Recurrent Thought: Implications for Attitudes and Persuasion

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Social psychologists who investigate attitudes and persuasion have long been interested in thought processes (e.g., Festinger, 1957; Hovland, Janis, & Kelley, 1953; Tesser, 1978; Wyer, 1974). For example, in the Elaboration Likelihood Model of persuasion (Petty & Cacioppo, 1981, 1986), as in much of the contemporary persuasion literature, two aspects of thinking have been emphasized because of their presumed importance for understanding attitude change. First, investigators have explored determinants of the extent of thinking. That is, what determines whether people think a lot or relatively little about some attitude object? Some variables have an impact on the extent of thinking by varying a person’s motivation to think about the issue (e.g., increasing the personal relevance of the message enhances thinking; Petty & Cacioppo, 1979), whereas other variables have an impact on a person’s ability to think about the issue (e.g., increasing distraction reduces message processing; Petty, Wells, & Brock, 1976).

The second aspect of thinking that has garnered considerable research attention concerns determinants of the content of thinking. Perhaps the most
investigated content dimension is the overall valence of the thinking that occurs. That is, what determines whether one’s thoughts are relatively positive or negative? For example, research indicates that when people are motivated and able to think, then their thoughts are more positive if strong rather than weak arguments are presented (e.g., Petty et al., 1976) or if they are in a positive rather than a neutral or negative mood (e.g., Petty, Schumann, Richman, & Strathman, 1993). Of course, content dimensions other than valence have been investigated. For example, research indicates that one can prime the extent to which people think about one aspect of an issue rather than another (e.g., Sherman, Mackie, & Driscoll, 1990).

Thus, considerable progress has been made in specifying and understanding the factors that can influence the extent of thinking and the content of thinking about persuasive messages (see Petty, Priester, & Wegener, 1994, for a review). In addition, progress has been made in understanding the consequences of the extent of thinking and the content of thinking. Among the consequences of these dimensions that have received considerable attention are the extremity of judgments resulting from different thought content and the strength of the judgments that result from different amounts of thinking (e.g., see Petty, Haugtvedt, & Smith, 1995; Tesser, Martin, & Mendolia, 1995).

Importantly, each of these dimensions is typically viewed as a continuum. That is, the extent of thinking can vary from all to none, with many levels in between. Similarly, along any one content dimension, thoughts can range, for example, from very positive to very negative, or very much about oneself to very little about oneself, and so forth. The outcomes of extent and content of thinking can also be viewed as falling along a continuum. That is, one can examine the degree of extremity in judgments, or the degree of strength of a judgment, and so on.

We view the chapter by Martin and Tesser as highlighting additional dimensions of thinking that can also be viewed as falling along various continua. The most important of these dimensions is the recurrence of the thinking. That is, whatever the overall amount of thinking (i.e., high, medium, low) that occurs, or whatever its content (e.g., positive, neutral, negative), how frequently does it occur? Does it occur all at once, or is it spaced out over a day, or a year, or a decade? Martin and Tesser refer to recurrent thought as rumination. They argue that there is no qualitative

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1In some studies, content variables are examined along with extent variables. For example, when a manipulation of argument quality is crossed with a manipulation of distraction, an interaction is obtained such that when the arguments are cogent, distraction reduces persuasion by interfering with the favorable thoughts that would have arisen, but when the arguments are spurious, distraction enhances persuasion by interfering with the counterarguing that would have taken place (Petty et al., 1976).
difference between ruminative and nonruminative thought, that it is not possible to define how many thoughts are necessary to be considered rumination, and that it is not possible to define over what time period thought must occur to be considered ruminative. Of course, such decisions could be made but would be arbitrary. Given this state of affairs, our preference is to categorize thinking along at least three dimensions: extent, content, and recurrence. Our specific goals in this chapter are to comment on the Martin and Tesser chapter and to outline some of the implications of recurrent thinking for understanding attitudes and persuasion.

