sage exposure and its role in belief change persis-tence. *Communication Research, 19,* 597-617.

Slater, M. D., & Rouner, D. (1996a). How message evaluation and source attributes may influence credibility assessment and belief change. *Journalism and Mass Communication Quarterly, 73,* 974-991.

Slater, M. D., & Rouner, D. (1996b). Value affirmative and value protective processing of alcohol education messages that include statistics or anecdotes. *Communication Research, 23,* 210-235.

Slater, M. D., & Rouner, D. (1997, May). *The processing of narrative fiction containing persuasive content about alcohol use: Effects of gender and outcome.* Paper presented at the meeting of the International Communication Association, Information Systems Division. Montreal.

Stephenson, M. T. (1999). *Message sensation value and sensation seeking as determinants of message processing.* Unpublished dissertation, University of Kentucky.

Stephenson, M. T. (in press). Sensation seeking as a moderator of the processing of anti-heroin PSAs. *Communication Studies, 53*(3).

Stroh, P. K. (1995). Voters as pragmatic cognitive misers: The accuracy-effort trade-off in the candidate evaluation process. In M. Lodge & K. McGraw (Eds.), *Political judgment: Structure and process* (pp. 207-228). Ann Arbor: University of Michigan Press.

Tewksbury, D. (1999). Differences in how we watch the news: The impact of processing goals and expertise on evaluations of political actors. *Communication Research, 26*(1), 4-29.

Wyer, R. S., Srull, T. K., Gordon, S. E., & Hartwick, J. (1982). Effects of processing objectives on the recall of prose material. *Journal of Personality and Social Psychology, 43,* 674-688.

11

The Heuristic-Systematic Model of Social Information Processing

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Persuasion has been a major topic of study for scholars interested in attitude change (Eagly & Chaiken, 1993). Earlier cognitive theories focused on how people process the quality of persuasion messages (Greenwald, 1968; McGuire, 1968). For example, persuasion effects were conceptualized in terms of the attention allocated to the message, the comprehension of the message content, and the acceptance of the message conclusions (Hovland, Janis, & Kelley, 1953). Unlike these message-based theories of persuasion, the Heuristic-Systematic Model (HSM) (Chaiken, 1980, 1987), together with the Elaboration Likelihood Model (ELM) (Petty & Cacioppo, 1981, 1986b), recognized a host of variables conceptually independent of message quality that influence people. Most important, according to both the HSM and the ELM, these variables can trigger qualitatively different information processing.

Although people can carefully attend to and elaborate on the content of a persuasion message, they can also process the message quite superficially, attending only to cues peripheral to its content such as the length of the message and the source of the message. The HSM attempts to characterize these two modes of processing—systematic and heuristic—and to specify the conditions that trigger and govern a specific mode of processing. We hasten to add that the two modes of information processing (systematic vs. heuristic) are not linked in one-to-one fashion with the types of informational cues (message content vs. other cues), as suggested by some researchers (Kruglanski & Thompson, 1999). The critical assumption of the HSM is that people can engage in systematic or heuristic processing. People can scrutinize cues peripheral to the message content, or they can process the message content heuristically. The

HSM is a dual-process model (Chaiken & Trope, 1999) positing two concurrent modes of qualitatively different social information processing.

The HSM has undergone several major developments. Initially, the model specified the two modes of heuristic and systematic processing (Chaiken, 1980, 1987). Then, the model was extended to specify the psychological conditions for triggering the modes of processing in terms of the discrepancy between actual and desired subjective confidence (Chaiken, Liberman, & Eagly, 1989). Finally, in addition to the accuracy motivation assumed to be present in most persuasion situations, the HSM was extended to include two other types of underlying motivations: defensive and impression motivation (Chaiken, Giner-Sorolla, & Chen, 1996). As a general model of social information processing, the HSM has been applied to a wide range of phenomena (e.g., Bohner, Moskowitz, & Chaiken, 1995; Chen & Chaiken, 1999).

In the first part of this chapter, we outline the main assumptions of the HSM and review research supporting the model's assumptions. In the second part, we lay out directions for future research.

ASSUMPTIONS ABOUT THE NATURE OF INFORMATION PROCESSING

People rarely process information in perfect conditions. There are both environmental and cognitive constraints on information processing. These constraints have given rise to the metaphor of the cognitive miser (Fiske & Taylor, 1991). In this metaphor, people are economy-minded, investing cognitive effort in a task only when given sufficient motivation and cognitive resources. Consistent with this assumption, the HSM posits that people engage in systematic processing of persuasive

information only when they are sufficiently motivated. In a systematic mode, people consider all relevant pieces of information, elaborate on these pieces of information, and form a judgment based on these elaborations.

However, if people are not sufficiently motivated or do not have sufficient cognitive resources, they can engage in superficial or heuristic processing of available information. In a heuristic mode, people consider a few informational cues—or even a single informational cue—and form a judgment based on these cues. For instance, such cues may be the source of the message or the length of the message. That is, people use a simple decision rule such as "Experts can be trusted" to arrive at a conclusion instead of scrutinizing the quality of persuasive arguments.

The signature finding of dual-process models of persuasion is the dissociation between the effects of relatively important message content variables and the effects of relatively unimportant message variables on persuasion (Chaiken, 1980, 1987; Petty & Cacioppo, 1981, 1986a, 1986b). People induced to process persuasion information systematically differentiate between strong and weak arguments and are unaffected by variables irrelevant to substantive message content such as the length of the message. People induced to process information heuristically do not differentiate between strong and weak messages and instead are affected by ostensibly less important informational cues such as the attractiveness of the message source. For example, participants who expected to discuss a persuasion message later were affected by the number of persuasive arguments but were not affected by the attractiveness of the communicator. Presumably, the importance of the message induced systematic processing. By contrast, participants who did not expect to discuss the message were affected by the attractiveness of the communicator but were not affected by the number of persuasive argu-

ments (Chaiken, 1980). The message was not important for the latter group of participants, and they processed it heuristically.

To obtain dissociations in effects of persuasion variables on attitudes, one needs to manipulate either the motivation of the participants or their cognitive resources and/or ability to process information. Motivational variables that have been shown to affect the mode of processing include the personal relevance of the persuasion message (Chaiken, 1980; Johnson & Eagly, 1989; Petty & Cacioppo, 1979, 1986b, 1990), the need for cognition (Cacioppo, Petty, Kao, & Rodriguez, 1986), task importance (Maheswaran & Chaiken, 1991), accountability for one's attitudes (Tetlock, 1983), and exposure to unexpected message content (Maheswaran & Chaiken, 1991). Cognitive resource variables that affect the mode of processing include distraction (Festinger & Maccoby, 1964; Osterhouse & Brock, 1970; Petty, Wells, & Brock, 1976), message repetition (Cacioppo & Petty, 1979, 1985), time pressure (Moore, Hausknecht, & Thamodaran, 1986; Ratneshwar & Chaiken, 1991), communication modality (Eagly & Chaiken, 1993), and knowledge and expertise (Alba & Marmorstein, 1987; Wood, 1982).

