

# A Theory of Heuristic and Systematic Information Processing

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## ABSTRACT

The heuristic-systematic model proposes two distinct modes of thinking about information. Systematic processing involves attempts to thoroughly understand any available information through careful attention, deep thinking, and intensive reasoning, whereas heuristic processing involves focusing on salient and easily comprehended cues that activate well-learned judgmental shortcuts. Heuristic processing is a more efficient and relatively automatic mode of processing, but more often than not confers less judgmental confidence. Systematic processing confers more confidence but is relatively effortful and time-consuming. Thus, individuals tend to engage in heuristic processing unless they are both motivated and able to think carefully about information, in which case the two modes of processing can have additive, attenuating, or interactive effects. Furthermore, both modes of processing can be relatively open-minded, driven by accuracy concerns, or relatively biased, driven by defense or impression concerns. This chapter situates the heuristic-systematic model within its intellectual and personal history, and highlights key empirical findings that support the model's central tenets.

## INTRODUCTION

Attitudes have been a primary focus of theory and research in social psychology since the 1920s. Nine decades of research have produced a sizeable and complex body of literature that speak to questions of how people's attitudes are formed, maintained, and changed, and provide an ever-growing foundation upon which new questions arise and new answers unfold. In 1980, a foundation of process-oriented models that explained attitude change based on how people understand and evaluate persuasive argumentation set the stage for one question in particular: Was careful argument scrutiny the only kind of process by which attitude change could occur? Or might we sometimes change our minds in more efficient, but less effortful, ways?

The heuristic-systematic model of persuasion (Chaiken, 1980, 1987; Chaiken et al., 1989, 1996; Chen and Chaiken, 1999)

answers this question by proposing two distinct modes of information processing. The first mode, *systematic processing*, involves attempts to thoroughly understand any and all available information through careful attention, deep thinking, and intensive reasoning (e.g., thinking carefully about the arguments presented, the person arguing, and the causes of the person's behavior). This information is combined and used to guide subsequent attitudes, judgments, and behaviors. For instance, a systematic approach to thinking about a proposed economic policy might involve reading as many magazine and newspaper reports as possible to learn and develop an opinion about the "best" course of action for the economy. The heuristic-systematic model suggests that such systematic thinking entails a relatively high degree of mental effort, and thus requires that a person (1) *can* devote a certain amount of attention to thinking about the issue, and (2) *wants* to devote this attention. Thus, systematic processing is unlikely to occur unless a person is both *able* and *motivated* to do so.

*Heuristic processing* is much less demanding in terms of the mental work required and much less dependent on having the ability (e.g., enough knowledge and enough time) to think carefully about information. In fact, heuristic processing can be viewed as relatively automatic because it can occur even when people are not motivated and able to deliberately think about a topic. Heuristic processing involves focusing on easily noticed and easily understood cues, such as a communicator's credentials (e.g., expert versus nonexpert), the group membership of the communicator (e.g., Democrat or Republican), the number of arguments presented (many or few), or audience reactions (positive or negative). These cues are linked to well-learned, everyday decision rules known as *heuristics*. Like other knowledge structures (e.g., stereotypes), heuristics can vary in their availability and accessibility, as well as in their perceived reliability (i.e., the extent to which a particular person perceives

a heuristic to be a valid guide for judgment in a given situation; see Chen and Chaiken, 1999; Darke et al., 1998). Moreover, they can be used self-consciously or non-self-consciously: People may consciously decide to invoke a heuristic in order to inform a subsequent judgment, but heuristics can also influence judgments without intention or self-awareness.

Examples of heuristics include "experts know best," "my own group can be trusted," "argument length equals argument strength," and "consensus implies correctness." These simple, intuitive rules allow people to form judgments, attitudes, and intentions quickly and efficiently, simply on the basis of the easily noticed cues, and with little critical thinking. A heuristic approach to a proposed economic plan might involve simply adopting the opinion of a noted economist. In other words, heuristic thinking is what we do when we do not have much ability or time to think about something and want to make a reasonable decision as quickly as possible.

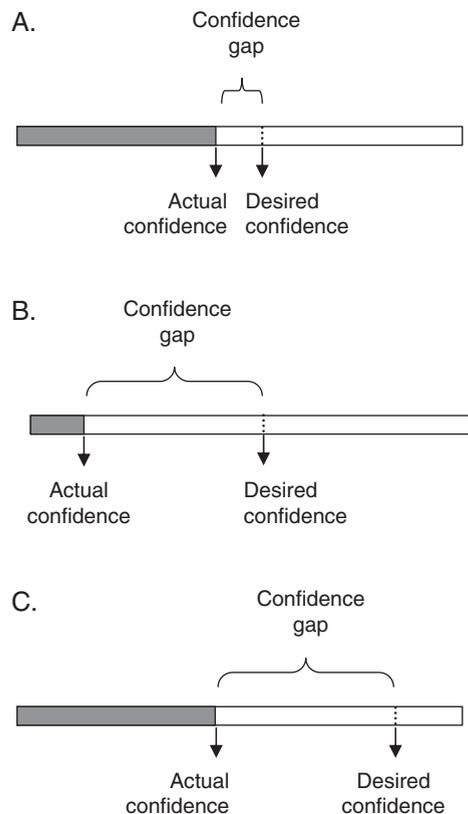
The theory further proposed that two principles act in conjunction to determine the mode and extent of information processing that occurs in any given context (Chaiken, 1980, 1987; Chaiken et al., 1989). The model's *least effort principle* reflects the assumption that individuals try to arrive at attitudinal decisions as efficiently as possible (see also Allport, 1954). Thus, all else equal, people should tend to prefer a less effortful mode of processing (i.e., heuristic processing) to one that requires more time and cognitive resources (i.e., systematic processing).

