prefer. The effect of format on these preferences paralleled its effect on evaluations of each vacation individually. Table 2 shows both the proportion of participants who preferred the vacation described in narrative format and the mean strength of these preferences as a function of picture-text dominance and feature desirability. The two sets of data have identical implications. That is, participants were more likely to prefer the vacation described in narrative format when either (a) undesirable features of the vacations were mentioned or (b) pictures were dominant than when neither of these conditions existed. This conclusion is confirmed by an interaction of feature desirability and dominance,  $F(1, 64) = 3.12, p < .08$ , and  $F(1, 64) = 8.39, p < .01$ , for choice and strength-of-preference data, respectively.

### *Supplementary Analyses*

The different effects of picture-text dominance on the impact of information in the two format conditions were assumed to be mediated in part by the effect of pictures on participants' ability to compute their evaluations. Indirect support for



TABLE 2  
 Preference for Vacation Described in Narrative Format as a Function of Picture-Text Dominance and the Presence of Undesirable Features—Experiment 1

	<i>Pictures Dominant</i>	<i>Text Dominant</i>
Proportion of participants who chose vacation in narrative format		
Only desirable features	.65	.31
Undesirable features included	.70	.70
Strength of preference for vacation described in narrative format		
Only desirable features	5.1	4.1
Undesirable features included	5.1	5.2

this assumption is provided by data concerning both the difficulty that participants reported having in imagining the events described in the brochure and their recall of these events.

*Imagination difficulty.* Participants' estimates of the difficulty they had in imagining the two vacations they rated are shown in the top half of Table 3 as a function of format and picture-text dominance. Consistent with our assumptions, participants had less difficulty imagining vacations when they were described in a narrative format ( $M = 4.5$ ) than when their features were listed ( $M = 5.4$ ),  $F(1, 63) = 20.91$ ,  $p < .01$ . Furthermore, this difference, like the corresponding difference in overall evaluations, was greater when pictures were dominant ( $M = 3.3$  vs.  $5.9$ ) than when they were not ( $M = 4.5$  vs.  $5.1$ ),  $F(1, 63) = 9.10$ ,  $p < .01$ . This contingency results from the fact that making pictures dominant decreased the difficulty of imagining vacations that were described in narrative format but increased the difficulty of imagining vacations that were described in list format. Although this effect was somewhat more evident in responses to vacations described in the first brochure than the vacation described in the second (see Table 3), this difference was not reliable ( $p > .10$ ).<sup>4</sup> Nor did the effect depend on whether negative features were mentioned in the information presented.

*Recall.* If a mental representation of the vacation is easier to form when it is described in a narrative, the places to be visited on this vacation should be easier

<sup>4</sup>An interaction of format, presentation order, and feature negativity was reliable,  $F(1, 64) = 5.22$ ,  $p < .01$ . This interaction indicated that the effect of format on perceptions of difficulty was less when the first vacation described had only desirable features than when it had undesirable features. Moreover, the effect was less when the second vacation presented had undesirable features than when it had only desirable ones. The reason for this unexpected interaction is unclear, and no attempt is made to interpret it.

TABLE 3  
 Imagination Difficulty and the Proportion of Places Recalled as a Function of Format,  
 Picture-Text Dominance, and Brochure Presentation Order—Experiment 1

	<i>First Brochure Presented</i>		<i>Second Brochure Presented</i>	
	<i>Narrative Format</i>	<i>List Format</i>	<i>Narrative Format</i>	<i>List Format</i>
Difficulty of imagining vacation				
Pictures dominant	3.2	6.3	3.5	3.5
Text dominant	4.5	4.7	4.5	5.4
Proportion of places recalled				
Pictures dominant	.52	.37	.54	.48
Text dominant	.48	.55	.48	.45

to recall. Moreover, if vivid pictures facilitate the construction of a narrative-based representation of the vacation but interfere with the computation of an evaluation based on individual features, this difference should also be reflected in the recall of the information.

To evaluate these possibilities, we restricted our consideration to conditions in which only desirable features of the vacations were presented. (This eliminated any effects of evaluatively inconsistent information on the recall of these features; for evidence that inconsistent information items can affect the recall of other items, see Srull, 1981; Wyer & Srull, 1989.) The proportion of places recalled under these conditions is shown in the second section of Table 3. As we expected, picture dominance increased the recall of places described in a narrative but decreased the recall of places described in a list. This was particularly true for features that were described in the first brochure presented. An interaction of format and picture-text dominance supports this interpretation,  $F(1, 63) = 4.95, p < .03$ .

Recall data were also expected to distinguish between the two reasons why negative features might have less influence when they are conveyed in a narrative than when they are contained in a list. First, recipients of the information might simply not have noticed the undesirable features when they were embedded in a narrative. If this is so, they should recall these features less well in these conditions than in list-format conditions.

However, this was not the case. An analysis of the number of negative features recalled as a function of format, picture-text dominance, and presentation order yielded no significant effects ( $p > .10$ ). In fact, negative features were recalled nonsignificantly better when they were embedded in a narrative ( $M = 1.10$ ) than when they were conveyed in a list ( $M = 1.02$ ). Thus, the decreased effect of undesirable features on judgments of the vacations described in a narrative was not a consequence of participants' failure to notice these features. Rather, participants in narrative-format conditions incorporated the negative features into the repre-

sentation they formed. However, they either gave these features less weight in construing the implications of this representation—or alternatively interpreted them as less undesirable—than did participants who encountered the features in a disorganized list.