We should note that to find evidence for different modes of processing, it is not sufficient to demonstrate dissociation effects of persuasion variables on attitudes at the level of the group means. In addition, one should show that in a systematic mode, issue-related thoughts mediate the effect of persuasion variables on attitudes. Similarly in a heuristic mode, heuristic cues should have direct effects on attitudes.

Characteristics of Systematic and Heuristic Processing

Systematic processing is a comprehensive analytic orientation to information process-

ing. In a systematic mode, people scrutinize available persuasion information for its relevance to their task. They evaluate the validity of the advocated position by scrutinizing the persuasive information and relating this information to their previous knowledge of the persuasion issue. Persuasion in a systematic mode is mediated by the person's understanding and cognitive elaboration of the persuasion message. By definition, systematic processing consists of extensive processing of persuasion arguments and therefore is constrained by the person's cognitive resources and motivation. Although people might not be aware of the exact nature of their systematic processing, they are aware of the contents of their message-related thoughts, and in fact such thoughts should mediate the persuasion effects in a systematic mode (e.g., Chaiken & Maheswaran, 1994).

Heuristic processing is a nonanalytic orientation to information processing. In a heuristic mode, people focus on that subset of information that enables them to use simple decision rules or heuristics (cf. Tversky & Kahneman, 1974) to form a judgment. Persuasion effects are mediated by simple rules, schemata, or heuristics that associate heuristic cues with a probability that the advocated position is valid. Such heuristics are derived from experience and have some empirical validity. For instance, some persuasion heuristics are "Experts can be trusted" and "Consensus implies correctness." Heuristics are triggered by the presence of relevant heuristic cues. For instance, the presentation of the results of an opinion poll in which the majority of respondents agree with the advocated position can trigger the "Consensus implies correctness" heuristic. In this case, the heuristic cue (the majority of respondents agree) is associated with a high probability that the advocated persuasive position is valid. Because heuristic processing uses a subset of available information, it is constrained by the person's cognitive

resources and motivation to a lesser extent than is systematic processing. Furthermore, people may be completely unaware of their heuristic processing. In fact, they may deny that they were influenced by peripheral informational cues that seem irrelevant to the advocated position (Chen & Chaiken, 1999).

Conditions of Heuristic Use

The schemata or heuristics used in heuristic processing are stored in memory as are other knowledge structures. As such, heuristics are governed by principles of knowledge activation and use (Higgins, 1996). Three general principles of knowledge use are availability, accessibility, and applicability. *Availability* refers to the storage of a knowledge structure in memory (Tulving & Pearlstone, 1966). In research on heuristic processing, it has been assumed that the studied heuristics were in fact stored in the participant's memory. This assumption is plausible because most of the studied heuristics are socially shared. Note that this does not imply that most people endorse these heuristics. In short, a heuristic is available if there is a stored heuristic representation in one's memory.

Although availability is a necessary condition for heuristic use, it is not a sufficient condition. According to the *accessibility* principle, a knowledge representation should be activated or accessible in memory in order to be used (Higgins, 1996; Sedikides & Skowronski, 1991). The triggering of heuristics from heuristic cues is related to the accessibility principle. Highly salient persuasion cues associated with decision heuristics make these heuristics more accessible in memory, increasing the likelihood of their use. In addition to these factors external to the person, heuristics can be chronically accessible if the heuristics are frequently used (Higgins, King, & Mavin, 1982). The accessibility of heuris-

tics can be linked not only to the likelihood of their use but also to the confidence conferred by a judgment based on a heuristic. As suggested by Chen and Chaiken (1999), the degree of accessibility of a heuristic can translate into judgmental confidence. In turn, confidence has specific implications about heuristic and systematic processing.

Even if a knowledge structure is accessible in memory, it may not be used if the accessible knowledge is not applicable to the informational task (Todorov, 2000). *Applicability* refers to the degree of appropriateness of the activated knowledge to the judgmental task. For nonconscious forms of processing, applicability refers to the degree of match or the overlap of features of the accessible knowledge and the judgmental stimulus (Higgins, 1989, 1996). The higher the match, the stronger the effect of the accessible knowledge on the judgment. For more complex judgmental situations such as persuasion, applicability refers to the perceived relevance of the accessible knowledge. For example, even if a heuristic comes readily to mind, it will be used only if the person believes that the heuristic is relevant to the specific persuasion task.

Chaiken, Axsom, Liberman, and Wilson (1992) studied the role of accessibility and applicability for a specific persuasion heuristic: "Length implies strength." This heuristic was primed or made accessible for all participants. Participants who perceived this heuristic as reliable used the heuristic in evaluating short versus long persuasion arguments. However, the priming did not affect participants who did not perceive the heuristic as reliable. This study shows that applicability constrains accessibility effects.

Whether a heuristic is judged as relevant to the task at hand may change as a function of the person's motivation. For instance, Darke et al. (1998) presented participants with results of an opinion poll in which the majority agreed with the advocated position. The criti-

cal manipulation was the sample size of the poll. Participants were told that the poll was based on either the responses of 10 persons or the responses of 1,000 persons. Participants low in accuracy motivation were influenced by consensus opinion independent of sample size, whereas participants high in accuracy motivation used the "Consensus implies correctness" heuristic only when the poll was based on the large sample.

Interactions of Systematic and Heuristic Processing

A major issue for any dual-process model is how the two processes interact (Gilbert, 1999). For example, one can posit that the two processes are mutually exclusive. If the one is operating, then the other one is turned off. Or one may posit that the two processes are in competition. Alternatively, the two processes may act in concert. Additional issues involve the temporal characteristics of the processes. Do the processes operate in a sequential fashion or in parallel?

Unlike dual-process models assuming that central/systematic processes exclude peripheral/heuristic processes (Petty & Cacioppo, 1986b), the HSM posits that systematic and heuristic processes can act simultaneously. Furthermore, the HSM specifies the nature of the interaction of these processes. How the modes of processing interact depends on the implications of the information brought to mind by heuristic and systematic processing and on the ambiguity of the persuasion message. The HSM has outlined and provided evidence for three hypotheses concerning the interplay of systematic and heuristic processing: the additivity, attenuation, and bias hypotheses.