Meanwhile, however, the *sufficiency principle* asserts that individuals are sometimes motivated to exert additional cognitive effort in order to reach a certain level of judgmental confidence. They must therefore balance their preference for maximizing cognitive efficiency with the desire to satisfy their motivational concerns, such as the goal to reach an accurate conclusion (Chaiken et al., 1989; see also Simon, 1976). The heuristic-systematic model suggests that this balance point is determined by a *sufficiency*

*threshold*, defined as the degree of confidence to which an individual aspires in a given judgmental situation (Chaiken et al., 1989; Eagly and Chaiken, 1993). The sufficiency threshold can be conceptualized as a point located on a continuum of judgmental confidence. The extent of information processing is determined by the size of the discrepancy that exists between an individual's actual level of confidence in their judgment and the sufficiency threshold (i.e., their desired confidence). Thus, effortful information processing should only occur when

actual confidence falls below the sufficiency threshold, and should continue (when capacity allows) until this confidence gap is closed. Extent of information processing will therefore depend both on a particular person's actual level of judgmental confidence in a given persuasion setting, as well as their desired level of confidence in that setting (see Figure 12.1).

Together, the least effort and sufficiency principles suggest that – assuming adequate cognitive capacity – individuals will engage in systematic processing insofar as the less



**Figure 12.1** A person with a small gap between actual and desired confidence might be able to reach their desired level of confidence (the sufficiency threshold) using only heuristic processing (Panel A). If the confidence gap is larger, either due to a low level of actual confidence (Panel B) or a high level of desired confidence (Panel C), it is less likely that people can reach their desired level of judgmental confidence using only heuristic processing. When people cannot attain their desired level of confidence using only heuristic processing, they will engage in systematic processing in an effort to finish closing the confidence gap, assuming they have the ability to do so

effortful heuristic mode does not yield sufficient judgmental confidence (either because heuristic processing cannot occur, as in situations that do not offer easily processed heuristic cues, or because it is insufficient to close the confidence gap). Systematic processing will therefore be increased by factors that either decrease actual confidence, increase desired confidence, or both.

### THE MULTIPLE-MOTIVE HEURISTIC-SYSTEMATIC MODEL

Although the heuristic-systematic model was initially developed to apply to individuals motivated by accuracy concerns to seek valid judgments, later work expanded the model to incorporate two other broad motivations that can lead to selective information processing, geared toward arriving at a particular attitudinal position (Chaiken et al., 1989, 1996; Chen and Chaiken, 1999). The first of these, *defense motivation*, was intended to reflect the impact of such self-focused variables as ego-involvement and personal commitment (see, e.g., Kiesler, 1971; Sherif and Cantril, 1947). According to the multiple-motive model of heuristic-systematic processing, these factors arouse a desire to confirm and defend the validity of preferred attitudinal positions (like one's pre-existing opinion), while challenging the validity of nonpreferred positions. *Impression motivation*, on the other hand, reflects the impact of other-focused variables such as impression-relevant involvement, communication goals, and affiliative concerns (e.g., Higgins and McCann, 1984; Johnson and Eagly, 1989; Smith et al., 1956), which arouse a desire to express attitudes that are socially acceptable.

Like accuracy motivation, defense and impression motivations can engender heuristic and/or systematic processing. However, unlike accuracy motivation, these directional motives tend to lead people to process information selectively, rather than openly-mindedly. The biases engendered by these

directional motives largely occur outside of awareness; people usually operate under the illusion that they are thinking in an open-minded fashion. In the case of defense-motivated processing, for instance, individuals may selectively choose heuristics that help to confirm a preferred position. A defense-motivated person might therefore invoke the heuristic "experts know best" if the position of an expert source reinforces her cherished values and social identity, but might choose a different heuristic (e.g., "outgroup sources can't be trusted") if the position threatens her social identity. Likewise, impression-motivated heuristic processing entails selective application of heuristics that ensure a smooth interaction with specific others. For example, when interacting with a person or group whose views on an issue are unknown or vague, a perceiver might invoke the heuristic "moderate judgment minimizes disagreement." On the other hand, when others' views are known, a "go along to get along" heuristic might better serve the same goal.

With sufficient cognitive capacity and higher levels of motivation, defense- or impression-motivated people will also process systematically, but they will again do so selectively. Thus, a defense-motivated perceiver will attend to, elaborate on, and recall information that serves to bolster his preferred, self-protective position, while an impression-motivated perceiver will systematically process information in such a way as to convey a desired impression to (real or imagined) others.

The multiple-motive model thus proposed three general categories of motives that give rise to three distinct processing goals, any of which can engender heuristic and/or systematic processing. Expanding the theory in this way broadened its applicability to a much wider range of persuasion and social influence situations. In essence, the multiple-motive heuristic-systematic model allowed a rapidly increasing laundry list of persuasion-relevant variables to be understood in terms of their effects on a few key factors – processing goal, cognitive capacity, actual

confidence, and desired confidence – which could in turn suggest a reliable prediction about the extent of attitude change that should occur in a given setting. The strength of this basic dual-process model to organize and generate predictions in the persuasion literature led to its application across a wide range of settings (Chen and Chaiken, 1999; Ledgerwood et al., in press; Mackie, 1987; Stroebe and Diehl, 1988; see Eagly and Chaiken, 1993; Ledgerwood et al., 2006, for reviews). More broadly, it was one of several theories that helped to precipitate a flowering of dual-process models across multiple areas of social psychology, as researchers began to see similar basic principles at work in a number of different domains including stereotyping, impression formation, and decision making (see Chaiken and Trope, 1999).

### **PERSONAL HISTORY OF THE THEORY: AN AUTHOR BY LITERATURE INTERACTION**

In 1972, the first author entered graduate school at the University of Massachusetts Amherst armed with a math major, a psychology minor, and a vague interest in social influence. I began working with Alice Eagly, who was at the time examining the importance of message comprehensibility within the context of Bill McGuire's information processing paradigm. In fact, my masters research project involved testing an idea about comprehensibility that McGuire had tucked away in the depths of a handbook chapter; namely, that the importance of comprehensibility in determining the effectiveness of persuasive appeals would depend on the modality of the communication (Chaiken and Eagly, 1976). Looking back, I can trace part of the development of the heuristic-systematic model to this project. The idea was that message comprehensibility should matter more when the message is in written form rather than audio or video, partly because there is more flexibility to carefully

scrutinize a message when reading it than when hearing it spoken. Later, we returned to this idea to examine whether a different type of persuasion variable – source cues – might become increasingly influential as one moved from written to audio and visual modalities (Chaiken and Eagly, 1983). This research suggested that different persuasion variables might be more or less influential depending on how a message was presented.