*Intrusions.* We have assumed that participants represent the information they receive in a narrative as an integrated sequence of events rather than as a set of unrelated facts. If this is so, one might expect relatively fewer intrusions of unmentioned features into these representations.<sup>3</sup> Differences in the number of places that participants incorrectly recalled as having been mentioned in each brochure provide some support for this conjecture. Although few intrusions occurred overall ( $M = 0.42$ ), they were less frequent when the information was presented in a narrative ( $M = 0.35$ ) than when it was listed ( $M = 0.50$ ),  $F(1, 64) = 3.97$ ,  $p < .05$ . Although this difference was somewhat more evident for items contained in the second brochure presented than in the first, this difference only approached significance,  $F(1, 63) = 3.46$ ,  $p < .07$ .

## EXPERIMENT 2

Experiment 1 provided tentative support for the conceptualization we have proposed. That is, people appear to use different processing strategies to assess the implications of information that is conveyed in different formats. Moreover, pictorial information may influence the impact of this information through its mediating effect on the ability to use these strategies. In this regard, the effects of picture dominance in Experiment 1 were consistent with H3. However, a more direct test of this hypothesis requires comparison of conditions in which pictures accompany the text with conditions in which pictures are not presented at all. Experiment 2 provided this comparison.

Second, this experiment provided a test of H4. If participants form their own mental images of the situations being described, the influence of these self-generated images should be similar to the influence of pictures that are actually presented. Specifically, these images should facilitate the construction of a mental representation of a vacation that is described in a narrative but should interfere with the computation of evaluations that are based on individual features. Consequently, the relative advantage of a narrative format over a list format should be greater when

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<sup>3</sup>If narrative representations are scripted (Schank & Abelson, 1977), the intrusion of events that are prototypic of the script may in fact occur (Bower, Black, & Turner, 1979; Graesser, 1981). In this study, in which the event sequences being constructed are unfamiliar, these intrusions should not occur.

participants are explicitly instructed to imagine the experiences described than when they are not.

The results of Experiment 1, however, suggest that these predictions only hold for evaluations of the first brochure that participants encounter. That is, the information processing strategy that participants appeared to use in evaluating the first vacation was applied in evaluating the second as well, despite the fact that the latter vacation was described in a different format. As we indicate later, this tendency was also evident in Experiment 2.

## Method

### *Overview*

This study differed from the first in three ways. First, some participants were explicitly instructed to imagine themselves having the experiences described in each brochure, whereas other participants were not given this explicit instruction. Second, conditions in which undesirable features were mentioned were not run. Third, information presentation conditions were constructed in which (a) only text information about the places to be visited on the vacations was presented, (b) only pictures of these places were presented, or (c) both types of information were presented in combination. These conditions permitted us to evaluate the extent to which text and pictorial information in combination affected judgments over and above the effects of each type of information in isolation.

### *Participants and Design*

Participants were 144 introductory marketing students who took part to fulfill a course requirement. Twenty-four participants were randomly assigned to each combination of instructional conditions (imagination vs. no imagination) and information type (pictures only vs. text only vs. pictures plus text). In text-only and pictures-plus-text conditions, the two vacations that participants read about were conveyed in different formats. These vacations were presented in counterbalanced orders similar to those administered in Experiment 1.

### *Stimulus Materials*

The materials administered in *pictures-plus-text* conditions were the same as they were under picture-dominant conditions of Experiment 1. That is, large pictures were accompanied by text in either narrative or list format. However, no

negative information was included in the brochures. In *text-only* conditions, pictures were not presented, and the size of the written text was enlarged to a font size of 18 points. In *pictures-only* conditions, the photographs used were the same as those presented in picture-dominant conditions of Experiment 1 (15 cm × 15 cm), but they were centered on the page and appeared with no caption or title.

Each participant received two brochures from the same information condition (pictures only, text only, or pictures plus text). In text-only and pictures-plus-text conditions, half of the participants received a brochure in narrative format followed by a brochure in list format. The other half received these brochures in reverse order. As in Experiment 1, the two vacations (India vs. Thailand) were described the same proportion of times in each format and were presented the same number of times in each order condition.

### *Procedure*

Participants were informed that a consulting group in the college of business administration had recently been asked by a travel company in Southeast Asia to obtain reactions to travel brochures for countries they were promoting as vacation spots. Instructions under *no-imagination* conditions then proceeded as in Experiment 1. Under *imagination* conditions, however, participants were asked to spend a few moments on each page of the brochure, to imagine themselves actually having the experiences described, and to think about how it would feel to be there. They were told that the information they provided would be more reliable if they imagined themselves experiencing the vacation.

### *Dependent Measures*

In addition to the measures taken in Experiment 1, other supplementary data were obtained. Participants' own perceptions of the processing strategy they employed (piecemeal vs. holistic) were assessed by asking them to indicate which of two alternatives best described the procedure they used—that is, whether (a) they considered the individual places described in a given country independently of one another and imagined how it would feel to be there (piecemeal processing), or (b) they imagined the overall sequence of events that might occur on the trip rather than thinking about individual aspects of it (holistic processing). Second, they estimated (a) the extent to which they compared the specific places they would visit in one country with those they would visit in the other and (b) the extent to which they formed an overall impression of each trip as a whole and then compared these overall evaluations. These latter estimates were reported along scales from 0 (*not at all*) to 10 (*very much*).

Then, to assess the feelings elicited by the different brochures, participants were asked to estimate the extent to which their judgments were influenced by both (a) the feelings and emotional reactions they experienced as they went through the brochures and (b) the information provided independently of their emotional reactions to it. These ratings were also reported along scales from 0 (*not at all*) to 10 (*very much*).

## Results

The primary hypotheses of interest in this experiment concern the effects of pictures and imagination instructions on the relative effectiveness of narrative and list formats. To examine these hypotheses, text-only and pictures-plus-text conditions were the only ones considered. A second, supplementary analysis was also performed to compare the effects of text and picture information when it was presented separately as well as together.<sup>6</sup> Data pertaining to each analysis are described in turn.