When the judgmental implications of heuristic cues and arguments are consistent, heuristic and systematic processing can have inde-

pendent and additive effects on persuasion. This is the *additivity* hypothesis of the model. For example, in one study participants were asked to evaluate a consumer product. When a "brand name" heuristic was consistent with the evaluative implications of the information about the product's attributes, participants who believed that their decisions were important based their product evaluations on the implications derived from both heuristic and systematic processing (Maheswaran, Mackie, & Chaiken, 1992; see also Chaiken & Maheswaran, 1994; Darke et al., 1998; Maheswaran & Chaiken, 1991).

Most of the evidence for dual-process models comes from pitting the judgmental implications of heuristic and systematic processing. For instance, an expert source delivers a message that consists of weak arguments. This is the situation where one can clearly see the contributions of systematic and heuristic processing under different levels of motivation. The *attenuation* hypothesis of the HSM states that in a situation where the implications of heuristic and systematic processing are in opposition, the implications derived from systematic processing can overwrite or attenuate the impact of heuristics given that people are sufficiently motivated. For example, highly motivated participants who were presented with consensus cue information inconsistent with the attributes of a consumer product based their judgments solely on their cognitions about the product's attributes (Maheswaran & Chaiken, 1991).

The additivity and attenuation hypotheses do not exhaust the possibilities of interplay between systematic and heuristic processing. Most persuasion experiments use unambiguous information. That is, the persuasion arguments are either strong or weak. However, in many everyday influence situations, the persuasive message may consist of strong arguments mixed with weak arguments. The *bias* hypothesis of the HSM was designed to

account for such situations. The bias hypothesis states that an ambiguous persuasion message can be interpreted in line with a preceding heuristic cue even if people are highly accuracy motivated. For example, the same ambiguous message can be interpreted differently if the person believes that the message source is reliable than if the person believes that the source is unreliable. Chaiken and Maheswaran (1994) conducted such a study. In this study, participants were asked to evaluate a consumer product. They believed that the description of the product appeared either in *Consumer Reports* (a reliable source) or in a promotional pamphlet of Kmart (an unreliable source). When the description of the product was unambiguous, the study replicated the basic dissociation finding characteristic for dual-process models. Participants high in motivation were influenced by the strength of the product attributes, whereas participants low in motivation were influenced by source credibility. However, the pattern of findings for the ambiguous product description looked the same for participants both low and high in motivation. Participants were influenced more by the reliable source. Although the mean effects looked identical, mediational analyses showed that the processes for participants low and high in motivation differed. Participants low in motivation processed the product description heuristically and were thus affected by source reliability only. Participants high in motivation processed the description systematically, but their cognitions were colored by the credibility of the source. When the source was reliable, these participants generated more favorable thoughts about the product.

The bias hypothesis has also received considerable support outside the field of persuasion research. For example, Trope and Gaunt (1999) showed that contextual cues can affect person perception when information about the person is ambiguous. More important, this

research has demonstrated that the effect of contextual cues on perception is implicit. That is, people are not aware of the biasing effect of context, believing that their perceptions are a veridical reading of reality. Similarly, in persuasion contexts, people might not recognize the biasing nature of heuristic cues even when they are highly motivated to be accurate.

Motivational Assumptions

We have described the systematic and heuristic modes of processing and how they interact. However, we have not discussed in detail one of the most important questions for any dual-process model. This question is about the triggering conditions for a processing mode. We noted that heuristic processing is less dependent on the availability of cognitive resources and, as such, can be triggered by external factors that constrain cognitive capacity. Such external conditions include time pressure and distraction (Moore et al., 1986; Petty et al., 1976; Ratneshwar & Chaiken, 1991). More important, we noted that people need to be sufficiently motivated to process information systematically. What is the meaning of sufficiently motivated?

The HSM makes two motivational assumptions. The first specifies the internal conditions for triggering systematic processing; in other words, it defines sufficient motivation. The second assumption specifies qualitatively different types of motivation that can be present in a persuasion situation. These two assumptions are about the quantitative and qualitative nature of motivation.

The quantitative assumption is expressed in the model's sufficiency principle (Chaiken et al., 1989, 1996). The sufficiency principle conceptualizes motivation to engage in information processing as a function of the discrepancy between the person's actual confidence and the person's desired confidence for a spe-

cific judgment task. The bigger the (negative) discrepancy between actual and desired confidence, the more likely the person is to engage in systematic processing. The sufficiency principle tries to strike a balance between the principle of least effort (people prefer less effortful information processing) and the person's accuracy concerns (people desire to make accurate judgments).

The sufficiency principle is directly linked to the selection of a mode of processing. This principle specifies that people will engage in systematic processing only if their actual confidence is lower than their desired confidence. Thus, desired confidence serves as a sufficiency threshold for triggering systematic processing. In fact, people should increase their processing effort as a function of the discrepancy between actual and desired confidence. In situations where actual confidence is higher than the desired confidence, people would not engage in systematic processing. Processing effort can be increased either by increasing the person's desired confidence, by decreasing the person's actual confidence, or by both mechanisms.

We noted earlier that a number of motivational variables such as personal relevance of the persuasion issue, task importance, accountability, and need for cognition induce systematic processing. According to the sufficiency principle, these variables induce systematic processing because they increase the person's desired judgmental confidence. For instance, participants who are presented with a personally relevant message should desire higher confidence in assessing the validity of the message than should participants presented with a personally irrelevant message. If, as assumed by the HSM, people believe that systematic processing of persuasion information can increase their judgmental confidence, they should increase their processing effort when the message is personally relevant.

The likelihood of systematic processing can be enhanced not only by increasing the person's desired confidence but also by reducing the person's actual confidence. Maheswaran and Chaiken (1991) presented participants with consensus information that was either congruent or incongruent with the valence of a persuasion message. The incongruence condition was designed to undermine the participants' actual confidence. In line with the hypothesis, participants who were not highly motivated but who received incongruent information showed substantial systematic processing.

What happens if people are sufficiently motivated but lack the ability or resources to engage in systematic processing? The HSM predicts that in such conditions, people should scrutinize the persuasion setting for relevant heuristic cues (Chaiken et al., 1989). That is, this enhancement hypothesis states that motivational variables such as personal relevance should increase heuristic processing under conditions of limited cognitive resources.

Types of Motivation in the HSM

Research on persuasion generally assumes that people are accuracy motivated. Indeed, in its early development, the HSM was based on this assumption (Chaiken, 1980, 1987). Recognizing that in many situations motives other than accuracy exist, the HSM has been extended to include two new broad types of motivation: defense motivation and impression motivation (Chaiken et al., 1989, 1996).