Here then was one seed for the heuristic-systematic model: different types of persuasion variables had more or less impact depending on a recipient's ability to carefully scrutinize a message. Other seeds were in the recent and current literature at that time: articles on correspondent inference theory, Kelley's covariation theory, and self-perception theory populated the reading lists for my coursework, and I was intrigued both by attribution models and by the simplicity of self-perception (Bem, 1972; Jones and Davis, 1965; Kelley, 1972, 1973). With Alice, I helped develop an attribution model of source characteristics based on Kelley's (1973) cube model, particularly his notions of discounting and augmentation. Yet compared to self-perception theory, analyzing the covariances of even a somewhat superficial persuasion variable like source characteristics seemed effortful and deliberative. Could people really be so careful, so thoughtful, all the time?

The simple if-then's of self-perception theory appealed to me – why engage in some arduous analysis of your own thoughts and behaviors when you could simply reason: if I'm yelling, I must be angry? Years before, when Kennedy and Nixon had been running for president, I remember listening to my parents consider the intricacies of the various political issues at stake. Meanwhile I (with a young child's preference for the simple that I still haven't seemed to grow out of completely) *knew* that Kennedy was the man to vote for; after all, he looked better. And it wasn't just me; in graduate school, I read about data showing that although those who heard the first Kennedy–Nixon debate on the

radio believed Nixon had won, those who watched it on television were convinced that Kennedy had in fact prevailed. If the average person was really what McGuire (1969) had dubbed “the lazy organism,” might a simple if-then suffice for most of us, much of the time?

Then, in 1975, I came across Shelley Taylor’s recently published dissertation, which shed some additional light on self-perception processes. Female participants were shown pictures of three different men who varied in attractiveness. Some participants were given false physiological feedback suggesting that they showed a strong preference for one of the men pictured. Participants were then led to believe that they would have the opportunity to meet one of these men in a few weeks (high consequences condition), or were not led to expect a future meeting (no consequences). They then rated each of the three men on attractiveness. The results suggested that participants in the no consequences condition engaged in self-perception: they based their ratings of attractiveness on the physiological feedback provided. Most interestingly to me, however, participants in the high consequences condition were not affected by the feedback manipulation. Instead, there was some evidence to suggest they were thinking more carefully and critically about the three candidates: they spent more time looking at the pictures, and content analyses suggested that they made more critical comments.

I remember thinking to myself that surely this could apply to persuasion. High and low consequences provided a variable that could perhaps predict when a lazy organism would opt for a simple “if-then” versus a more complicated analysis of available information. I built my main dissertation experiment around this idea, testing whether high versus low consequences would moderate the persuasive impact of source cues (the most frequently studied noncontent variable at the time) and content (extent of strong persuasive argumentation). I reasoned that source cues such as likeability can be processed

quite easily and efficiently by a lazy organism unmotivated by future consequences. When future consequences were present, however, participants should be motivated to process information more carefully, and extent of strong argumentation should play a greater role in persuasion.

And (amazingly, to me at the time), the study worked. I started calling the more deliberative mode of thinking systematic, but didn’t really know what to call the other one until Icek Ajzen, another important mentor for me in graduate school, suggested the name “heuristic.” As I continued the line of research, the notion of consequences became abstracted into motivation to process information. Like many other theories at that time, the default motivation was implicitly assumed to be accuracy; I began to explicitly label the motivation “accuracy motivation” only later in order to emphasize that both modes of thinking served the same motive (rather than one being rational and the other irrational). Drawing on my earlier modality research, I also added capacity as a second variable that seemed necessary for deliberative processing to occur.

Over the years, I tried to expand the model to other kinds of cues, and to test its assumptions in various ways. Perhaps inevitably, given that my intellectual genes were steeped in classic functional theories of attitudes (Alice Eagly had worked with Herb Kelman), it occurred to me that accuracy was not the only motive in town, and I began to try to group the major attitudinal functions I had learned about in graduate school into a few broad categories of motives. Over time, we developed and tested predictions deriving from a multiple-motive heuristic-systematic model that included not just accuracy motivation, but also impression and defense motives (see Chaiken et al., 1996; Chen and Chaiken, 1999, for reviews).

Very gradually, then, the theory expanded – first under the influence of functional theories, and then following new developments in social cognition. I had always thought of heuristics as simple decision rules

that were likely represented in memory, and such a conceptualization lent itself to new theorizing about availability and accessibility in social cognition. By now I was at New York University, where hallway conversations with Tory Higgins and John Bargh inevitably turned toward basic principles of social cognition. I began to think that heuristics ought to vary in their availability, accessibility, and reliability, and that this would have important consequences for when a given heuristic would be applied. Furthermore, heuristics seemed to me to be relatively automatic, in at least some senses of the term (see Bargh, 1994). I always thought of them as a kind of shortcut; thus, at the very least they were automatic in the sense of being efficient. It also seemed likely that they often (but not always) operated outside of awareness. Over time, the results of accumulating studies provided support for this social-cognitive side of the model as well (see Chen and Chaiken, 1999, for a review).

Conceptualizing heuristics as a form of automatic social cognition highlights one way in which the basic processes underlying the heuristic-systematic model extend beyond the persuasion context to other domains. It became apparent early on that a dual-process perspective was not restricted to a persuasion context; that it would be fruitful to look across different domains to understand the common mechanisms at work in all of them. And indeed, the heuristic-systematic model was just one of a growing family of dual-process models that began to populate social psychology in the 1980s and 1990s, as researchers across different domains converged on a similar set of mechanisms to explain information processing in a variety of settings (see Chaiken and Trope, 1999).