### *Effects of Format on the Influence of Text Information*

To determine the effects of format, data from text-only and pictures-plus-text conditions were analyzed as a function of format, the presence or absence of pictures, imagination instructions, and format presentation order (narrative first vs. list first). As in Experiment 1, we interpreted the effects of the latter variable as an interaction of format and whether the brochure being evaluated was presented first or second. We hypothesized that vacations would receive more favorable evaluations when the text was presented in narrative format than when it was conveyed in list format. Moreover, we expected this difference to increase when (a) pictures accompanied the text information (H3) and (b) participants were explicitly instructed to imagine themselves experiencing the situations described (H4). Finally, we expected these contingencies to be more evident in participants' reactions to the first vacation that they considered than their reactions to the second. These hypotheses were confirmed.

*Overall evaluations.* Vacations were evaluated more favorably overall when they were described in narrative format ( $M = 6.6$ ) than when they were conveyed in a list ( $M = 5.9$ ),  $F(1, 79) = 5.82, p < .05$ . As expected, however, the magnitude of this difference was contingent on the presence or absence of pictures

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<sup>6</sup>The design of the study precluded an overall analysis involving all five information presentation conditions. This is because format (narrative vs. list) was a within-subject variable when pooled over the two brochures that participants received. Therefore, the two format conditions could not be compared to picture-only conditions in the same analysis because it would confound between-participant and within-participant variation.

and imagination instructions. These contingencies are reflected in a three-way interaction of format, the presence of pictures, and whether the brochure being evaluated was presented first or second,  $F(1, 79) = 5.07, p < .03$ , and in a higher order interaction involving these three variables and imagination instructions,  $F(1, 79) = 4.75, p < .05$ . Note that these interactions are alternatively interpretable as interactions of (a) the presence of pictures and format presentation order (narrative first vs. list first) and (b) the presence of pictures, imagination instructions, and format presentation order. In other words, they indicate that the effects of pictures and imagination instructions on judgments of both vacations depended on the format in which the *first* vacation was described. This generalizability confirms the results of Experiment 2.

The nature of these effects can be seen in Table 4. This table shows mean evaluations of each vacation as a function of picture presence, imagination instructions, and format. Consider the first vacation that participants evaluated. In this case, the relative effectiveness of narrative format over list format (pooled over imagination instructions) was greater when the text information was accompanied by pictures ( $M = 7.2$  vs.  $6.0$  under narrative- vs. list-format conditions, respectively) than when it was not ( $M = 6.4$  vs.  $6.2$ , respectively). This difference conceptually replicates the effects of picture dominance obtained in Experiment 1 and confirms H3. Moreover, as implied by H4, the difference was greater when participants were instructed to imagine experiencing the events described ( $M = 7.2$  vs.  $6.3$ ) than when they were not ( $M = 6.5$  vs.  $5.8$ ).

However, the effects of picture dominance and imagination instructions were not independent. A scrutiny of the data in Table 4 indicates that the advantage of a narrative format over a list format was appreciable only when both pictures accompanied the text and participants were explicitly told to imagine having the experiences described. The effect of format in this condition was greater ( $M = 8.1$  vs.  $5.8$  under narrative- vs. list-format conditions, respectively) than it was under any of the other three combinations of instructions and picture presence (averaged

TABLE 4  
Mean Evaluations as a Function of Format, the Presence of Pictures, Imagination Instructions, and Brochure Presentation Order—Experiment 2

	<i>First Brochure Presented</i>		<i>Second Brochure Presented</i>	
	<i>Narrative Format</i>	<i>List Format</i>	<i>Narrative Format</i>	<i>List Format</i>
Imagination instructions				
Pictures presented	8.1	5.8	6.1	7.1
No pictures presented	6.3	6.8	7.8	4.6
No imagination instructions				
Pictures presented	6.4	6.1	5.6	5.8
No pictures presented	6.5	5.5	5.9	5.6

over conditions,  $M = 6.4$  vs.  $6.1$ , respectively),  $F(1, 79) = 3.03, p < .08$ . These latter three conditions did not differ appreciably from one another,  $F < 1$ . Put another way, the effectiveness of information conveyed in a narrative was greater when both pictures were presented and instructions were given to imagine the experiences ( $M = 8.1$ ) than when this was not the case ( $M = 6.4$ ); in contrast, the effectiveness of information conveyed in a list was somewhat less in the former condition than in the latter ( $M = 5.8$  vs.  $6.1$ , respectively). In summary, therefore, the pictures that actually were contained in the brochure and the mental pictures that participants themselves generated under imagination conditions had similar effects on the ability to compute evaluations under the two format conditions. However, both the presence of pictures and imagination instructions were necessary for these effects to be pronounced.

Now, consider the second vacation that participants evaluated. Based on Experiment 1, we expected that participants would apply the strategy they used in evaluating the first vacation to judge this one as well, even though it was described in a different format. This expectation was confirmed. If the first vacation presented was described in a narrative, participants evaluated the second vacation more favorably when both pictures were presented and imagination instructions were given ( $M = 7.1$ ) than when they did under other conditions ( $M = 5.3$ ). When the first brochure was in list format, this difference was not evident ( $M = 6.1$  vs.  $6.4$ ). Thus, these differences are very similar to the corresponding differences in participants' evaluations of the first vacation they considered.<sup>7</sup>

*Comparative judgments.* The effects of format on participants' evaluations of each vacation considered separately were only partly reflected in their preferences for one vacation over the other. Participants were more likely to prefer the vacation that was described in narrative format when the text was accompanied by a picture ( $M = .67$ ) than when it was not ( $M = .46$ ),  $F(1, 79) = 4.26, p < .05$ . Moreover, their preference for this alternative was stronger in the former condition than in the latter ( $M = 6.0$  vs.  $5.0$ , respectively),  $F(1, 79) = 2.96, p < .10$ . However, these differences did not depend significantly on either imagination instructions or whether the vacation described in narrative format was presented first or last (in each case,  $p > .10$ ).