We have already described the extent and content dimensions, but what about the recurrence dimensions? Consider a person who is relatively low on the extent of thinking dimension—thinking only three thoughts about some issue. This person might have these three thoughts all at once, or these thoughts might be spread out over the course of a month. Similarly, a person who is high on the extent of thinking dimension—thinking 20 thoughts about some issue—might think these thoughts all at once without interruption (i.e., at one occurrence), or these thoughts might occur in two blocks of 10 thoughts each (2 occurrences), or 10 blocks of 2 thoughts each (10 occurrences). The more total thoughts a person thinks (e.g., 20 rather than 3), the higher the person is on the extent of thinking dimension. The more specific episodes of thought about an object or issue (e.g., 10 versus 1), the higher the person is on the recurrence dimension. This analysis avoids the term rumination and suggests instead that all thinking can vary in extent, content, and recurrence.

Just as the extent of thought and the content of thought have been of interest to investigators because specific outcomes have been tied to these thought dimensions, the recurrence dimension would be of special interest to the extent that it has unique outcomes. Stated simply, does it matter if a person’s 20 thoughts occur all at once, or if they are spread over 2 or 10 occasions? To the extent that the number of occurrences makes a difference over and above what can be predicted based on the extent of thinking alone (e.g., the total number of thoughts generated; or the total amount of time devoted to thinking), then recurrence of thought is of considerable interest. To the extent that meaningful consequences result from recurrence, then it is important to understand the determinants of recurrence. That is, why does thinking about some things occur all at once and only

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2Various measurable aspects of recurrence in addition to the mere number of occurrences of thought are likely to be of interest in any research program. For example, one could calculate the average spacing of the thought occurrences (e.g., Does the person think about the issue on average of once per day or per year? Do 10 or 100 unrelated thoughts intervene between each relevant occurrence?).
once, versus twice over the course of a year, versus 100 times over the course of a month?³

INITIATION AND TERMINATION OF THINKING: AN INITIAL MODEL

Figure 10.1 presents a model outlining some ways in which thought can become recurrent. This model, like the Elaboration Likelihood Model of persuasion (ELM; Petty & Cacioppo, 1986), begins with variables that initiate thinking and determine its extent. Until a thought process is initiated, it makes little sense to ask how intense the thought is, what its content is, or whether the thinking will recur.

Initiation of Thinking

In the ELM, it is assumed that some thinking is initiated when a persuasive message is received. In laboratory settings, when people receive a message, they typically are told that they are being exposed to the message for some purpose (e.g., to analyze the personality of the writer; to assess the sound quality of a tape-recording, etc.), and thus some thinking is initiated by the participants’ desires to accomplish their assigned task. However, extra thinking (not required by the experimenter-provided goal) can occur if the message is particularly relevant or interesting. If a persuasive message is encountered outside of the laboratory, however, a thought episode might or might not be initiated.

In general, a host of variables can initiate thinking. At the most simple level, the mere encountering of some object toward which one has an accessible attitude can lead to thinking about that object (e.g., seeing a

³Martin and Tesser’s analysis also suggests other dimensions of thinking. For example, is the thought deliberate or spontaneous, intended or unintended? We view these as separate dimensions along which thought can be categorized. That is, recurrent thought (as well as nonrecurrent thought) can be extensive or minimal, deliberate or spontaneous, intended or unintended, positive or negative, and so on. Martin and Tesser highlight the spontaneous and unintended aspects of recurrent thought in their treatment of rumination, yet deliberate and intended recurrent thought may have many of the same consequences. Other dimensions that are likely to be consequential include whether the thoughts are wanted versus unwanted and unique versus duplicative. Martin and Tesser note that unwanted recurrent thoughts can be problematic, but so too can thoughts that occur only once—it’s just that the more often undesired thoughts occur (i.e., the more they recur), the more problematic they are. In any case, we favor viewing each of these variables as continuous dimensions along which thinking can vary.
FIG. 10.1. Model of initiation and termination of a thought episode.

picture of one’s boyfriend or girlfriend; cf. Fazio, 1995). Of course, specific tasks assigned by others can initiate thinking (e.g., being given a puzzle to solve or a survey question to answer). As highlighted by Martin and Tesser, failure to complete one’s goal or making unexpected progress toward one’s goal can initiate thinking in the absence of any external demand (e.g., Why have I failed? What can I do differently?). Noticing incongruities and being confused or surprised can initiate thinking in an attempt to resolve the incongruity and restore clarity (e.g., Pyszczynski & Greenberg, 1981). For
example, thinking about a persuasive message is more likely to be initiated when people encounter the unexpected information that a majority of people disagrees rather than agrees with them on some issue (Baker & Petty, 1994; see also Maheswaran & Chaiken, 1991).