## **INTELLECTUAL HISTORY OF THE THEORY**

Like many of the models in this family, the heuristic-systematic model suggests that

individuals can think about information not only via a bottom-up, data-driven process but also via a more top-down process that depends on the pre-existing knowledge structures they bring to a particular context. Although this represented a radical reorientation in the field of persuasion at the time, the notion that we can rely on learned associations to structure understanding emerged as early as 1930 in Kohler's discussion of sensation and perception, in which he suggested that our perceptions are shaped as much by a top-down application of knowledge derived from past experiences as by bottom-up, sensory experience (see also Moskowitz et al., 1999; Yates, 1985). For instance, upon sensing a pattern of colors and lines with our eyes, we can draw on our past experiences and associations with this pattern to label it a "chair" and infer its form and function. Subsequently, Bruner's "new look" emphasized the notion that our perceptions are substantially shaped by expectation and motivation (Bruner, 1957). Research on mental schemas developed this idea to suggest that we can quickly organize and "fill in the blanks" about our world using generalized mental structures built from our past experiences (e.g., Anderson and Pichert, 1978; Brewer and Treyns, 1981; see Fiske and Linville, 1980; Taylor and Crocker, 1981; and Fiske and Taylor, 2008, for reviews). Together, these literatures highlight a relatively quick, efficient, top-down method of understanding the world that capitalizes on past experience to structure current understanding, and suggests that these mental shortcuts may be applied to a range of different domains (see also Tversky and Kahneman, 1974).

Within this historical context, the heuristic-systematic model proposed that individuals might sometimes rely on quick, efficient, cognitive shortcuts to make judgments about the validity of information they encounter. Thus, rather than carefully scrutinizing any and all available information, people might instead draw on simple if-then associations learned through repeated experience to

inform their attitude judgments. For instance, given that experts tend to be correct, individuals might develop a learned association between experts and correctness that allows them to easily and efficiently infer that a subsequently encountered expert is likely to be right (“if expert, then correct”).

As noted earlier, because the model assumed that heuristics are like other knowledge structures, it invited connections to social-cognitive research on the principles governing the activation and use of stored knowledge (Chaiken et al., 1989, Chen and Chaiken, 1999). In other words, heuristics should be subject to the same principles of availability, accessibility, and applicability that underlie the use of stored knowledge in other domains (e.g., Higgins, 1989; Higgins et al., 1982). Considerable research supports this claim (see Chen and Chaiken, 1999, for a review). For instance, in order to be used to inform attitudes in a given setting, a heuristic must be (1) accessible (e.g., because it has been situationally primed), and (2) applicable (e.g., because an individual believes it to be a reliable, or usable, guide for judgment; Chaiken et al., 1992).

Heuristic processing thus represented a very different mode of thinking from the more systematic, comprehensive mode that had occupied the center stage of persuasion theory and research for some time. Furthermore, the heuristic-systematic model suggested that these modes of processing involved a tradeoff between optimal judgments (maximized by systematic processing) and efficient judgments (maximized by heuristic processing). The model’s original formulation proposed that heuristic or systematic processing would predominate depending on the relative importance of accuracy or economic concerns for a given person in a given context (Chaiken, 1980). Subsequently, this notion was refined to emphasize a continuum of judgmental confidence, along which two critical points can be located: a person’s actual confidence, and their desired confidence or *sufficiency threshold* (Eagly and Chaiken, 1993). As lazy

organisms (McGuire, 1969), people first attempt to close this gap in confidence via heuristic processing. Only when this easier strategy fails to confer sufficient judgmental confidence will people exert the cognitive effort required by systematic processing, assuming they are able to do so.

Considerable research supports this central claim that individuals will process information heuristically unless they are both motivated and able to engage in more effortful systematic processing. Heuristic cues alone tend to guide judgments when ability is low (such as when participants possess little knowledge about the topic, when they are under time pressure, or when situational constraints diminish cognitive capacity) and when motivation is low (such as under conditions of low task importance or personal relevance; Giner-Sorolla et al., 2002; Petty et al., 1976; Ratneshwar and Chaiken, 1991; Wood et al., 1985). As ability and motivation increase, systematic processing plays an increasing role in influencing attitudes (e.g., Chaiken, 1980; Martin et al., 2007; Petty and Cacioppo, 1984; see Eagly and Chaiken, 1993, for a review). Importantly, the processing modes are by no means mutually exclusive: given adequate levels of ability and motivation, heuristic and systematic processing often co-occur (Chaiken, 1980, 1987; Eagly and Chaiken, 1993). We return to this assumption of *concurrent processing* later in the section.

### ***Bridging beyond the persuasion context***

Although the heuristic-systematic model was initially developed within the context of the paradigmatic persuasion experiment, in which a source conveys a message to a target with some effect, it quickly became clear that the fundamental processes at work within this context were mirrored in other domains. At its heart, the persuasion paradigm involves individuals making judgments in light of information, as they do in many

other domains. Because it focuses on the basic processes underlying persuasion effects, the heuristic-systematic model provided a natural bridge from persuasion to many other, conceptually similar, areas. Across various domains, individuals can make judgments based on quick shortcuts or more effortful, extensive processing, and motivation and ability play a key role in guiding the extent to which effortful processing occurs.

Indeed, as noted earlier, the heuristic-systematic model was among several early dual-process models in social psychology. Together, these paved the way for a rapid proliferation of information-processing theories in a variety of domains that distinguished between a relatively automatic, fast, reflexive mode of thinking based on well-learned associations, and a more controlled, analytic, effortful mode based on systematic reasoning (e.g., Brewer, 1988; Devine, 1989; Fazio and Towles-Schwen, 1999; Fiske et al., 1999; Gawronski and Bodenhausen, 2006; Gilbert, 1989; see Chaiken and Trope, 1999; Smith and DeCoster, 2000, for reviews). In their 1999 volume, Chaiken and Trope featured a variety of dual-process models from diverse fields that converged in their basic distinction between these two types of processes, illustrating that these perspectives are really a family of theories with a common core.

### ***Empirical findings***

The first experiment designed to test the heuristic-systematic model examined whether involvement would moderate the extent to which a heuristic cue (communicator likeability) versus message content (extent of supportive argumentation) influenced people's attitudes (Chaiken, 1980: Study 1). Undergraduate participants read a transcript of an interview with a university administrator who in the course of the interview either praised undergraduates (likeable source condition) or disparaged them (unlikeable

source condition). Later, the administrator stated his opinion on an issue (e.g., changing from a semester to a trimester system) and provided either a weak message (containing only two arguments) or a strong message (containing six different arguments) in support of his opinion.