*Imagination difficulty.* Participants' estimates of the difficulty they had in imagining themselves experiencing the vacations were generally a mirror image of

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<sup>7</sup>Participants also evaluated the attractiveness of pictures and text information separately. These component ratings generally paralleled the overall evaluations. Because these data provide little additional insights into the phenomena of concern, they are not reported in detail.



their evaluations of these vacations. Participants generally reported having less difficulty imagining vacations that were described in a narrative ( $M = 3.5$ ) than vacations whose features were simply listed ( $M = 5.4$ ),  $F(1, 79) = 5.82$ ,  $p > .02$ . However, this difference and its contingency on instructions and the presence of pictures depended on whether the vacation being judged was described first or second. If the first vacation presented was described in narrative format, participants reported having less difficulty imagining it when both pictures accompanied the text and imagination instructions were given ( $M = 3.0$ ) than under the other three combinations of instructions and picture presence ( $M = 3.8$ ). This was also true for the second vacation they considered under these conditions, which was described in list format ( $M = 5.3$  vs.  $6.3$ ). When the first vacation was described in list format, however, a corresponding difference in the reported difficulty of imagining this vacation was not apparent ( $M = 4.6$  vs.  $4.8$ ), and the difference in difficulty of imagining the second vacation was reversed ( $M = 4.1$  vs.  $3.4$ ). These contingencies are reflected in part by interactions of format and the presence of pictures,  $F(1, 79) = 4.18$ ,  $p < .05$ , and of format, the presence of pictures, and brochure presentation order,  $F(1, 79) = 2.94$ ,  $p < .10$ . The contingency of these effects on imagination instructions was not reliable ( $p > .10$ ). Nevertheless, the parallel between these data and judgment data is noteworthy.

*Self-reported bases for judgment.* Our interpretation of the results of both this experiment and Experiment 1 assumes that the format of the first brochure presented stimulated the use of an information processing strategy that, once activated, was applied in evaluating the second brochure as well. This assumption was confirmed by participants' self-reports. Specifically, participants estimated the extent to which they (a) evaluated the two vacations by forming an overall impression of each trip as a whole and then comparing these impressions and (b) compared the specific places they would visit on the two trips. Participants generally reported using the first, holistic comparison strategy to a greater extent ( $M = 6.4$ ) than the second, piecemeal strategy ( $M = 4.9$ ),  $F(1, 79) = 17.28$ ,  $p < .01$ . However, this difference was greater when the first brochure was in narrative format ( $M_{diff} = 2.2$ ) than when it was in list format ( $M_{diff} = 0.8$ ),  $F(1, 79) = 3.60$ ,  $p < .06$ . This supports two assumptions. First, narrative formats were more likely to stimulate the use of a holistic processing strategy than list formats. Second, the format of the first brochure determined the strategy that participants employed in evaluating both this brochure and the second one.

In addition, a higher order interaction of processing strategy (holistic vs. piecemeal), imagination instructions, picture presence, and brochure presentation order emerged,  $F(1, 79) = 3.51$ ,  $p < .06$ . Data relevant to this interaction indicate that the format of the first brochure (narrative vs. list) had its greatest effect on the preference for a holistic strategy over a piecemeal strategy when pictures were

presented and participants were told to imagine experiencing the events described ( $M_{diff} = 2.8$  vs.  $0.3$  under narrative vs. list format conditions, respectively). In the other three combinations of picture presence and instructions, however, the effect of format on the preference for holistic versus piecemeal strategy was much less ( $M_{diff} = 1.9$  vs.  $1.0$ , respectively). Thus, the conditions in which the format of the first brochure had its greatest impact on the computational strategy that participants reported using were the same as the conditions in which it had its greatest impact on evaluations (see Table 4).

*The impact of affect on judgments.* To obtain an indication of whether affective reactions influenced evaluations of the vacations, we asked participants to report (a) the extent to which each brochure elicited positive or negative feelings; and (b) the extent to which their evaluations were based on these feelings as opposed to other, nonaffective criteria. Brochures elicited stronger feelings when they were in narrative format ( $M = 6.5$ ) than when they were in list format ( $M = 5.6$ ),  $F(1, 79) = 4.08, p < .05$ . Surprisingly, they elicited stronger feelings when pictures were not presented ( $M = 6.5$ ) than when they were ( $M = 5.6$ ),  $F(1, 79) = 9.14, p < .01$ . Moreover, imagination instructions increased the strength of the feelings elicited by the vacations that were described in list format ( $M = 6.3$  vs.  $5.3$  under imagine vs. no-imagine conditions, respectively) but decreased the intensity of feelings elicited by vacations that were described in narrative format ( $M = 5.6$  vs.  $6.5$ , respectively),  $F(1, 79) = 6.09, p > .01$ . The latter effect is opposite to what one would expect if affective reactions mediated the influence of imagination instructions on evaluations. Finally, the extent to which participants reported basing their evaluations on feelings as opposed to nonaffective criteria did not depend on either format, the presence of pictures, or imagination instructions; all main and interactive effects of these variables on these judgments were nonsignificant ( $p > .10$ ).