Extent of Thinking

Consistent with the ELM, Fig. 10.1 shows that the extent of thinking in any thought episode is determined in part by how motivated and able people are to consider the issue. For example, consider two people, one about to make a decision on which candy bar to purchase, another about to make a decision on which house to purchase. In each case, thinking is initiated by the need to make a decision. However, the amount of thinking will differ in each case. The house purchase is considerably more consequential and important and will motivate greater thought (Petty & Cacioppo, 1990). Similarly, as noted by Martin and Tesser, problematic progress toward some goal will initiate thinking. However, the extent of thinking will be determined by the importance of the goal toward which one is making unexpected progress (e.g., is the goal a higher or lower order goal?).

If a person is particularly motivated to think, whether thinking will occur or not depends on the person’s ability to think. Such practical considerations as whether the person has sufficient time to think can be important in determining whether thought occurs at that point in time. Also, a person who is highly motivated to think about some problem might have plenty of time but insufficient knowledge to generate thoughts on the issue. In such instances a person might simply tag this issue as worthy of further thought when circumstances permit (Klinger, 1975).

It is important to note that people are sometimes highly motivated to avoid thinking rather than neutral with respect to thinking (Schwarz, 1990). For example, when people are in a good mood, they particularly do not wish to think about things that are unpleasant (Wegener, Petty, & Smith, 1990). Our working assumption is that variables such as personal relevance or importance influence the extent of thinking. For example, high relevance subjects think a lot during a message presentation, and low relevance subjects exert less effort and rely on cues (e.g., Petty, Cacioppo, & Goldman, 1981). It is assumed that when it is time for a judgment to be expressed, subjects simply report the judgment formed based on much or little thinking. A second possibility, however, is that high involvement subjects engage in on-line thinking at the time of message presentation but that low involvement subjects do not think until the attitude question is posed (cf. Hastie & Park, 1986). That is, under high involvement, thought is initiated at message presentation, but under low involvement, thought is not initiated until the attitude question is posed (see Haugtvedt & Petty, 1992). Thus, involvement may induce differences in the timing of the thinking as well as the extent of thinking.
Thus, a happy person might simply decide to put off thinking about an unpleasant problem now but tag it to return to later. Of course, just because a person is motivated to avoid thinking about some issue does not mean that thinking will be avoided (cf. Wegner, 1994). The person must also have the ability to stop the unwanted thoughts. Martin and Tesser note that in such circumstances, if some distraction is available, the person might be able to terminate thinking at least until some other stimulus reinitiates thought.

**Content of Thinking**

Whether a person is motivated and able to think or is motivated to avoid thinking but unable to suppress the thoughts, the content of thought can be determined by a number of factors. In their Table 1.1, Martin and Tesser categorize various modes of ruminative thought. Their categorization scheme is potentially quite valuable, especially because these categories of thought appear to apply to all thought, not just ruminative thought. For example, if a survey taker asks a person about his or her most recent clothing purchase, the respondent might reply that the purchase was a mistake because the shirt wrinkles so easily. This thought is clearly a negative reaction to past attainment—a “regret” thought. However, it presumably is not ruminative in that it does not recur and is elicited by situational demand. Similarly a person can have one “basking” thought or one “optimistic” thought.

Because the organizational scheme in Table 1.1 appears to apply to all thinking, it provides a useful starting point for uncovering the most important content dimensions along which people’s thoughts can be categorized. Interestingly, two of the dimensions in Table 1.1 might be captured in part by individual difference variables. For example, the optimism–pessimism scale (Scheier & Carver, 1987) might be useful in assessing the likelihood of generating positive versus negative thoughts, and the consideration of future consequences scale (Strathman, Gleicher, Boninger, & Edwards, 1994) might tap into the extent to which people’s thoughts focus on the future rather than the past or present. Other individual difference constructs suggest other content dimensions. For example, all the thoughts in Table 1.1 appear to be “evaluative” in nature, but recent research indicates that there are individual differences in the tendency to generate evaluative thoughts (i.e., the need to evaluate; Jarvis & Petty, in press; see also Petty & Jarvis, in press). This suggests that the authors might include a category for neutral or “factual thoughts” (e.g., a person who has recurrent thoughts about what the future will be like). The persuasion literature suggests that another dimension of potential utility is the extent to which the thoughts are
self-relevant or not (e.g., one can “worry” about oneself or “worry” about the world economy; cf. Shavitt & Brock, 1986). Of course, the number of content dimensions can easily become overwhelming, and thus some criteria for inclusion should be specified.