Accuracy-motivated people strive to achieve valid attitudes that are consistent with reality. Accuracy-motivated processing can be characterized as an open-minded processing in which persuasion information is treated even-handedly. The most important objective for an accuracy-motivated person is to make

judgments that square with the relevant objective facts. Two things should be noted about accuracy motivation. First, accuracy motivation does not exclude biased processing. For example, systematic processing can be biased by prior knowledge or by prior heuristic cues (Chaiken & Maheswaran, 1994). Nevertheless, accuracy-motivated people strive to be objective even if the processing is biased. Second, accuracy can be achieved either by systematic processing, heuristic processing, or both. Although heuristic processing can lead to less accurate judgments than systematic processing, heuristics are grounded in experience and under certain conditions can be accurate.

In contrast to accuracy motivation, defense motivation can be characterized as a closed-minded form of processing. The concept of defense motivation is related to concepts such as position involvement (Chaiken & Stangor, 1987), self-evaluation maintenance (Tesser, 1988), value-relevant involvement (Johnson & Eagly, 1989), and motivated reasoning (Kunda, 1990). In the framework of the HSM, defense-motivated people strive to defend beliefs and attitudes that are consistent with the person's vested interest or self-definitional attitudes and beliefs (Chaiken et al., 1996). Self-definitional attitudes and beliefs are closely tied to the self. For instance, these can include values and personal attributes. The defense-motivated person tries to preserve one's self-concept and associated worldviews. The processing objective in defense motivation is to confirm the validity of preferred attitudinal positions and to disconfirm the validity of nonpreferred attitudinal positions.

As in the case of accuracy motivation, defense-motivated processing can be either systematic, heuristic, or both. In fact, the HSM posits that defense-motivated people use the same heuristics that accuracy-motivated people use but use them in a selective fashion. That is, heuristics that are congruent with the attitudes of the defense-motivated person are likely to be used, whereas heuristics incongruent with these attitudes are likely to be ignored. To demonstrate this effect, Giner-Sorolla and Chaiken (1997) presented participants who had vested interests in the persuasion issue with a consensus cue heuristic in the form of poll results. When the poll results supported the participants' vested interests, they rated the poll as more reliable and criticized it less. In fact, the attitudes of these participants were primarily based on their heuristic processing of the congruent consensus cue information.

The HSM predicts that when defense motivation is high and people have sufficient cognitive resources, they will engage in systematic but biased processing of the information. Information congruent with the preexisting attitudes will be rated favorably, and information incongruent with these attitudes will be scrutinized to be disconfirmed. This has been confirmed by a number of studies (Ditto & Lopez, 1992; Liberman & Chaiken, 1992; Lord, Ross, & Lepper, 1979; Pomerantz, Chaiken, & Tordesillas, 1995; Pyszczynski & Greenberg, 1987).

Like accuracy-motivated processing, the processing in the case of defense motivation follows the sufficiency principle. However, unlike in the case of accuracy motivation, the sufficiency threshold in defense motivation is determined by the degree to which processing reinforces self-definitional attitudes and not by the degree to which processing yields an accurate judgment. The mode of processing triggered in defense motivation will depend on the discrepancy between actual and desired confidence. For example, heuristic cues incongruent with the person's preferred position would reduce the person's actual confidence, thereby extending the confidence gap. Thus, the person should engage in biased systematic processing to reduce this gap. Alternatively, heuristic cues congruent with the person's position can increase the person's actual confidence so that little confidence gap exists, and thus the person may engage in little (if any) systematic processing.

Recognizing the role of interpersonal factors in persuasion, the extended HSM also includes a third broad type of motivation: impression motivation. The concept of impression motivation is related to concepts such as impression-relevant involvement (Johnson & Eagly, 1989), impression management (Schlenker, 1980), and response involvement (Leippe & Elkin, 1987; Zimbardo, 1960). Impression motivation refers to the desire to express socially acceptable attitudes or attitudes and beliefs that satisfy the person's immediate social goals. The processing objective of impression motivation is to assess the social acceptability of alternative positions. Impression-motivated people are mainly concerned with the interpersonal consequences of expressing an attitude in the specific persuasion setting (Chaiken et al., 1996).

As in the case of defense motivation, impression-motivated persons use heuristics selectively. Furthermore, there are specific heuristics related to impression motivation situations. For example, people may use the heuristic "Moderate opinions minimize disagreements" if they expect to interact with a person with unknown views. Alternatively, if the expected interaction partner has known views, people may use the heuristic "Go along to get along." In fact, previous research has shown that impression-motivated participants express views that mirror the views of an expected audience or express moderate views when the audience position is unknown (Cialdini, Levy, Herman, & Evenbeck, 1973; McFarland, Ross, & Conway, 1984; Tetlock, 1983).

Similar to accuracy and defense motivations, processing predictions in the case of impression motivation follow the sufficiency principle. The sufficiency threshold in the latter case corresponds to the desired confidence that the person's judgments will satisfy the person's immediate interpersonal concerns. If the sufficiency threshold is high and heuristic processing does not close the gap between actual and desired confidence, people may engage in systematic processing that is biased toward achieving their social goals.

To obtain evidence for biased systematic processing, Chen, Schecter, and Chaiken (1996, Experiment 2) primed participants either with accuracy motivation or with impression motivation (in an ostensibly unrelated first task). All participants expected a discussion about a social issue with a person who held either a favorable or an unfavorable attitude toward the issue. Prior to this discussion (which in fact did not take place), participants were presented with an essay on the issue and asked to list their thoughts and indicate their attitudes. As expected, accuracy-motivated participants based their attitudes on their evenhanded systematic processing of the essay arguments, and their attitudes were not affected by their communication partner's attitude. By contrast, the attitudes of impression-motivated participants were in line with their partner's attitude. The heuristic "Go along to get along" biased the more effortful systematic processing of the essay arguments by these participants.

Summary

The HSM posits two qualitatively different modes of information processing. People can either process information systematically (attending to all relevant pieces of information) or process heuristically (focusing only on a subset of informational cues). More important, these modes can act simultaneously. If the implications of the processing modes are congruent, they have additive effects on persuasion. If the implications are incongruent,

systematic processing attenuates the impact of heuristic processing. Finally, when persuasion arguments are ambiguous, heuristic cues can bias their interpretation independent of the person's motivation. The selection of mode of processing depends on both external and internal factors. External factors that reduce cognitive capacity are likely to lead to heuristic processing. Factors that increase motivation can lead to systematic processing. This motivational principle is captured by the sufficiency principle, which posits that processing effort is a function of the discrepancy between the person's actual and desired confidence. The HSM also recognizes three underlying motivations. People can be accuracy motivated, trying to achieve valid judgments. People can be defense motivated, trying to preserve valued attitudes. People can also be impression motivated, trying to satisfy interpersonal goals. It is important to emphasize that the type of motivation is conceptually independent of mode of processing. Systematic and heuristic processing can serve any of the three types of motivation. Similarly, processing across motivations follows the predictions of the sufficiency principle.