To test whether participants' level of motivation would determine the extent to which they relied on the heuristic cue or engaged in more effortful processing of message content, the experiment also manipulated participants' involvement by leading them to expect that they would discuss either the same issue or a different issue at a subsequent experimental session. Participants who expected to discuss the same issue should be more motivated to reach an accurate conclusion about whether the administrator's position was valid, compared to those who expected to discuss a different issue, and should therefore engage in more systematic processing. Consistent with the study's hypotheses, high involvement participants showed greater attitude change in response to a strong (versus weak) message, but were unaffected by communicator likeability. In contrast, low involvement participants showed greater attitude change in response to the likeable (versus unlikeable) communicator, but were unaffected by message content. Furthermore, substantiating the notion that attitude change was mediated via systematic processing in the high involvement condition, these participants showed greater recall of arguments and reported more issue-relevant thoughts, compared with those low in involvement. Thus, which factors produced persuasion – and *how* they produced persuasion – depended critically on participants' level of motivation.

Importantly, by delineating a dual process underlying people's thinking about persuasive appeals, the heuristic-systematic model was able to shed light on the role played by motivational variables, as well as source cues and message content, in influencing attitudes. For instance, previous research had reported conflicting findings regarding the

impact of involvement on persuasion (e.g., Pallak et al., 1972; Sherif and Hovland, 1961). Our results (Chaiken, 1980) suggested that involvement could either increase or decrease attitude change in response to a persuasive message, depending on the valence of available heuristic cues and the strength of the message content. Similarly, Axsom et al. (1987) showed that whereas involvement increased the impact of argument quality on persuasion, it decreased the impact of the heuristic cue of audience response (i.e., whether an overheard message audience sounded enthusiastic or unenthusiastic). The heuristic-systematic model thus provided a theoretical framework within which to organize a large number of persuasion-related factors in a literature that had often produced contradictory results.

### ***The concurrent processing assumption***

It was in large part the prevalence of such contradictory results that motivated the development of the heuristic-systematic model. Looking back, the historical assumptions discussed earlier, combined with the current climate in the persuasion literature, created a unique context within which the logic of a dual-process perspective was perhaps more likely to be discovered. And, in fact, two dual-process models of persuasion independently emerged from this context: the heuristic-systematic model and the elaboration-likelihood model (ELM; Petty and Wegener, 1999). Both provided an organizing framework for understanding the impact of various persuasion variables by suggesting two routes to persuasion: the heuristic or “peripheral” route, and the systematic or “central” route. However, they differed in some important ways. For instance, whereas the ELM assumed that the peripheral and central routes to persuasion were mutually exclusive, the heuristic-systematic model suggested that they could co-occur and even interact.

Thus, although many of the initial dual-process studies of persuasion suggested that heuristic cues do not impact attitudes when people are motivated and able to process systematically (e.g., Axsom et al., 1987; Chaiken, 1980; Petty et al., 1981; Wood et al., 1985), the heuristic-systematic model suggested that this pattern was only one possible outcome of the two modes of information processing. Specifically, these results seemed to represent cases in which systematic processing *attenuated* the judgmental impact of heuristic processing because it took into account information that contradicted the valence of the available heuristic cues. If systematic processing instead yielded information that was congruent with heuristic processing, the heuristic-systematic model suggested an *additivity hypothesis* whereby heuristic processing could exert a direct effect on judgment over and above the impact of systematic processing. Supporting this hypothesis, Maheswaran and Chaiken (1991; see also Maheswaran et al., 1992) found that when heuristic cues and message content were congruent, attitude change was mediated by both heuristic and systematic processing.

Importantly, however, the heuristic-systematic model proposed that the two processes could not only co-occur, but could also interact to exert interdependent effects on judgment. Specifically, heuristic processing could *bias* systematic processing by influencing people’s expectations about the validity of arguments presented in a persuasive appeal (Chaiken et al., 1989). To test this notion, Chaiken and Maheswaran (1994) presented participants with a novel attitude object (a new telephone answering machine called the “XT-100”) and assigned them to one cell of a 2 (accuracy motivation: low versus high) by 2 (heuristic cue: valid versus invalid) by 2 (argument quality: strong versus ambiguous versus weak) design. This study manipulated accuracy motivation by varying the importance and personal relevance of participants’ decisions regarding this new product. Whereas participants in the high

importance condition learned that they were part of a small list of respondents, that their input would be heavily weighted, and that the product would be distributed in their geographical area, participants in the low importance condition learned that they were part of a large group of respondents, that individual opinions were unimportant, and that the product would be distributed in a different geographical area.

Participants next received a positive message about the product that contained a heuristic cue conveying either high or low validity. Specifically, they learned that the product description in the message was taken from *Consumer Reports*, a credible source, or from a promotional Kmart pamphlet, a noncredible source. The product description contained either strong arguments, weak arguments, or an ambiguous mixture of the two. Participants then reported their attitudes toward the XT-100 and listed their thoughts about the product description.

As in previous studies (e.g., Chaiken, 1980), the relatively unmotivated participants in the low importance condition expressed attitudes that reflected the source credibility cues, but not the quality of the arguments presented in the product description. Thus, participants were more favorable toward the XT-100 when they had read a positive message from a credible (versus noncredible) source, regardless of actual message content. Moreover, this effect of source cue on attitudes was direct, rather than mediated by cognitive elaboration, consistent with the notion that participants were directly inferring the validity of the message from the source's credibility (i.e., processing heuristically by using a well-learned association between credibility and correctness).

Meanwhile, the results for participants in the high importance condition who read an unambiguous message also replicated past research: highly motivated participants who read a strong (versus weak) persuasive message expressed more positive attitudes toward the XT-100, and this effect was mediated by participants' cognitive elaborations about the

product. Additional analyses revealed that when source cue and message content were contradictory in their implications for message validity (i.e., a credible source paired with weak arguments, or a noncredible source and strong arguments), systematic processing alone determined attitudes. This is consistent with the *attenuation hypothesis* suggesting that systematic processing can override the effects of heuristic processing. However, when source credibility and message content were congruent (i.e., a credible source and strong arguments, or a noncredible source and weak arguments), there was both a direct effect of the heuristic source cue on attitudes and an effect of message content mediated by systematic processing. Thus, when the information provided by heuristic and systematic processing were congruent, the results supported the additivity hypothesis suggesting that both modes of processing can independently influence attitudes.