According to Martin and Tesser, which of the specific types of thought in Table 1.1 will occur is determined by which goal the person believes has been thwarted. Although this is clearly an important variable, other factors can determine the content of thought whether or not this thought is rumi-
native. For example, as noted previously, a person’s mood can influence the valence of thinking. The authors appear to agree in that they note that negative moods can lead people to think that they are falling short of their standards whereas positive moods provide a more optimistic bias. Our point is that the content of thinking in general, whether rumi-native or not, is likely to be influenced by thwarted goals, moods, accessible constructs, and many other factors.

Although Table 1.1 provides an excellent start in categorizing the content of people’s thoughts, it does not offer much guidance in understanding whether the various types of thought (e.g., regret, brooding, etc.) recur in the absence of some external demand. Thus, our preference is simply to talk about thinking and to examine the dimensions of thinking that are impor-
tant for the phenomena at hand. The aspect of thinking highlighted by Martin and Tesser is the likelihood of recurrence.

Recurrent of Thought

After an initial occurrence of thought about an object, what determines whether the thinking about the object or issue will occur again? Figure 10.1 depicts a number of ways in which thinking about an issue can recur. First, consider a situation in which thinking about some problem is initiated and the person is motivated to think diligently about the problem because it is important. However, before generating the first substantive thought, the phone rings, stifling thought about issue 1 and initiating thought about another issue. The phone call sends the person hurrying off to work at the hospital. The problem (or discrepancy or confusion) that initiated thought has not been resolved, and the person makes a mental note to think about the issue at some time in the future. Later that day (e.g., after dinner when it is quiet and ability to think is present), the person may begin to think about the issue until other demands require termination. The person may continue to think about the issue on and off until the problem is solved (or the discrepancy is resolved or the confusion is made clear; i.e., one’s goal is reached).

In other instances, people might initially have the motivation and ability to think about the issue at the time thought is initiated, and many initial
thoughts occur, but they are interrupted from reaching closure. There are many reasons why people might not be able to finish thinking after it is started. First, time could run out—it is time to prepare dinner, or go to work, and so on. Second, time might not be a problem, but the person might not be able to reach closure (e.g., the person cannot decide what to buy because there is insufficient information available in the store; the person runs out of solutions to the problem and is not happy with any of the solutions generated). Alternatively, the topic might be so pleasant to think about that the issue is tagged for thought whenever the person is feeling bad (e.g., retrieving a pleasant memory to alleviate a negative mood; see Smith & Petty, 1995). Thus, once thinking begins, there are a number of factors that can lead a person to tag the issue as worthy of further thought and return to it later. We are not suggesting that the people necessarily set aside time to think about the issue in a conscious or deliberate way. Rather, by making a mental note of wanting to think, this topic is more likely to come to mind than if the issue was tagged as resolved or closed. It is even possible that people are not consciously aware that they want to engage in additional thought about the issue, but at some level they are unsatisfied with the solution they have arrived at, and thus the issue keeps popping into mind.

Yet another possibility is that a person reaches closure (i.e., stops thinking) and is happy with the solution or judgment reached initially, but something later causes the person to doubt the initial solution (e.g., "I thought I would major in psychology, but this new class makes me wonder"). This instance is distinguished from the others in that in the earlier examples, thought was initiated by factor 1, and the thought reoccurred periodically over time until the initial provocation to think reached some resolution. In the current instance, the thinking initiated by factor 1 reaches closure, but some new provocation (factor 2) initiates thinking on the same topic.