Thus, these data provide little, if any, support for the hypothesis that the differential effectiveness of narrative and list information is mediated by differences in the affective reactions that the information elicits. However, persons' self-reports of the factors that influence them are not always good indicators of the actual influence that these factors have (Nisbett & Wilson, 1977). Thus, more direct evidence bearing on the role of affect in the phenomena under consideration is desirable. This evidence is provided in the third experiment we report.

### *General Effects of Verbal and Visual Information*

To provide a more direct indication of the relative effectiveness of text and pictorial information when it was presented both separately and in combination, data were pooled over the two vacations that participants evaluated and were

analyzed as a function of information type (picture only, text only, and picture plus text) and imagination instructions. Only those analyses of particular interest are reported.

*Overall evaluations.* Participants evaluated the vacations less favorably when pictures alone were presented ( $M = 5.3$ ) than when either text alone was presented ( $M = 6.1$ ) or both types of information in combination were available ( $M = 6.4$ ). The effect of information conditions implied by these differences was reliable,  $F(2, 138) = 4.04, p < .05$ . Averaged over the three information conditions, evaluations were somewhat more favorable when participants were explicitly told to imagine themselves experiencing the events described ( $M = 6.2$ ) than when they were not ( $M = 5.7$ ),  $F(1, 138) = 2.80, p < .10$ . However, the impact of different types of information presented did not depend on these instructions ( $p > .10$ ). Thus, pictures alone led to generally less favorable evaluations than the written descriptions. Moreover, averaged over the two formats in which text information was presented, adding pictures to this information had little impact over and above the effects of the text when presented in isolation.

The generally less favorable evaluations of vacations under picture-only conditions does not indicate that the pictures and the situations they described were unappealing. Supplementary data (see footnote 7) indicated that participants rated the pictures as quite attractive ( $M = 6.7$ ), and these ratings were similar in all conditions in which the pictures were presented. When written descriptions were available, however, participants appeared to base their evaluations primarily on these descriptions, and the pictures had little additional impact. This conclusion is consistent with that drawn from a number of studies cited earlier in this article (e.g., Costley & Brucks, 1992).

*Affective reactions.* We speculated that the addition of pictures to text information might increase the intensity of participants' affective reactions to the vacations they read about and that these feelings could mediate the judgments that were made. However, this did not appear to be the case. Participants estimated the extent to which their judgments were influenced both by the emotional reactions they experienced in reviewing the material and by the implications of the information presented independently of these reactions. All participants reported being influenced more by the feelings they experienced ( $M = 6.7$ ) than by nonaffective aspects of the information presented ( $M = 4.8$ ),  $F(1, 138) = 55.03, p < .01$ . Although this difference did not depend on instructions to imagine the experiences,  $F < 1$ , it varied with the type of information presented,  $F(2, 138) = 5.84, p < .01$ . Specifically, the reliance on feelings relative to nonaffective criteria was greater under pictures-only conditions ( $M = 6.9$  vs. 3.8) than in either text-only conditions ( $M = 6.8$  vs.

5.4) or pictures-plus-text conditions ( $M = 6.6$  vs. 5.3). The similar ratings that participants made in the latter two conditions indicates that adding pictures to the text information did not increase their reliance on feelings relative to conditions in which the text information was presented alone.

These results indicate that participants' evaluations of the vacations were least favorable under conditions in which they perceived their feelings to have the greatest effect. This suggests that the influence of pictures on the processing of text information was not simply due to the increased intensity of feelings that these pictures elicited. The role of affect in responses to particular types of text material is considered more fully in the next experiment.

### EXPERIMENT 3

The presence of pictures and instructions to imagine appear to have different effects on evaluations of the vacations and on participants' reports of the feelings they elicit. Thus, the effects of these variables on the impact of narrative and list forms of information are unlikely to be attributable to their mediating influence on the affect that participants experienced. Nevertheless, narratives elicited generally stronger affective reactions than lists. Therefore, the possibility remains that the relatively greater impact of narratives on judgments is due in part to the intensity of the affect they elicit.

As noted earlier, there are two ways in which the affect elicited by narrative information could contribute to their greater influence. First, research in both consumer behavior (Adaval, 1996) and psychology (Clore, Schwarz, & Conway, 1994; Schwarz & Clore, 1988) indicates that individuals often base their liking for a stimulus on their affective reactions to it. Thus, if narrative descriptions of a vacation elicit more affect than lists of its features, and if persons base their liking for the vacations on the affect they experience when thinking about them, this could account for the relatively greater impact of narrative information on judgments.

The second way in which affect might influence the relative impact of narrative and list information is implied by H5. That is, if the vacation information elicits positive affect, it might induce recipients to adopt a more holistic processing strategy. Their use of this strategy may facilitate their processing of information conveyed in a narrative but might interfere with their computation of an evaluation based on a feature list. Consequently, positive affect could increase the difference in effectiveness of the information that is conveyed in these different formats.

Experiment 3 investigated these possibilities using a procedure similar to that employed by Schwarz and Clore (1983). This procedure recognizes that many factors can contribute to the affective reactions that people experience at any given time and that individuals often are unable to distinguish clearly between the affect that is elicited by one source and the affect that is elicited by another. Thus, suppose people are asked to make a type of judgment that they typically base on their

affective reactions to the object being judged. Then, unless the affect that is elicited by judgment-irrelevant sources is called to their attention, this extraneous affect is likely to influence the judgments they report. (If people are made aware that the affect they are experiencing may be caused by judgment-irrelevant factors, they may discount their affective reactions as a source of judgment-relevant information and resort to alternative, nonaffective criteria; see Schwarz & Clore, 1983.) On the other hand, suppose people are asked to make a judgment to which affective reactions are not relevant. Then, the affect they are experiencing should have little influence on their judgments regardless of its source (for evidence that the use of affect as information depends on its relevance to the judgment being made, see Pham, *in press*; Schwarz, Strack, Kommer, & Wagner, 1987; Strack, Martin, & Stepper, 1988).