Finally, highly motivated participants who read an ambiguous message were influenced both by the source cue and by systematic processing of the high (versus low) quality arguments. Supporting the *bias hypothesis*, these participants' cognitive elaborations about the attitude object were influenced by the validity information provided by the source cue, such that the high credibility source biased systematic processing in a positive direction, whereas the low credibility source biased systematic processing in a negative direction. In addition, attitudes in this condition were also directly influenced by the heuristic cue.

In other research examining the bias hypothesis, Darke et al. (1998) studied the impact of consensus information presented in the absence of persuasive argumentation on college students' support for comprehensive exams. Accuracy motivation was manipulated via personal relevance. Participants in the high relevance condition were led to believe that the exam policy would have direct personal consequences (i.e., it would take effect the following academic year, and

would thus apply to current students), whereas those in the low relevance condition were led to believe that there would be no personal consequences (i.e., the policy would take effect in ten years, and therefore have no impact on current students). Participants then learned that 80 percent of students either supported or opposed instituting comprehensive exams, based on either a small poll (a sample size of ten students) or a large poll (a sample size of 1,000 students). Consistent with the bias hypothesis, participants in the high personal relevance condition generated thoughts that were biased in the direction of the available consensus cue, and these thoughts then influenced their attitudes. In contrast, the consensus information exerted a direct, heuristic influence on participants' attitudes in the low personal relevance condition. Interestingly, highly motivated participants also discriminated between the more and less reliable heuristic cues: participants in the high relevance condition were more persuaded by the consensus information when the poll was based on a large versus small sample of students, whereas participants in the low relevance condition were persuaded by consensus information regardless of the poll's size.

Together, then, these studies highlight the complex interplay between heuristic and systematic processing (see also Chen et al., 1996; Erb et al., 1998; Ziegler et al., 2005). Importantly, they demonstrate that the two modes of processing can influence attitudes both independently and interactively, suggesting that they may best be conceptualized as two interdependent and potentially co-occurring ways of thinking (see Eagly and Chaiken, 1993: Chapter 7, for further discussion).

### **Multiple motives**

Another unique feature of the heuristic-systematic model is that it jointly considers the influence of multiple modes of processing on the one hand and multiple motives on

the other. The tripartite analysis of motives in the heuristic-systematic model has its historical roots in the literature on attitude function, although it should be noted that similar classes of motives that center on understanding, protecting the self, and affiliating with others are echoed across multiple domains (e.g., Allport, 1954; Baumeister and Leary, 1995; Deutsch and Gerard, 1955; Fiske, 2002; Heider, 1958; Lerner and Tetlock, 1999; Tesser and Campbell, 1983). The notion that individuals are often motivated to form and hold attitudes that square with relevant facts built on Katz's (1960) "knowledge" function and Smith et al.'s (1956) "object appraisal" function of attitudes, which emphasized the role often played by attitudes in organizing experience and guiding action with respect to an individual's ongoing concerns. The heuristic-systematic model was thus initially designed to apply to persuasion contexts in which the message recipient is concerned with assessing the validity of a persuasive appeal (Chaiken, 1980, 1987; Chaiken et al., 1996). We subsequently extended the model beyond validity-seeking persuasion contexts, adding impression and defense motives to encapsulate two other broad classes of attitude functions in the literature (Chaiken et al., 1989). The concept of impression motivation was designed to capture other-oriented, affiliative functions such as Smith et al.'s (1956) social adjustment function, which emphasized the role that attitudes can play in helping people establish and maintain relationships with other individuals or groups (see also McGuire, 1969). Meanwhile, defense motivation encapsulated self-oriented defensive functions such as Katz's (1960) ego-defensive function and Smith et al.'s (1956) externalization function, which suggested that some attitudes serve to protect individuals' self-image against internal or external threats.

Considerable evidence supports the notion that impression motivation can guide heuristic and systematic processing (see Chaiken et al., 1996, for a review). For example, Chen

et al. (1996: Study 2) led participants to anticipate a discussion about a social issue with a partner who ostensibly held either a favorable or an unfavorable opinion on the issue. Before this discussion, participants read a series of fictitious scenarios designed to prime either the accuracy goal of determining a valid opinion, or the impression goal of getting along with other people. After this task, participants familiarized themselves with the discussion issue by reading an evaluatively balanced essay concerning the issue (in this case, whether election returns should be broadcast while polls are still open). Participants then listed the thoughts that had occurred to them as they read the essay and indicated their own attitudes toward the issue.

Impression-motivated participants expressed attitudes that were much more congruent with their alleged partners' attitudes than did accuracy-motivated participants: when the partner favored one side of the issue, they favored the same side, whereas when the partner opposed it, they opposed it. Interestingly, accuracy-motivated and impression-motivated participants exhibited the same amount of systematic processing (as measured by the number of issue-relevant thoughts that were listed). However, whereas accuracy-motivated participants' systematic processing was open-minded and unbiased by their partners' attitudes, impression-motivated participants exhibited systematic processing that was biased toward their partners' attitudes. For example, when the partner favored allowing broadcasts of election returns while the polls were still open, impression-motivated participants listed thoughts that revealed much more favorable thinking about arguments supporting the broadcasting of returns and more unfavorable thinking about arguments opposing it.