**Termination of Thinking**

With rare exceptions (e.g., Lassiter, Pezzo, & Apple, 1993), research on the thought processes leading to attitude change has focused on the thought that occurs during an initial thought episode. Yet the consideration of rumination and thought recurrence raise the important need to understand not only what initiates thinking but also what gets it to recur and then finally stop. First, we know that some individuals are more eager to reach closure quickly than others (Webster & Kruglanski, 1994). Individuals high in their need for closure are expected to stop thinking (i.e., reach closure) more quickly than those who are low in need for closure, but if the individuals high in this need were prevented from reaching closure, it is likely that they would be more susceptible to recurrent thought. Also,
some people like to think and problem solve. These individuals are considered high in the need for cognition (Cacioppo & Petty, 1982) and are expected to persevere in thinking about a problem or task longer than individuals who are low in need for cognition. Because high need for cognition individuals are task focused, they are not more likely to engage in non-task-relevant thoughts (e.g., irrelevant daydreams) than are low need for cognition individuals.

Importantly, however, just as there are start rules or heuristics that initiate thinking (e.g., “begin thinking when a problem is presented”) and shift rules that move thinking into high gear (e.g., “process carefully when the issue is important”), there are also stop rules that allow a person to decide when to terminate thinking (Petty & Priester, 1994). Martin and Tesser emphasize that thinking about an issue is stopped when progress toward a goal is no longer problematic. For example, in a persuasion situation, if the overall goal is to form a veridical opinion (Petty & Cacioppo, 1986), then people are likely to stop thinking when they can be confident that the opinion they have formed is accurate (e.g., Priester & Petty, 1995). Chaiken, Liberman, and Eagly (1989) suggested that people will stop thinking about an issue (or resort to heuristic processing) when their level of confidence in their attitude reaches their desired level of confidence (i.e., the “sufficiency threshold”).

Other stop rules for thinking are also possible, and these rules are typically tied to the goals that initiated thinking in the first place. For example, if people are motivated to maintain a positive mood, they may continue thinking about a message as long as thinking about the message is enjoyable and maintaining happiness is a current goal (Wegener & Petty, in press). Investigations of stop rules are just beginning, but it is already clear that different stop rules are likely to be used in different situations. Furthermore, the framing of a stop rule appears to be important. For example, Martin, Ward, Achee, and Wyer (1993) compared the cognitive performance of individuals in good or bad moods who were given different stop rules. Instructing people to work on a task for as long as they felt like continuing led to greater thought among happy than among sad individuals. If people ask themselves if they should continue thinking, people in a good mood may be more likely to continue because they interpret their good mood as a sign that the task is enjoyable. People in a bad mood may see the task as unpleasant and will be less likely to continue. However, when people were told to work on the task until they felt it was a good time to stop, sad people exerted more cognitive effort than happy people. If people ask themselves if they should stop, people in a good mood may be more likely to feel satisfied with the thoughts generated and feel that enough thinking has been done. People in a bad mood may feel dissatisfied and think that additional thought is necessary prior to stopping.
Outcome of Thinking

As noted earlier, the dimensions of thinking we have identified are of interest to the extent that there are specific consequences of each. Previous research has already documented consequences of the amount of thinking and the content of thinking. Fewer implications of recurrent thinking have been demonstrated. Of interest are such questions as whether recurrent thinking leads to overall evaluations that are different in any way (e.g., more polarized or stronger) than evaluations formed as a result of the same amount of thinking that occurs all at once.

POSSIBLE CONSEQUENCES OF RUMINATION IN THE ATTITUDE CHANGE LITERATURE

As noted previously, the vast majority of attitude change studies appear to assume that any thinking about a persuasive message (or issue) is done at one time. Little attention is paid to the recurrence of thought and its consequences or what might lead to recurrence. However, a number of attitudinal phenomena in addition to the work on attitude persistence mentioned by Martin and Tesser (e.g., Lassiter et al., 1993) lend themselves to a recurrence analysis. Inspired by Chapter 1, we present ideas on the implications of recurrent thought for two theories of attitude change—the theory of cognitive dissonance (Festinger, 1957) and the elaboration likelihood model of persuasion (Petty & Cacioppo, 1986).