NEW DIRECTIONS FOR RESEARCH

Taking into account mode of information processing and underlying motivations, the HSM has established itself as a general model of social information processing and has been applied to a number of domains outside persuasion research (e.g., Bohner et al., 1995; Chaiken & Trope, 1999). In the final part of this chapter, we outline new directions for research within the HSM framework. We consider research further clarifying the nature of modes of processing as well as research extending the applications of the model.

Research on the Model's Assumptions

In most of the research we have cited, heuristic processing was closely associated with cues peripheral to the message content. By definition, heuristics are triggered by simple definition. On the other hand, in most research, systematic processing has been closely associated with message content. For instance, systematic processing is often measured in terms of the person's elaboration of persuasive arguments. Because of this seeming confounding of mode of processing and persuasion variables, the HSM has been criticized as confusing persuasion variables with modes of processing (Kruglanski & Thompson, 1999). Presumably, once such confounds are controlled for, a more parsimonious model positing only one type of processing could account for persuasion data. It is true that mode of processing is often empirically correlated with type of persuasion cues. And more often than not, peripheral cues will trigger heuristic rather than systematic processing. However, the nature of mode of processing is conceptually independent of the triggering informational input. The same information can be processed either heuristically or systematically (Chaiken, Duckworth, & Darke, 1999; Chen & Chaiken, 1999).

In fact, a number of studies have demonstrated systematic processing of cues unrelated to message content and heuristic processing of message-related cues. For example, Petty and Cacioppo (1984) showed that unmotivated participants were influenced by the sheer number of arguments in a persuasive message rather than by the semantic content of the arguments (see also Chaiken, 1987; Chaiken et al., 1989; Petty, 1994; Wood, Kallgren, & Preisler, 1985). Similarly, peripheral cues can be processed systematically. As described in the section on conditions of heuristic use, Darke et al. (1998) showed that

accuracy-motivated participants processed a heuristic consensus cue systematically. In addition, Shavitt, Swan, Lowrey, and Waenke (1994) found that endorser attractiveness, a peripheral cue, was processed systematically by highly motivated participants when a commercial appealed to public image. This same cue was processed heuristically when the commercial appealed to sensory gratification.

These studies show that one can obtain evidence for systematic and heuristic modes of processing when these modes are not confounded with message cues. However, the Kruglanski and Thompson (1999) criticism helps point to a fruitful and relatively unexplored line of research. Such research would focus on providing *direct* evidence for the qualitatively different nature of systematic and heuristic processing. Direct evidence of this type requires the use of online measures that are independent of informational cues. Online measures assess processing at the time of its occurrence, as opposed to offline measures, which measure the outcome of processing. We sketch a few possible experiments illustrating the utility of such measures.

Because systematic processing is a comprehensive analytic orientation to information processing, systematic processors should be more attentive to new information. To study online inferences during exposure to persuasion arguments, one can present high- and low-motivated participants with a sequence of persuasion arguments on a computer screen. Participants would also perform a secondary lexical decision task in which a string of letters is presented and the participants' task would be to identify whether the letter string is a word or a nonword (Neely, 1977). Response times to lexical decisions are a good indicator of online access to word meaning. Faster response times to the word concept imply faster automatic access to its semantic meaning. In this hypothetical experiment, after each persuasive argument is presented to participants,

they would be presented with a probe word that would summarize the main idea of the argument. The HSM predicts that if highly motivated participants process information systematically, they should be faster to respond to the probe word than should low-motivated participants. This would constitute online evidence for different inferential processes in the systematic versus heuristic modes. Alternatively, one can measure the impact of heuristics by providing probe words related to the heuristic cue (e.g., majority or consensus for the heuristic "Consensus implies correctness").

The experiment described is just one example of a theory-based approach to providing direct evidence for the nature of systematic and heuristic processing. In this approach, one can manipulate variables traditionally used to induce systematic and heuristic processing such as personal involvement and time pressure. What is new in the approach is the focus on online measures of processing. Lexical decision is just one such online measure. Others could include attention span tasks, word fragment completion, reading speed, and false recognition. In all cases, one starts with a specific proposition about the nature of processing and designs an experiment to test this proposition. For example, heuristic processing is defined as focused on a narrow set of cues. In a persuasion situation where heuristic cues are not provided, people who process heuristically could focus on a single argument and ignore the rest of the arguments. One can test this hypothesis by manipulating the salience of arguments relative to the persuasion issue and by including online measures of the speed of inferences. The HSM predicts that the inference speed advantage for participants who process the arguments systematically relative to participants who process them heuristically should disappear for the most salient arguments.

Modes of Processing and Implicit and Explicit Processes

The traditional procedure for assessing systematic processing has been to ask people to list their thoughts during exposure to a message. Although this procedure has been useful, it may overestimate the use of systematic processing. Reporting one's thoughts on a persuasion issue is an explicit measure, which makes one's thoughts a salient basis for making a judgment. The procedure makes people highly aware of their thoughts and may create a consistency demand for providing a judgment congruent with these thoughts. Another problem with this procedure is that it can capture only explicit mental processes.

Two distinctions in the field of social cognition have been increasingly popular and have generated a substantial amount of research: the distinction between automatic and controlled processes (Bargh, 1989, 1994, 1999) and the distinction between implicit and explicit processes (Greenwald & Banaji, 1995). A common idea behind these distinctions is that many mental processes run outside of one's awareness (Uleman & Bargh, 1989). Implicit processes map into those processes. By contrast, explicit processes are intentional and controllable, and people are aware of them.

By definition, systematic processing requires cognitive effort and implies explicit processes (Chen & Chaiken, 1999). However, this definition does not mean that all processes involved in systematic processing are explicit. Most of the inferential work can be completely implicit in the sense that people are not aware of the nature of these inferences. Most likely, both systematic and heuristic processing will turn out to consist of sets of interacting implicit and explicit processes. In other words, the question is not whether systematic processing is explicit and whether heuristic processing is implicit; rather, the question is to what extent the two modes of processing are linked to implicit processes.