This logic was employed in the present experiment to determine the extent to which participants used their affective reactions as a basis for judgments of the vacations they considered. Participants at the start of the experiment were induced to feel either happy or sad by recalling a pleasant or unpleasant past experience. Then, they evaluated vacations described by the same materials employed in Experiment 1. Suppose participants base their evaluations of a vacation that is described in narrative format on the affect they experience when imagining it. Then, because the affect elicited by thinking about the past experience they recalled is likely to be confused with their affective reactions to the vacation, this extraneous affect is likely to influence the judgments they report. On the other hand, suppose participants who evaluate a vacation described in list format compute their evaluations on the basis of nonaffective criteria. Then, the feelings elicited by thoughts about their past experience should have little impact on their evaluations.

This experiment also permitted a test of H5. That is, suppose the positive affect that is elicited by the verbal descriptions increases participants' tendency to employ a holistic processing strategy and that the difference in impact of narrative and list formats on judgments is partly a result of differences in the ability to apply this strategy effectively. Then, independent manipulations of the affect that participants experience should also influence the magnitude of these differences. That is, inducing positive affect should further magnify the differential effectiveness of narrative and list formats, whereas negative affect should decrease it. Experiment 3 examined this possibility.

## Method

### *Overview*

This study was identical to Experiment 1 with two exceptions. First, conditions in which undesirable features were mentioned were not run. Second, participants were induced to feel either happy or sad by writing about an affect-eliciting past

experience before being exposed to the vacation brochures. Moreover, after reading the travel brochures but before making their valuations, participants under *attribution* conditions were reminded of the extraneous source of affect they were experiencing, whereas participants under *no-attribution* conditions were not. Other aspects of the procedure and the presentation of stimulus materials were identical to those described earlier.

### *Participants and Design*

One hundred ninety-two undergraduate students in an introductory marketing course participated to fulfill a course requirement. The basic design was a 2 (induced affect)  $\times$  2 (attribution vs. no attribution)  $\times$  2 (picture-text dominance) factorial. Within each of these conditions, two brochures were presented (one in narrative format and the other in list format). The order in which narrative and list versions of the information were presented and the countries to which the information ostensibly referred were counterbalanced as in Experiment 1.

### *Stimulus Materials*

The stimulus materials presented were identical to those presented in Experiment 1 except that no negative features of the vacations were described in the brochures that participants received.

### *Procedure*

Participants were told that the study was being conducted jointly by the departments of business administration, advertising, and psychology and that the researchers wished to obtain information about college students' daily lives along a number of dimensions, including their purchasing habits, the types of entertainment shows they liked, the types of places they liked to visit on vacations, and other life experiences. The psychology department in particular was interested in how students typically feel at different times of the day and the problems with which they had to cope while at school. Participants were told that they would be asked to provide information on only a subset of the topics to keep the task manageable.

Participants were then told that one part of the study was concerned with the development of a life event inventory and that, to construct the inventory, it was necessary to obtain specific information about the types of emotional experiences that students were likely to have. On this pretense, they were asked to recall and write about a personal experience as vividly and in as much detail as possible. They were told to imagine that they were writing about the experience to a very close friend and they were trying to convey what happened, the events that led up to the experience, and the feelings they had as a result. They were informed that picturing

the experience in their mind would help them to describe it more vividly. Specific instructions about the type of experience participants were to write about were indicated on the individual forms given to them. These forms instructed them to think about an event that occurred that made them feel either "very happy" or "very sad" and that continued to make them feel this way whenever they thought about it. They were then given approximately 12 to 15 min to complete this task.

After participants had finished writing about their personal experiences, they were given the brochure-evaluation task. As in the first two experiments, they first reviewed the two brochures in the order requested and then answered the questions on the brochure evaluation form. Before completing this form, however, participants under attribution conditions were given a one-page questionnaire that instructed them to estimate how they felt as a result of writing about their personal experience. Thus, their attention was drawn to the source of the extraneous affect they were experiencing. In contrast, participants under no-attribution conditions completed the brochure evaluation form without being asked about the affect they were experiencing.

### *Dependent Measures*

The measures pertaining to the brochure-evaluation task were identical to those described in Experiment 1. After completing this task, however, participants completed an additional questionnaire in which their affective reactions were assessed. Specifically, they reported how they were feeling at that particular moment along a scale from  $-5$  (*very unhappy*) to  $+5$  (*very happy*) and indicated the type of mood they were in along a scale from  $-5$  (*very bad*) to  $+5$  (*very good*). In addition, they estimated the extent to which they experienced various specific types of feelings (e.g., anger, sadness, happiness, etc.) while writing about their life experiences. These latter questions were answered along scales from 0 (*not at all*) to 10 (*a lot*). Items pertaining to negative feelings were reverse scored, and then all responses were averaged to obtain a single measure of how positive the experienced affect was.

### Results

Several results obtained in this study replicated those of earlier experiments. For the sake of brevity, we report only those aspects of the data that concern the effects of affect on responses to the information presented.

#### *Manipulation Check*

The affect that participants experienced was manipulated successfully. Participants, after completing the brochure-evaluation task, reported feeling more favor-

ably if they had written about a happy experience than if they had written about an unhappy one ( $M = 1.76$  vs.  $1.21$ , respectively),  $F(1, 175) = 3.62, p < .06$ . Moreover, they described themselves as being in a relatively better mood in the former condition ( $M = 1.88$  vs.  $1.30$ , respectively),  $F(1, 175) = 3.64, p < .06$ , and reported more positive feelings on the mood adjective checklist ( $M = 6.81$  vs.  $6.26$ , respectively),  $F(1, 175) = 3.88, p < .05$ . It is reasonable, therefore, to conclude that participants were experiencing different levels of affect during the course of reading and evaluating the vacations they considered.