Recurrent Thought and Cognitive Dissonance

Although contemporary theorists disagree about the precise triggering event for cognitive dissonance to occur, each of the popular perspectives

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5 Interestingly, the cited work on attitude persistence may have less relevance to rumination than it initially appears. Lassiter et al. (1993) exposed subjects to a message that induced attitude change. Some subjects were then assigned the task of transmitting the message to another subject but were interrupted from doing so. Other subjects were allowed to complete their transmission. When attitudes were assessed 10 weeks later, interrupted subjects showed greater persistence of attitude change than individuals who were not interrupted from transmitting. One explanation for this finding is that task-incomplete subjects continued to think about the incomplete task over the 10 weeks and this rumination helped to maintain their newly changed attitudes. However, Downing (1994) showed that if subjects are interrupted but then allowed to complete their transmission just 10 minutes later, they show persistence comparable to subjects who don’t complete their transmission until 8 weeks later (and both groups showed greater persistence than uninterrupted subjects). Thus, although task interruption may increase thought, it is possible that all the thought takes place shortly after the task interruption (e.g., “what would I have said if I got to transmit the message”) and might not continue until the task (i.e., the transmission) is completed (see Petty et al., 1995, for further discussion).
suggests that dissonance occurs when people have done something they
did not want to do. Some theorists focus on the fact that people have
brought about an aversive or negative outcome (e.g., Cooper & Fazio, 1984).
Others focus on the fact that people have engaged in behavior that is
inconsistent with their own view of themselves (e.g., Aronson, 1968). Still
others argue that dissonance occurs when people violate their self-integrity
(e.g., Steele, 1988). In each case there is some type of discrepancy between
the way things turned out and what was wanted. Such discrepancies are
postulated by Martin and Tesser to bring about recurrent thought until the
discrepancy is resolved. Thus, dissonance inductions are prime candidates
for instigators of recurrent thought.

In the typical dissonance study, people are provided with an immediate
chance to resolve the discrepancy by changing their attitudes. For example,
if people see themselves as honest, then it is discrepant to tell a lie such as
saying that a boring task is interesting (Festinger & Carlsmith, 1959).
However, if people come to view the task as interesting, the self-discrep-
ancy disappears (Aronson, 1968). It is often assumed that the motivation to
resolve the discrepancy stems from the aversive feelings that such discrep-
ancies induce. According to this view, reducing the unpleasant state by
inducing a pleasant state may be sufficient to reduce dissonance. In fact,
some research has shown that following a dissonance-inducing act with a
comedy film is effective in reducing dissonance (Cooper, Fazio, & Rhode-
walt, 1978). Yet a comedy film (or any other momentary distractor) does
not eliminate the discrepancy.6 Thus, if discrepancy reduction rather than
negative state relief is behind dissonance effects (cf. Berkowitz & Devine,
1989), the comedy film will provide only temporary relief from dissonance.
As long as the discrepancy remains unresolved, at some later point in time,
thoughts about the discrepancy may arise. The more important the cogni-
tions involved in the discrepancy, the more likely the person is to have
recurrent thoughts about the unresolved discrepancy in the future. This
raises the interesting possibility that in some studies where a treatment (e.g.,
comedy film) appeared to have eliminated dissonance, the treatment might
in fact have only postponed dissonance reduction. In support of this view,
Higgins, Rhodewalt, and Zanna (1979) found that dissonance processes
could be reinitiated two weeks after dissonance was apparently attenuated
by misattribution.

Dissonance theorists have also argued that any choice involving more
than trivial consequences induces dissonance. People want to make perfect

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6Cooper et al. (1978) argued that the comedy film reduced dissonance because subjects
misattributed their dissonance arousal to the film, which caused them to see the film as more
funny than in the no-dissonance condition. On the other hand, subjects might have seen the
film as more funny in the dissonance conditions because of a judgmental contrast effect with
their current aversive state serving as an anchor.
choices, but almost no choices are perfect. Thus, most choices are less than ideal in that people must accept the negative features of the chosen alternative and discard the positive features of the rejected alternative. For example, Brehm (1956) found that after people made a choice between two consumer products that they had originally rated as equally attractive, their ratings of the products diverged such that the chosen product was seen as more desirable and the rejected product was seen as less desirable.