Implicit processes can be captured with on-line implicit measures. What makes an implicit measure implicit is the fact that the person is not aware of the objective of the measurement (Greenwald & Banaji, 1995). For example, in the hypothetical lexical decision experiment we described, the lexical decision task can be considered an implicit measure. Whereas the person thinks that this task is secondary to the main task (and measures word knowledge), the real objective of the task is to measure inferences related to the presented persuasion arguments. Implicit measures are obviously less reactive than explicit measures. At the same time, they can be used in mediational analyses in the same way explicit measures are used. For instance, a finding that an implicit measure of argument-related inferences mediates the effect of high motivation on judgments would nicely dovetail with the traditional finding that explicit measures, such as thought listing, mediate such motivational effects.

The Bias Hypothesis of the HSM

The purpose of the proposed research we have described is to provide more direct tests of the assumptions of the HSM. However, this research also has practical implications. Implicit processes are generally inaccessible to one's consciousness. Consciousness is a prerequisite for controlled processes. Thus, implicit processes that affect systematic processing can bias people's judgments without their being able to control for this bias. The bias hypothesis of the HSM is a good example of such processes.

As described earlier in this chapter, the HSM's bias hypothesis states that preceding heuristic cues can bias interpretation of an ambiguous persuasion message (Chaiken &

Maheswaran, 1994). More important, the bias is independent of the person's motivation. It is generally assumed that systematic processing leads to better outcomes than does heuristic processing (although caveats do exist). According to the sufficiency principle, one can induce systematic processing either by undermining the actual confidence of the person or by increasing the person's desired confidence. However, this strategy might not work when persuasive arguments are ambiguous.

It is likely that ambiguous persuasion messages are more frequent in real life than in laboratory persuasion research, the latter of which has generally used unambiguous messages. A number of studies have shown that the disambiguation of social information can be an implicit process (Higgins, 1996; Trope, 1986; Trope & Gaunt, 1999). In fact, even contextual cues that are presented subliminally affect interpretation of ambiguous information (Bargh & Pietromonaco, 1982; Erdley & D'Agostino, 1988). Based on this research, there are good reasons to assume that heuristic cues can implicitly bias the interpretation of ambiguous persuasion messages. This can have important practical implications. For instance, persuasion campaigns that cannot be based on unequivocally strong arguments can use mixed strong and weak arguments preceded by positive heuristic cues such as an expert or an attractive source.

Judgmental Accuracy and Mode of Processing

It is widely believed that systematic processing can lead to more accurate judgments than can heuristic processing. This assumption fits a long and honorable tradition of research on biases and heuristics in decision making (Kahneman, Slovic, & Tversky, 1982). This research has shown that judgmental heuristics can lead to suboptimal decisions. However, in such work, the suboptimality of judgments has always been assessed against some normative statistical standard (Todorov, 1997). Normative standards are not constrained by time and limited resources.

The main reason for the appeal of heuristic reasoning is its efficiency. Such "if-then" reasoning provides shortcuts for making judgments in a changing uncertain environment under limited cognitive and computational resources. Presumably, one has to pay with occasional inaccuracy for this efficiency. But to show that heuristics lead to inaccurate decisions, one needs to look at natural task domains and to compare heuristic decisions to actual outcomes. Comparing heuristic performance to some more sophisticated strategy is not sufficient to conclude that heuristic reasoning is inaccurate. In fact, research using objective measures of accuracy has been accumulating, and surprisingly, heuristics in the form of simple decision algorithms may be as accurate as complicated rational algorithms (Gigerenzer & Todd, 1999).

The HSM has always considered the question of judgmental accuracy as conceptually independent of the question of the mode of processing. Heuristic processing does not mean inaccurate judgmental outcomes. However, the HSM has not empirically addressed the question of the actual accuracy of heuristic strategies. This research question is well worth addressing. Indeed, one can make the counterintuitive prediction that heuristic processing can lead to more accurate judgments than can systematic processing under some conditions. Heuristic processing is characterized as focusing on a narrow set of informational cues as opposed to systematic processing, which is characterized as scrutinizing all potentially relevant cues. Under conditions of limited cognitive resources, focusing on a single subset of relevant cues may lead to more efficient and more accurate judgments than

using a strategy that integrates relevant and (often times) irrelevant cues (see Chen & Chaiken, 1999; Tordesillas & Chaiken, 1999).

CONCLUSION

The HSM has undergone several theoretical developments. In its current form, the HSM specifies two modes of concurrent information processing, three broad motivational orientations, and a motivational principle (sufficiency) that makes specific predictions about the investment of processing effort in a judgmental task. The HSM was conceived as a specific persuasion model but has evolved into a general model of social information processing. In fact, the HSM is related to a number of current social judgment models (Chaiken & Trope, 1999; Chen & Chaiken, 1999). As a general judgment model, the HSM has been applied to a number of areas outside of persuasion research (e.g., Bohner et al., 1995; Chaiken, Gruenfeld, & Judd, 2000). However, the HSM can be even better specified, and here we have attempted to outline a program of research with respect to this endeavor.

REFERENCES

Alba, J. W., & Marmorstein, H. (1987). The effects of frequency knowledge on consumer decision making. *Journal of Consumer Research, 14,* 14-25.

Bargh, J. A. (1989). Conditional automaticity: Varieties of automatic influence in social perception and cognition. In J. S. Uleman & J. A. Bargh (Eds.), *Unintended thought* (pp. 3-51). New York: Guilford.

Bargh, J. A. (1994). The four horsemen of automaticity: Awareness, intention, efficiency, and control in social cognition. In R. S. Wyer & T. K. Srull (Eds.), *Handbook of social cognition* (2nd ed., pp. 1-40). Hillsdale, NJ: Lawrence Erlbaum.

Bargh, J. A. (1999). The cognitive monster: The case against the controllability of automatic stereotype effects. In S. Chaiken & Y. Trope (Eds.), *Dual-process theories in social psychology* (pp. 361-382). New York: Guilford.

Bargh, J. A., & Pietromonaco, P. (1982). Automatic information processing and social perception: The influence of trait information presented outside of conscious awareness on impression formation. *Journal of Personality and Social Psychology, 43,* 437-449.

Bohner, G., Moskowitz, G. B., & Chaiken, S. (1995). The interplay of heuristic and systematic processing of social information. *European Review of Social Psychology* (Vol. 6, pp. 33-68). New York: John Wiley.

Cacioppo, J. T., & Petty, R. E. (1979). Effects of message repetition and position on cognitive response, recall, and persuasion. *Journal of Personality and Social Psychology, 37,* 97-109.

Cacioppo, J. T., & Petty, R. E. (1985). Central and peripheral routes to persuasion: The role of message repetition. In L. F. Alwitt & A. A. Mitchell (Eds.), *Psychological processes and advertising effects* (pp. 91-111). Hillsdale, NJ: Lawrence Erlbaum.