### *Evaluations of Vacations*

Participants' evaluations of the vacations they considered were analyzed as a function of induced mood, attribution conditions, format presentation order, and format. Vacations were generally evaluated more favorably if they were described in narrative format ( $M = 6.5$ ) than if they were described in list format ( $M = 5.9$ ),  $F(1, 167) = 10.62, p < .01$ , thus confirming the results of Experiments 1 and 2. However, these evaluations were no different when participants felt happy ( $M = 6.3$ ) than when they did not ( $M = 6.2$ ),  $F < 1$ , and this difference did not depend on whether the source of this affect was made salient to them ( $M = 5.9$  vs.  $6.0$ ) or not ( $M = 6.7$  vs.  $6.4$ ),  $F < 1$ . Moreover, format had an identical influence on judgments regardless of whether participants were happy ( $M = 6.6$  vs.  $6.0$  under narrative vs. list format conditions, respectively) or not ( $M = 6.5$  vs.  $5.9$ , respectively),  $F < 1$ . Thus, in contrast to the implications of H5, the difference in the effectiveness of narrative and list forms of information was not at all dependent on the level of affect that participants were experiencing.

It therefore seems reasonable to conclude that although participants experienced different levels of affect at the time they evaluated the vacations they considered, this affect had no influence on their processing of the information they received or the judgments they made. Consequently, the different effects of narrative and list information on their judgments are unlikely to be attributable to differences in the affect that the information elicits when it is presented in these formats. Rather, they are a consequence of differences in the information processing strategy that is stimulated by the formats and the descriptive implications that are drawn from the use of these strategies.

## DISCUSSION AND CONCLUSIONS

The evidence that information has more impact on judgments and decisions when it is conveyed in the form of a narrative than when it is conveyed in a list underscores the importance of taking the format of information into account in consumer information processing. At the same time, our results make salient the need to



consider a number of factors that have not been investigated in previous research on the impact of narrative forms of information (e.g., Pennington & Hastie, 1988). For example, the differential effectiveness of narrative and list forms of information is magnified when (a) negative features of the objects being described are conveyed along with positive ones, (b) pictures accompany the text information, and (c) participants are stimulated to imagine themselves experiencing the situations described. Of particular importance is the evidence that pictures not only increase the impact of written information when this information is conveyed in a narrative but are likely to decrease the impact of information that is presented in a disorganized list.

The results obtained in these studies help to delineate the cognitive mechanisms that underlie the differential impact of narrative and list forms of information. In doing so, they call into question several possible interpretations of this difference. For example, the generally greater impact of narrative forms of information over list forms does not appear to lie in the affective reactions that narratives elicit. Participants in Experiment 2 reported that brochures elicited stronger feelings when they were in narrative form than when they were in list form. However, the affective reactions that participants experienced played no role in their judgments in Experiment 3, and this was true regardless of the format in which the information was presented. Thus, there is no evidence that the affective reactions elicited by narratives were used as a basis for judgments.

Rather, the differential effectiveness of narrative and list forms of information appears to lie in the different information processing strategies that these forms stimulate. People who encounter information in narrative form tend to adopt a holistic processing strategy. That is, they construct a mental representation of the sequence of events described by the information. (In these studies, these events concerned their own imagined experiences in the situations depicted.) Pictures of the events are likely to facilitate the construction of this sequence and to increase the detail in which it is represented. Once the representation is constructed, participants may evaluate its implications as a whole without considering the individual features that compose it. Thus, features whose implications differ from those of the sequence as a whole are given relatively little weight.

In contrast, people who encounter a list of features appear to engage in piecemeal processing. That is, they consider the implications of each feature separately without construing the context in which the features occur, and they compute an overall evaluation in a manner similar to that implied by theories of information integration (Anderson, 1981; Fishbein & Ajzen, 1975). In this computation, negative pieces of information may receive greater weight (Birnbaum, 1974; Skowronski & Carlston, 1989; Wyer, 1973, 1974). On the other hand, pictures may interfere with these mechanistic computational processes and, therefore, may decrease the impact that the information would otherwise have. Moreover, self-generated mental images of the situations described, which may result from recipients' attempts to

imagine themselves personally experiencing the situations, may have similar effects.

Once these holistic and piecemeal computational strategies have been well learned, they may be spontaneously activated by information that is presented in a format that is conducive to their application. Once activated, however, these strategies may continue to be applied in processing information that would otherwise be evaluated in different ways. In this research, for example, the strategy that was activated by the information contained in the first brochure that participants encountered was applied to information in the second brochure as well, even though the latter material was relatively difficult to process in this fashion. As we speculated earlier, participants' decisions to apply the same strategy in processing both sets of information could be due in part to their perception that similar criteria should be used in computing their evaluations. However, it could also reflect a more general tendency for information processing strategies, once they are activated, to persist (see also Schwarz & Wyer, 1985; Smith, 1990). This tendency may exist even when alternative strategies are easier to apply (e.g., Luchins, 1942).

Several considerations arise in evaluating our results and construing their generalizability. First, the narratives we considered described prominently desirable features. If the information to be transmitted has generally undesirable implications, conveying it in narrative form should theoretically produce more unfavorable evaluations than more favorable ones. Moreover, the insertion of positive features into an otherwise unfavorable set of descriptions should have relatively less influence when the information is conveyed in a narrative than when it is listed. For obvious reasons, promotional materials typically focus on attractive features of the product or service being advertised. However, negative features predominate in many public service messages that convey undesirable consequences of behavior (e.g., smoking, drinking while driving, unprotected sex, etc.). Therefore, an empirical investigation of the effect of format on the impact of this type of material is of practical as well as theoretical importance.