Martin and Tesser suggested some factors that would likely influence the extent to which people engage in recurrent thought about their choices. Consider the following choice dilemma. Two individuals are standing in the supermarket and are trying to decide between purchasing the fat-free frozen yogurt or the sinfully rich double chocolate fudge ice cream. This decision might typically be framed as involving a lower order and rather immediate goal: “I need to choose a dessert for tonight.” However, this same decision can be represented on a higher level (see McIntosh & Martin, 1992): A person may frame the choice as one of self-control versus freedom and autonomy. By choosing the fat-free yogurt, one maintains self-control but gives up free choice. By choosing the rich ice cream, one tosses self-control aside and declares freedom. This trade-off is clearly more central to the self-concept than the simple “What should I have for dessert” decision. Importantly, after consuming the evening’s dessert, the lower order goal of selecting a dessert is completely resolved. However, even after consuming the dessert, the higher order battle between self-control and freedom remains, and thus the process of dissonance reduction may be more likely to continue over some period of time. Each instance of recurrent thought about the decision may reactivate the original dissonance arousal, resulting in a greater spreading of the alternatives. Interestingly, the alternatives spread apart may include the underlying values of freedom and control, which would in turn influence the desirability of the two dessert choices in the future.

**Recurrent Thought and the Elaboration Likelihood Model**

**Elaboration and Attitude Strength.** The Elaboration Likelihood Model of persuasion (ELM) has focused on variables that determine the extent and content of thinking. In addition, a key postulate of this model is that attitudes formed through extensive elaborative thought are more persistent over time, resistant to change, and more predictive of behavior than similar attitudes formed through less effortful means (Petty & Cacioppo, 1986). However, what has not been considered previously is whether two attitudes based on the *same extent* of object-based elaboration can vary in their persistence, resistance, and link to behavior as a function
of the time course over which the elaboration occurred (i.e., the recurrence of thought).

An important step for future research is to examine the extent to which attitude formation and change processes are susceptible to thought recurrence. If we assume that people want to have correct attitudes about the many objects, issues, and people in their lives (Festinger, 1950) and that, to the extent that these targets are important, people engage in considerable target-relevant information processing activity in order to reach this goal (Petty & Cacioppo, 1986), then according to Martin and Tesser, any factor preventing the individual from completing this goal should encourage thought recurrence. For example, if initial thinking produced an ambivalent reaction (e.g., equivalent positive and negative thoughts), an overall evaluation might not be formed, and the individual might vacillate back and forth between positivity and negativity (Vallacher, Nowak, & Kaufman, 1994). This lack of evaluative closure could lead to recurrent thinking until the ambivalence was resolved. In addition, because a number of very common factors are known to disrupt motivated evaluative processing (e.g., lack of information or knowledge, distraction, competing goals, and so forth), it seems likely that thoughts recur during the development of attitudes, especially when objects of high personal relevance or importance are involved.

If thought recurrence is common in attitude formation and change settings, another question that should be addressed is whether recurrent thinking in such contexts involves unique thoughts or repetitive thoughts about the target. This is a potentially important question because the consequences of thought recurrence for attitudes vary depending on the nature of the recurrent thought. For example, if recurrence is limited to rethinking old thoughts (i.e., "mere" recurrence), the primary consequence will be maintaining one’s attitude. In fact, getting people to memorize their cognitive responses to a persuasive message has been effective in producing enduring attitudes (see Petty et al., 1995). The rehearsal of previous thoughts should help to inhibit their normal decay over time, which should consequently encourage attitude persistence, discourage the attitude-behavior link from weakening, and prevent the attitude from becoming vulnerable to attack due to weakened accessibility of the attitude and bolstering thoughts. That is, the strength of mere recurrence lies in its capacity to maintain attitudes at or near the level of their initial activation.

However, if people tend to elaborate on their recurrent thoughts, generating unique ideas at each episode, then the extremity and strength of the attitude might increase over time. If new attitude-consistent thoughts are generated at each thought episode, attitudes could polarize (Tesser et al., 1995). Also, with additional elaboration, the attitude structure should become more extensive, better organized, and more differentiated from other
structures in memory. Greater elaboration is thought to be associated with increased resistance because it provides the individual with a stronger basis for the attitude, preparing it to resist counterattacks more effectively (e.g., Haugtvedt, Schumann, Schneier, & Warren, 1994; Petty & Cacioppo, 1986).

Of course, the question of whether one’s thoughts are unique or repetitive could be asked about the thinking that takes place on any one occasion. Thus, an essential question concerns whether the link between attitude elaboration and outcomes such as persistence, resistance, and attitude–behavior consistency becomes stronger when it occurs gradually over time (i.e., when holding the extent of elaborative processing constant). This finding would have important implications for attitude change strategies. For example, will the disruption of attitude formation processes prior to completion be a more effective means of persuasion (assuming strong arguments) than encouraging subjects to reach final closure during initial exposure to the attitude object? Although the effectiveness of gradual versus all-at-once elaboration remains an empirical question, some research suggests that information learned over a longer period of time is better retained and remains more accessible than the same information learned over a shorter period of time (e.g., see Underwood, Keppel, & Schulz, 1962; Smith & Rothkopf, 1984).