Cacioppo, J. T., Petty, R. E., Kao, C. F., & Rodriguez, R. (1986). Central and peripheral routes to persuasion: An individual difference perspective. *Journal of Personality and Social Psychology, 51,* 1032-1043.

Chaiken, S. (1980). Heuristic versus systematic information processing and the use of source versus message cues in persuasion. *Journal of Personality and Social Psychology, 39,* 752-766.

Chaiken, S. (1987). The Heuristic Model of persuasion. In M. P. Zanna, J. M. Olson, & C. P. Herman (Eds.), *Social influence: The Ontario Symposium* (Vol. 5, pp. 3-39). Hillsdale, NJ: Lawrence Erlbaum.

Chaiken, S., Axsom, D., Liberman, A., & Wilson, D. (1992). *Heuristic processing of persuasive messages: Chronic and temporary sources of rule accessibility.* Unpublished manuscript, New York University.

Chaiken, S., Duckworth, K., & Darke, P. (1999). When parsimony fails. *Psychological Inquiry, 10,* 118-123.

Chaiken, S., Giner-Sorolla, R., & Chen, S. (1996). Beyond accuracy: Defense and impression motives in heuristic and systematic information processing. In P. M. Gollwitzer & J. A. Bargh (Eds.), *The psychology of action: Linking cognition and motivation to behavior* (pp. 553-578). New York: Guilford.

Chaiken, S., Gruenfeld, D. H., & Judd, C. M. (2000). Persuasion in negotiations and conflict situations. In M. Deutsch & P. T. Coleman (Eds.), *The handbook of conflict resolution: Theory and practice* (pp. 144-165). San Francisco: Jossey-Bass.

Chaiken, S., Liberman, A., & Eagly, A. H. (1989). Heuristic and systematic processing within and beyond the persuasion context. In J. S. Uleman & J. A. Bargh (Eds.), *Unintended thought* (pp. 212-252). New York: Guilford.

Chaiken, S., & Maheswaran, D. (1994). Heuristic processing can bias systematic processing: Effects of source credibility, argument ambiguity, and task importance on attitude judgment. *Journal of Personality and Social Psychology, 66,* 460-473.

Chaiken, S., & Stangor, C. (1987). Attitudes and attitude change. *Annual Review of Psychology, 38,* 575-630.

Chaiken, S., & Trope, Y. (Eds.). (1999). *Dual-process theories in social psychology.* New York: Guilford.

Chen, S., & Chaiken, S. (1999). The Heuristic-Systematic Model in its broader context. In S. Chaiken & Y. Trope (Eds.), *Dual-process theories in social psychology* (pp. 73-96). New York: Guilford.

Chen, S., Shechter, D., & Chaiken, S. (1996). Getting at the truth or getting along: Accuracy-vs. impression-motivated heuristic and systematic information processing. *Journal of Personality and Social Psychology, 71,* 262-275.

Cialdini, R. B., Levy, A., Herman, C. P., & Evenbeck, S. (1973). Attitudinal politics: The strategy of moderation. *Journal of Personality and Social Psychology, 25,* 100-108.

Darke, P. R., Chaiken, S., Bohner, G., Einwiller, S., Erb, H. P., & Hazlewood, J. D. (1998). Accuracy motivation, consensus information, and the law of large numbers: Effects on attitude judgment in the absence of argumentation. *Personality and Social Psychology Bulletin, 24,* 1205-1215.

Ditto, P. H., & Lopez, D. F. (1992). Motivated skepticism: Use of differential decision criteria for preferred and nonpreferred conclusions. *Journal of Personality and Social Psychology, 63,* 568-584.

Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes.* Fort Worth, TX: Harcourt Brace Jovanovich.

Erdley, C. A., & D'Agostino, P. R. (1988). Cognitive and affective components of automatic priming effects. *Journal of Personality and Social Psychology, 54,* 741-747.

Festinger, L., & Maccoby, N. (1964). On resistance to persuasive communications. *Journal of Abnormal and Social Psychology, 68,* 359-366.

Fiske, S. T., & Taylor, S. E. (1991). *Social cognition* (2nd ed.). New York: McGraw-Hill.

Gigerenzer, G., & Todd, P. M. (Eds.). (1999). *Simple heuristics that make us smart.* New York: Oxford University Press.

Gilbert, D. T. (1999). What the mind's not? In S. Chaiken & Y. Trope (Eds.), *Dual-process theories in social psychology* (pp. 3-11). New York: Guilford.

Giner-Sorolla, R., & Chaiken, S. (1997). Selective use of heuristic and systematic processing under defense motivation. *Personality and Social Psychology Bulletin, 23,* 84-97.

Greenwald, A. G. (1968). Cognitive learning, cognitive response to persuasion, and attitude change. In A. G. Greenwald, T. C. Brock, & T. M. Ostrom (Eds.), *Psychological foundations of attitudes* (pp. 147-170). San Diego: Academic Press.

Greenwald, A. G., & Banaji, M. R. (1995). Implicit social cognition: Attitudes, self-esteem, and stereotypes. *Psychological Review, 102,* 4-27.

Higgins, E. T. (1989). Knowledge accessibility and activation: Subjectivity and suffering from unconscious sources. In J. S. Uleman & J. A. Bargh (Eds.), *Unintended thought* (pp. 75-123). New York: Guilford.

Higgins, E. T. (1996). Knowledge activation: Accessibility, applicability, and salience. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 133-168). New York: Guilford.

Higgins, E. T., King, G. A., & Mavin, G. H. (1982). Individual construct accessibility and subjective impressions and recall. *Journal of Personality and Social Psychology, 43,* 35-47.

Hovland, C. I., Janis, I. L., & Kelley, H. H. (1953). *Communication and persuasion: Psychological studies of opinion change.* New Haven, CT: Yale University Press.

Johnson, B. T., & Eagly, A. H. (1989). The effects of involvement on persuasion: A meta-analysis. *Psychological Bulletin, 106,* 290-314.

Kahneman, D., Slovic, P., & Tversky, A. (Eds.) (1982), *Judgment under uncertainty: Heuristics and biases.* Cambridge, UK: Cambridge University Press.

Kruglanski, A. W., & Thompson, E. P. (1999). Persuasion by a single route: A view from the unimodel. *Psychological Inquiry, 10,* 83-109.

Kunda, Z. (1990). The case for motivated reasoning. *Psychological Bulletin, 108,* 480-498.