Other factors may need to be considered in construing the impact of format on the influence of negative information, and these are not taken into account in the conceptualization we have proposed. For example, information that is presented in narrative form may be more likely than listed information to call the recipients' attention to contextual features that surround the events being described. Thus, suppose a heavy smoker receives information describing the negative consequences of smoking cigarettes. If the information is conveyed in the form of a narrative, the recipient may identify more easily the situational factors that could account for these consequences and, therefore, may be better able to deny their personal relevance than might be the case if the consequences were simply listed. These attributional processes may not occur when the events and outcomes being described are desirable. This and other possible differences in the effects of format on the processing of favorable and unfavorable information are worth examining.

An alternative interpretation of our findings is worth noting in this context. That is, the organizational flow of the event descriptions conveyed in a narrative format might be taken as an indication that the trip itself is well organized. This could produce an increment in the desirability of vacations described in this format that is independent of the processing differences we have assumed. In this research, this increment would presumably be reflected in an overall advantage of narrative over list format. This advantage was evident only when pictures accompanied the text information. Nevertheless, the possibility that the organization of text information per se can provide information about the quality of the trip itself is worth considering in future research.

The greater influence of narrative over list format could reflect a more general tendency for information to have more impact when it is easy to comprehend and its implications are easy to imagine. This tendency has been evident in quite different domains of research. For example, the assumption that hypothetical sequences of events have more impact on judgments when they are easy to imagine is central to research on the simulation heuristic (Kahneman & Tversky, 1982; see also Strack et al., 1987, Experiment 3; Ross, Lepper, Strack, & Steinmetz, 1977). However, caution should be taken in assuming that narrative forms of information are inherently easier to process and comprehend than other forms. In the absence of either pictures or explicit instructions to imagine the events described, narrative forms of information on judgments were not appreciably more influential than list forms (see Table 4). The piecemeal computational procedures that are elicited by a list of features may be well developed as a result of prior learning and may be applied quite effectively in the absence of distraction. Therefore, pictures or mental images may be necessary to produce a clear advantage of narrative format. In this regard, Reyes, Thompson, and Bower (1980) found that image-evoking descriptions of the events conveyed in a narrative had greater impact after a period of time had elapsed than they had immediately after the information was presented. This suggests that, when narratives are accompanied by pictures or when recipients actively attempt to form mental images of the events portrayed, their relative advantage over list forms of information might increase over time.

The results of this research may help to clarify the rather mixed evidence concerning the effects of pictures on the impact of verbal information obtained in other research on consumer information processing (Costley & Brucks, 1992; Miniard et al., 1991). Although much of this research suggests that pictures have limited impact over and above the written descriptions, these descriptions were often conveyed in disorganized lists. When written material is in the form of a narrative, the positive influence of pictures may be more apparent.

Other implications of our results for marketing strategy should also be noted. Of particular interest is the implication that, when undesirable features of a product must be mentioned in a promotion (either to ensure truth in advertising or for some other reasons), these features are likely to have less adverse effects on product

evaluations when they are conveyed in the context of a narrative than when they are included in a list of features. It is also interesting to speculate that the failure to mention judgment-relevant features of a product is less likely to be noticed when the product information is conveyed in narrative form. Thus, for example, the cost of a high-priced product or service might be given less weight when it is embedded in a narrative, or, if the price is not mentioned at all, its absence might not be noticed unless knowledge of it is necessary to construct a mental representation of the sequence of events being conveyed (however, for a detailed discussion of the factors that affect sensitivity to omissions, see Sanbomatsu, Kardes, Posavac, & Houghton, 1997). Although the effects of unmentioned features were not investigated in this research, they are a worthwhile avenue for future investigation.

The decreased impact of undesirable features when they are embedded in a narrative is particularly noteworthy in the context of evidence that these features were recalled just as well under these conditions as they were when they were embedded in a list. This finding has methodological as well as theoretical implications. Specifically, it makes salient the fact that the recall of information is not always a good predictor of the influence this information has on judgment. Similar distinctions have been evident in other domains (Greenwald, 1968; Loken, 1984; Srull & Wyer, 1989; Wyer & Unverzagt, 1985). Research on implicit memory (for a review, see Greenwald & Banaji, 1995) suggests many instances in which people use information they cannot recall. This research indicates at least one instance in which people can recall judgment-relevant information that they do not use. The recall of information can often be useful in diagnosing the processes that underlie the acquisition and use of information, as this research testifies. However, its use in predicting the impact of information on consumer decisions may be somewhat questionable.

Two final observations are worth making. First, it would be inappropriate to conclude from our research that accompanying lists of features with pictures is always dysfunctional. In newspapers, for example, readers are typically exposed to a large amount of written material about a variety of topics. In this case, pictures may attract attention to an advertisement that might otherwise be ignored completely. The conclusions to be drawn from this research are most likely to apply when individuals are motivated on a priori grounds to read about the product being described without being distracted by other irrelevant information.

Second, not all product information is as easily conveyed in a narrative as the vacations described in the experiments we have reported. Nevertheless, the features of many products come into play sequentially in the course of using them. Under these conditions, presenting the features in the form of a narrative that depicts this sequence may often be more effective than a list of these features, and this may be particularly true when pictures accompany it or when undesirable features must be acknowledged along with the desirable ones. Confirmation of this speculation must of course await further research.

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