Like impression motivation, defense motivation can also guide heuristic and systematic processing in a directional fashion, as individuals attempt to close the gap between actual and desired confidence that a judgment will protect their cherished beliefs

and self-views (e.g., Ditto and Lopez, 1992; Giner-Sorolla and Chaiken, 1997; Liberman and Chaiken, 1992; Lord et al., 1979). For instance, Giner-Sorolla and Chaiken (1997) found that participants' vested interest in a campus issue biased their judgments of a consensus cue's reliability, when additional information that would permit systematic processing was unavailable. Specifically, participants rated the consensus information (an opinion poll of their fellow students) as more reliable, and criticized it less, when the poll results supported rather than opposed their vested interests. When additional information was available, participants also displayed a defensive bias in their systematic processing, cognitively elaborating the arguments presented in a selective manner that reflected their vested interests. Interestingly, when both types of information were available, exposure to a hostile consensus cue appeared to undermine judgmental confidence and increase systematic processing of the arguments presented: In these conditions, the influence of vested interests on participants' subsequent attitudes was mediated by their cognitive elaborations about the issue. In contrast, exposure to a congenial cue appeared to close the confidence gap, such that participants simply used their vested interests to directly inform their subsequent attitudes, rather than engaging in additional heuristic or systematic processing. Thus, as with accuracy and impression motives, both heuristic and systematic processing can be used to serve self-protective processing goals.

## IMPLICATIONS FOR SOCIAL ISSUES

Because it focuses on the basic mechanisms by which persuasion can occur, the heuristic-systematic model can predict how a wide range of variables will influence attitudes and judgments in various situations. It is therefore a particularly powerful tool for understanding and influencing information

processing in ways that can help effect positive social change, and has been applied to diverse issues such as increasing individuals' acceptance of potentially threatening health information, improving the design of product warning labels, identifying and decreasing bias in jury decision-making, increasing recycling behavior, and developing more effective programs for preventing substance abuse among teens (e.g., Brewer and Hupfeld, 2004; ForsterLee et al., 2006; Harris and Napper, 2005; Howard et al., 2006; Jepson and Chaiken, 1990; Liberman and Chaiken, 1992; Scott, 1996; Werner et al., 2002; Zuckerman and Chaiken, 1998). Here, we discuss the implications of the heuristic-systematic model for two areas that we find particularly interesting: negotiation and political decision-making.

### ***Negotiation and conflict resolution***

Recent research exploring heuristic and systematic processing in simulated negotiations has confirmed the utility of a dual-process perspective for understanding information processing in conflict settings (see Ledgerwood et al., 2006, for a review). Specifically, when negotiators have modest levels of motivation (or low cognitive capacity), they often rely on heuristics such as fixed-pie assumptions (the perception that a negotiation is a zero-sum game), initial anchor values (e.g., first offers, or information about the typical outcome of similar negotiations), and stereotypes about an opponent's group membership (De Dreu et al., 1999; Thompson and Hastie, 1990; see De Dreu, 2004, for a review). In contrast, when motivation and capacity are relatively high, sole reliance on these heuristics tends to decrease as systematic processing increases.

Researchers have identified several factors that influence the extent to which people process information in negotiations (see De Dreu, 2004). These factors include both

stable individual differences and temporary elements of a given situation that influence motivation and/or capacity. For instance, negotiators who are high in the dispositional need for cognitive closure – that is, the desire to reach a judgment quickly and avoid ambiguity (Webster and Kruglanski, 1994) – are more likely to rely solely on heuristics than are those who have a low need for closure (De Dreu et al., 1999).

Temporary, situation-specific factors such as the presence of a highly involving task or process accountability (the need to justify the way in which a decision is made) tend to increase the extent of systematic processing, whereas time pressure and capacity-degrading conditions (e.g., noise) tend to decrease such processing (e.g., De Dreu, 2003; Tetlock et al., 1989; see Ledgerwood et al., 2006, for a review). For example, De Dreu (2003) examined the effect of time pressure on fixed-pie perceptions. Business students were placed into pairs and asked to play the role of a buyer or seller in a negotiation over the purchase of a car. The negotiation task was designed to hold integrative potential: the different issues varied in importance to the two negotiators, so that an integrative solution that capitalized on this variation in priorities would be more beneficial to both negotiators than a 50:50 split based on a fixed-pie assumption. Participants were led to believe that they had either plenty of time in which to complete the negotiation (low time pressure condition), or relatively little time (high time pressure condition). Participants were more likely to revise their fixed-pie assumptions, which led to higher joint outcomes, under low rather than high time pressure. These results suggest that time pressure reduces systematic processing, heightening reliance on heuristic cues such as fixed-pie perceptions and preventing negotiators from capitalizing on integrative potential.

In contrast, when an individual expects to discuss an issue with, justify a decision to, or be evaluated by an unknown audience, he or she tends to engage in pre-emptive

self-criticism, displaying a heightened motivation to arrive at an accurate conclusion (Lerner and Tetlock, 1999; Tetlock et al., 1989). In terms of the heuristic-systematic model, holding a person accountable to an audience whose views are unknown can increase desired confidence for a correct judgment and thereby stimulate accuracy-motivated systematic processing. Confirming this idea, De Dreu et al. (2000) randomly assigned business student participants to high-accountability and low-accountability conditions before asking them to engage in a mock negotiation over the purchase of a car. In the high-accountability condition, participants expected that their negotiation strategies and decisions would be reviewed and evaluated several days later by an experienced negotiator and a psychologist. In the low-accountability condition, participants did not receive this information. The results showed that under high accountability, participants were more likely to revise their fixed-pie assumptions and tended to obtain higher joint outcomes. Together, these studies suggest that negotiation outcomes can be improved by reducing the impact of variables that decrease accuracy motivation and capacity (like time pressure), as well as by facilitating factors that increase accuracy motivation (like accountability to an impartial expert).

### ***Political attitudes***

The heuristic-systematic model can also be used to shed light on political decision-making and voting behavior (e.g., Forehand et al., 2004; Marcus et al., 2000; Mondak, 1993; Newman and Perloff, 2004), and suggests that the impact of various factors on political judgments and intentions will depend on a voter's ability and motivation to think about available information. When people are motivated and able to process political information, they will tend to weigh the quality of the arguments put forth regarding an issue or candidate. In contrast,

when people are low in motivation to process information about political issues or candidates (e.g., involvement and personal relevance are low), or lack the ability to process systematically (e.g., they are stressed or under time pressure), they may tend to rely on heuristics such as party labels, expert or celebrity endorsements, and source cues such as attractiveness or group membership. For example, a low-motivation or low-capacity voter might oppose a state ballot initiative because Oprah opposes it, support a senator because the letter ("D" or "R") next to the name matches the voter's typical political preferences, or vote for a presidential candidate because their facial features convey an air of competence (see Hall et al., 2009; Todorov et al., 2005).