Leippe, M. R., & Elkin, R. A. (1987). When motives clash: Issue involvement and response involvement as determinants of persuasion. *Journal of Personality and Social Psychology, 52,* 269-278.

Liberman, A., & Chaiken, S. (1992). Defensive processing of personally relevant health messages. *Personality and Social Psychology Bulletin, 18,* 669-679.

Lord, C. G., Ross, L., & Lepper, M. R. (1979). Biased assimilation and attitude polarization: The effects of prior theories on subsequently considered evidence. *Journal of Personality and Social Psychology, 37,* 2098-2109.

Maheswaran, D., & Chaiken, S. (1991). Promoting systematic processing in low-motivation settings: Effect of incongruent information on processing and judgment. *Journal of Personality and Social Psychology, 61,* 13-25.

Maheswaran, D., Mackie, D. M., & Chaiken, S. (1992). Brand name as a heuristic cue: The effects of task importance and expectancy confirmation on consumer judgments. *Journal of Consumer Psychology, 1,* 317-336.

McFarland, C., Ross, M., & Conway, M. (1984). Self-persuasion and self-presentation as mediators of anticipatory attitude change. *Journal of Personality and Social Psychology, 46,* 529-540.

McGuire, W. J. (1968). Personality and attitude change: An information-processing theory. In A. G. Greenwald, T. C. Brock, & T. M. Ostrom (Eds.), *Psychological foundations of attitudes* (pp. 171-196). San Diego: Academic Press.

Moore, D. L., Hausknecht, D., & Thamodaran, K. (1986). Time compression, response opportunity, and persuasion. *Journal of Consumer Research, 13,* 85-99.

Neely, J. H. (1977). The effects of visual and verbal satiation on a lexical decision task. *American Journal of Psychology, 90,* 447-459.

Osterhouse, R. A., & Brock, T. C. (1970). Distraction increases yielding to propaganda by inhibiting counterarguing. *Journal of Personality and Social Psychology, 15,* 344-358.

Petty, R. E. (1994). Two routes to persuasion: State of the art. In G. d'Ydewalle, P. Eelen, & P. Bertelson (Eds.), *International perspectives on psychological science,* Vol. 2: *The state of the art* (pp. 229-247). Hillsdale, NJ: Lawrence Erlbaum.

Petty, R. E., & Cacioppo, J. T. (1979). Issue involvement can increase or decrease persuasion by enhancing message-relevant cognitive responses. *Journal of Personality and Social Psychology, 37,* 1915-1926.

Petty, R. E., & Cacioppo, J. T. (1981). *Attitudes and persuasion: Classic and contemporary approaches.* Dubuque, IA: William C. Brown.

Petty, R. E., & Cacioppo, J. T. (1984). The effects of involvement on responses to argument quantity and quality: Central and peripheral routes to persuasion. *Journal of Personality and Social Psychology, 46,* 69-81.

Petty, R. E., & Cacioppo, J. T. (1986a). *Communication and persuasion: Central and peripheral routes to attitude change.* New York: Springer-Verlag.

Petty, R. E., & Cacioppo, J. T. (1986b). The Elaboration Likelihood Model of persuasion. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 19, pp. 123-205). San Diego: Academic Press.

Petty, R. E., & Cacioppo, J. T. (1990). Involvement and persuasion: Tradition versus integration. *Psychological Bulletin, 107,* 367-374.

Petty, R. E., Wells, G. L., & Brock, T. C. (1976). Distraction can enhance or reduce yielding to propaganda: Thought disruption versus effort

justification. *Journal of Personality and Social Psychology, 34,* 874-884.

Pomerantz, E. M., Chaiken, S., & Tordesillas, R. S. (1995). Attitude strength and resistance processes. *Journal of Personality and Social Psychology, 69,* 408-419.

Pyszczynski, T., & Greenberg, J. (1987). Toward an integration of cognitive and motivational perspectives on social inference: A biased hypothesis-testing model. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 20, pp. 297-340). New York: Academic Press.

Ratneshwar, S., & Chaiken, S. (1991). Comprehension's role in persuasion: The case of its moderating effect on the persuasive impact of source cues. *Journal of Consumer Research, 18,* 52-62.

Schlenker, B. R. (1980). *Impression management: The self-concept, social identity, and interpersonal relations.* Pacific Grove, CA: Brooks/Cole.

Sedikides, C., & Skowronski, J. J. (1991). The law of cognitive structure activation. *Psychological Inquiry, 2,* 169-184.

Shavitt, S., Swan, S., Lowrey, T. M., & Waenke, M. (1994). The interaction of endorser attractiveness and involvement in persuasion depends on the goal that guides message processing. *Journal of Consumer Psychology, 3,* 137-162.

Tesser, A. (1988). Toward a self-evaluation maintenance model of social behavior. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 21, pp. 181-227). San Diego: Academic Press.

Tetlock, P. E. (1983). Accountability and complexity of thought. *Journal of Personality and Social Psychology, 45,* 74-83.

Todorov, A. (1997). Another look at reasoning experiments: Rationality, normative models, and conversational factors. *Journal for the Theory of Social Behaviour, 27,* 387-417.

Todorov, A. (2000). The accessibility and applicability of knowledge: Predicting context effects in national surveys. *Public Opinion Quarterly, 64,* 429-451.

Tordesillas, R. S., & Chaiken, S. (1999). Thinking too much of too little? The effects of introspection on the decision-making process. *Personality and Social Psychology Bulletin, 25,* 623-629.

Trope, Y. (1986). Identification and inferential processes in dispositional attribution. *Psychological Review, 93,* 239-257.

Trope, Y., & Gaunt, R. (1999). A dual-process model of overconfident attributional inferences. In S. Chaiken & Y. Trope (Eds.), *Dual-process theories in social psychology* (pp. 161-178). New York: Guilford.

Tulving, E., & Pearlstone, Z. (1966). Availability versus accessibility of information in memory for words. *Journal of Verbal Learning and Verbal Behavior, 5,* 381-391.

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science, 185,* 1124-1131.

Uleman, J. S., & Bargh, J. A. (1989). *Unintended thought.* New York: Guilford.

Wood, W. (1982). Retrieval of attitude-relevant information from memory: Effects on susceptibility to persuasion and on intrinsic motivation. *Journal of Personality and Social Psychology, 42,* 798-810.

Wood, W., Kallgren, C. A., & Preisler, R. M. (1985). Access to attitude-relevant information in memory as a determinant of persuasion: The role of message attributes. *Journal of Experimental Social Psychology, 21,* 73-85.

Zimbardo, P. G. (1960). Involvement and communication discrepancy as determinants of opinion conformity. *Journal of Abnormal and Social Psychology, 60,* 86-94.