**Multiple Roles for Recurrent Thought.** According to the ELM, variables can serve multiple roles in determining attitude change (Petty, 1994), and thus recurrence of thought is likely to influence attitudes in multiple ways. Perhaps the most obvious implication of recurrence is that it provides individuals with an increased number of opportunities to engage in elaborative thought regarding the attitude object. In this regard it would be interesting to determine whether the effects of recurrent self-generated thought parallel effects obtained in research conducted on the effects of message repetition. Cacioppo and Petty (1979), for example, found that a moderate amount of repetition enhanced object-relevant elaborative thought, but a high amount of repetition led to tedium and negative reactions. Perhaps people react similarly when a issue repeatedly comes to mind. That is, moderate recurrence may lead to relatively objective elaboration of the topic, but a high degree of recurrence may lead to tedium and negative thoughts about the issue. Thus, recurrence can influence the amount and valence of thinking one does about an attitude object.

A second possibility is that when the likelihood of elaboration due to other factors is low (e.g., high distraction conditions), recurrence can influence attitudes by peripheral route processes. A number of lines of research make interesting predictions here. Wyer (1991) suggested that the likelihood of an event can be judged simply on the basis of the perceived
familiarity of the event. Consistent with the familiarity idea, Arkes, Boehm, and Xu (1991) showed that mere repetition of a statement led to an increase in its perceived truthfulness. Thus, the more a person is exposed to an idea (i.e., the more it recurs), the more he or she is likely to believe that the idea is true. This effect is especially likely if critical thought about the idea is minimized (e.g., Gilbert, Krull, & Mallone, 1990). If recurrence of thought influences the perceived validity of the thought, this would be of central importance to subsequent processes involving deliberative evaluation. In expectancy-value models (e.g., Fishbein & Ajzen, 1975), for example, an evaluative response is in part determined by the likelihood of the consequences associated with the attitude object. If recurrence by itself facilitates the strengthening of belief, then recurrent thinking will lead to a corresponding polarization of the attitude. This is especially interesting given that this prediction requires no change in thought content over time!

The effects of mere recurrence may not be limited to strengthening beliefs. Zajonc's (e.g., 1968) research on mere exposure suggests that mere recurrence may also lead to an increase in the perceived desirability of the recurrent thoughts, especially when additional processing is limited (Bornstein, 1989). This suggests the possibility that people come to perceive the consequences associated with the object more favorably (or at least less negatively) as a function of recurrence, especially under restricted processing conditions. This also points to another useful distinction between elaborative and mere recurrence. The present analysis suggests that mere recurrence can make thoughts seem more likely and more desirable. It would be very interesting to find that more deliberative recurrence, in contrast, leads to polarization of the person's initial likelihood and desirability judgments (e.g., Judd & Brauer, 1995; Tesser et al., 1995).

Finally, it seems possible that under restricted processing conditions, people may simply infer their attitudes by the mere recurrence of thought, as might be expected by self-perception theory (Bem, 1972). For example, a man may infer his liking for a woman due to the frequency of his thoughts about her (e.g., "I must like her... I can't get her off my mind!").

**SUMMARY**

We have argued that there are various dimensions of thought that are relevant to understanding attitudes and other judgmental phenomena (e.g., extent, content, recurrence). We have further argued that numerous variables can influence each of these aspects of thought. The Martin and Tesser chapter is quite valuable in pointing to a dimension of thought that has been relatively ignored in the attitudes and persuasion literature—thought recurrence. In addition, Martin and Tesser have highlighted factors that produce recurrence, such as lack of goal attainment. One open question,
however, is whether it is productive to separate ruminative thought as a special category of recurrent thinking or whether it will prove more useful to consider recurrence as just one of many dimensions along which thinking can be categorized. In any case, there is little question that many of us will be thinking (or ruminating) about the issues raised by Martin and Tesser for some time.

REFERENCES


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