Political psychologists have identified five broad categories of heuristics that can influence voting behavior: party affiliation, ideological affiliation, endorsements, polls (i.e., consensus information), and candidate appearance (Lau and Redlawsk, 2001). Although in an ideal world, citizens participating in a democratic process would usually think carefully and critically about political information before arriving at conclusion, heuristic processing is thought to guide a substantial portion of political decision-making. For instance, echoing Converse's (1964) observation that the majority of Americans display relatively low levels of political sophistication and knowledge, Mondak (1993) suggested that most voters face a range of pressing everyday concerns that tend to take precedence over political matters, increasing the likelihood that voters will rely on heuristics when processing political information (see also Ledgerwood and Chaiken, 2007). Consistent with this notion, Lau and Redlawsk (2001) found a high rate of heuristic use among individuals participating in a mock presidential election. Using a process-tracing methodology, these researchers were able to track the extent to which participants accessed different kinds of information about the candidates on a computer: They provided participants with a

list of available types of information (e.g., “Issue Stance,” “Past Experience,” “Endorsements”), each of which could be opened with a mouse click to display the relevant information, and then recorded which kinds of information participants chose to access. Information from each of Lau and Redlawsk’s five political heuristic categories was accessed by over 90 percent of participants. Interestingly, different participants also appeared to prefer different types of heuristics: those higher in political expertise were more likely to use ideology and endorsement heuristics, whereas those lower in expertise were more likely to use candidate appearance heuristics. As the heuristic-systematic model would predict, participants were more likely to use heuristics when their ability to engage in more effortful processing was limited (i.e., when the information environment was made more complex by having the information labels actively scroll past participants on the computer screen rather than remain static).

Lau and Redlawsk’s (2001) study suggests that all five categories of heuristics are likely to play a role in a given election; however, some types have been studied more frequently than others. For example, given the prolific use of endorsements for a wide variety of political attitude objects (including everything from local ballot initiatives to presidential candidates), and from a wide variety of endorsers (ranging from political organizations to celebrities), political scientists have been particularly interested in how endorsement heuristics influence political opinions and voting behavior. Using data from a California poll regarding an upcoming election for members of the State Supreme Court, Mondak (1993) showed that endorsements increased voters’ willingness to express an opinion and the direction of that opinion when they had relatively little information about the issue. Specifically, respondents were more likely to say a Supreme Court justice should be retained or recalled (rather than choosing “not sure”) when told which governor had appointed the justice, and they used their evaluation of the governor to guide

their evaluation of the justice in question. In other words, they used the governor’s endorsement as a heuristic in forming an attitude toward the associated Supreme Court justice. Consistent with the heuristic-systematic model, this was more likely to occur when respondents had been previously exposed to relatively little media information regarding the justice (thereby limiting their ability to engage in systematic processing) and for respondents scoring higher on a need for cognitive efficiency measure (designed to tap both motivation and ability to carefully process information).

In Mondak’s (1993) study, the heuristic implication of an endorsement from a politician depended on a voter’s attitude toward that politician. However, the impact of an endorsement could also depend on the perceived *reliability* of the heuristic for a particular judgmental task; that is, the extent to which a perceiver deems a heuristic to be a valid guide for judgment in a given situation (see Chen and Chaiken, 1999). For example, when considering an environmental issue, a voter might feel that an endorsement from Greenpeace affords a sizeable increase in judgmental confidence, whereas an endorsement from the National Basketball Association does not, despite equivalent evaluations of the two organizations. Indeed, Forehand et al. (2004) found that participants expressed more favorable attitudes toward a hypothetical initiative when it was endorsed by a well-known and issue-relevant source rather than a fictional or issue-irrelevant source. Supporting the heuristic-systematic model’s sufficiency principle, this difference emerged in a low motivation context (in which participants expected to justify their preferences about an unimportant and unrelated issue, ballot formatting) but not a high motivation context (in which participants expected to be held accountable for their position on the initiative itself).

Group endorsements can also act to bias systematic information processing about an issue or a candidate. Individuals may be motivated by defense or impression concerns

to agree with an ingroup and disagree with an outgroup, and may therefore process information selectively to arrive at these preferred judgments (Fleming and Petty, 2000). For example, Cohen (2003: Study 4) asked liberal undergraduate students to evaluate a (stereotypically liberal) proposal for a generous federally funded job-training program. Half the participants learned that Democrats opposed and Republicans supported the program, while half received no information about group endorsement. On average, participants in the latter condition supported the program, in keeping with their ideological beliefs. However, when participants were told that their ingroup opposed the program, they showed biased processing of the information presented in the proposal, selectively interpreting ambiguous information and selectively attending to unambiguous information to support the ingroup position. As a result, participants in the ingroup-opposed condition were more likely to oppose the program themselves, compared to participants in the no-information condition. Moreover, the Democratic participants believed that group endorsement influenced the attitudes of other Democrats and (even more strongly) Republicans, but perceived themselves to be relatively unaffected by this information. Thus, consistent with the notion that heuristic processing need not involve intentionality and self-awareness (see Chaiken et al., 1989; Chen and Chaiken, 1999), it seems likely that people are unaware of the extent to which group endorsements bias their thinking about an issue. This may tend to exacerbate political conflicts: whereas Democrats and Republicans might agree on a policy in the absence of endorsement information, merely attaching a party label to a proposal can distort information processing and lead partisans to adopt divergent positions. Bipartisan proposals may therefore be particularly likely to gain public support not only because their actual content may better address the political goals of both groups, but also because the absence of a link to a particular party may help to

promote more open-minded information processing.

## CONCLUSION

Looking back, we see the heuristic-systematic model as very much a product of its historical context, building on theories both within the attitudes domain and outside of it, and developing beyond the study of basic social psychological processes to shed light on important and relevant social issues. To us, this illustrates the benefit of working in an area with such a long and cumulative history that both influences and draws from other psychological and related social-science disciplines. In coming years, we hope that the field continues to develop the heuristic-systematic model in concert with other dual-process theories, drawing from the research that has already been done to influence that which is yet to come.

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