

Heuristic-systematic Model of Information Processing

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Heuristic-Systematic Model of Information Processing, or HSM, is a widely recognized communication model that attempts to explain how people receive and process persuasive messages. The model states that individuals can process messages in one of two ways. The first being heuristically and the second being systematically. The guiding belief with this model is that individuals are more apt to minimize their use of cognitive resources thus affecting the intake and processing of messages. HSM is quite similar to Elaboration Likelihood Model, or ELM. Both models were predominately developed in the early-to-mid 1980's and share many of the same concepts and ideas.

History

Early research investigating how people process persuasive messaging focused mainly on cognitive theories and the way the mind processed individual inputs. One of the early guiding principles of underlying motivations of persuasive communications came from Leon Festinger's (1950) statement that incorrect or improper attitudes are generally maladaptive and can have deleterious behavioral, affective, and consequences.

In 1953, Hovland, Janis, and Kelley noted that a sense of "rightness" accompanies holding opinions similar to the opinions of others. In 1987, Holtz and Miller reaffirmed this line of thought by noting, "When other people are perceived to hold similar attitudes, one's confidence in the validity of one's own attitude is increased."

Another concept that contributed to the HSM was the Sufficiency Principle. This principle reflected widespread notions that people use limited cognitive resources, or use an "economy-minded" approach to information processing when presented with persuasive information. Based on this thought, early assumptions said people were at least partially guided by the "principle of least effort." This principle stated that in the interest of economy, the mind would often process with the least amount of effort (heuristic), and for more detailed information processing would use more effortful processing (systematic). This was the major difference when compared with the ELM, which described the two different ways information was processed, through central and/or peripheral processing.

Ideas contributing to the development of both persuasion models continue to be refined, "Although people want to hold correct attitudes, the amount and nature of issue-relevant elaboration in which they are willing or able to engage to evaluate a message vary with individual and situational factors."

The developer and main researcher of the HSM was Dr. Shelly Chaiken, a now-retired social psychologist. She first received her BS from the University of Maryland, College Park in 1971 for mathematics. She later earned her MS (in 1975) and her PhD (in 1978) at the University of

Massachusetts Amherst in social psychology. In her last position before retiring, Chaiken worked as a professor of psychology at New York University.

Under her direction, the HSM has undergone several major revisions. As she noted in 1980 and 1987, the model specified the two modes of heuristic and systematic processing. Then, Dr. Chaiken (et al) noted in 1989 that 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. In 1986, Dr. Chaiken, and others, updated the model to include underlying motivations.

Heuristic Processing

Heuristic processing uses judgmental rules known as knowledge structures that are learned and stored in memory. The heuristic approach offers an economic advantage by requiring minimal cognitive effort on the part of the recipient. Heuristic processing is governed by availability, accessibility, and applicability. Availability refers to the knowledge structure, or heuristic, being stored in memory for future use. Accessibility of the heuristic applies to the ability to retrieve the memory for use. Applicability of the heuristic refers to the relevancy of the memory to the judgmental task. Due to the use of knowledge structures, heuristic information processors are likely to agree with messages delivered by experts, or messages that are endorsed by others, without fully processing the semantic content of the message. In comparison to systematic recipients, in judging the validity of messages and rely more on accessible information such as the identity of the source or other non-content cues which exert more impact on persuasion than message characteristics. Heuristic views de-emphasize detailed information processing and focuses on the role of simple rules or cognitive heuristics in mediating persuasion.

Systematic Processing

Systematic processing involves comprehensive and analytic, cognitive processing of judgment-relevant information. The systematic approach values source reliability and message content, which may exert stronger impact on persuasion, when determining message validity. Judgments developed from systematic processing rely heavily on in-depth treatment of judgment-relevant information and respond accordingly to the semantic content of the message. Recipients developing attitudes from a systematic basis exert considerable cognitive effort and actively attempt to comprehend and evaluate the message's arguments. Systematic recipients also attempt to assess their validity as it relates to the message's conclusion. Systematic views of persuasion emphasize detailed processing of message content and the role of message-based cognitions in mediating opinion change. While recipients utilizing systematic processing rely heavily on message content, source characteristics and other non-content may supplement the recipients' assessment

of validity in the persuasion message.

Choosing Systematic or heuristic processing

Both Heuristic and Systematic processes may occur independently; it is also possible for both to co-occur in an additive fashion or in a way that the judgmental implications of one process lend a bias nature to the other. The Heuristic-Systematic Model includes the hypothesis that attitudes developed or changed by utilizing heuristic processing alone will likely be less stable, less resistant to counterarguments, and will be less predictive of subsequent behavior than attitudes developed or changed utilizing systematic processing.

Recipients may sometimes choose to accept message conclusions they might otherwise have correctly rejected, or vice versa, had they properly invested the time and effort needed to receive and scrutinize the message. When the recipient views the argumentation judgment as being inconsequential, the recipient will likely place greater value on economical concerns than reliability concerns.

When economic concerns are predominant, the recipient will likely employ heuristic processing when formulating argumentation judgment. Reliability concerns are influenced by the level of the recipient's issue-involvement or response-involvement.

When reliability concerns are predominant, the recipient will likely employ systematic processing when formulating argumentation judgment. When recipients perceive significant importance in formulating highly accurate argumentation judgment, the recipient will likely employ a systematic processing strategy. Source credibility affects persuasion under conditions of low, but not high, issue-involvement and response-involvement.

Practical Application

Research into information processing, especially in persuasive messaging, has a natural application in advertising, specifically medical awareness. A 2004 study by Suzanne K. Steginga, PhD, and Stefano Occhipinti, PhD, Queensland Cancer Fund and the School of Applied Psychology, Griffith University, Queensland, Australia, investigated the utility of the Heuristic-Systematic Processing Model as a framework for the investigation of patient decision making. A total of 111 men diagnosed with localized prostate cancer were assessed using Verbal Protocol Analysis and self-report measures. The results showed: "Most men (68%) preferred that decision making be shared equally between them and their doctor. Men's use of the expert opinion heuristic was related to men's verbal reports of decisional uncertainty and having a positive orientation to their doctor and medical care; a desire for greater involvement in decision making was predicted by a high internal locus of health control. Trends were observed for systematic information processing

to increase when the heuristic strategy used was negatively affect laden and when men were uncertain about the probabilities for cure and side effects. There was a trend for decreased systematic processing when the expert opinion heuristic was used. Findings were consistent with the Heuristic-Systematic Processing Model and suggest that this model has utility for future research in applied decision making about health issues.

The model is also used in Internet webpage considerations. In a 2002 study by Wathen & Burkell, they proposed a theory that separated the evaluation process into distinct segments. In the theory, the process began with low-effort examinations of peripheral cues (e.g., appearance, design, organization, and source reputation) then continued to a more high-effort analysis of the content of the information source. The proposed research also drew on social psychological theories of dual-processing, which stated that information processing outcomes were the result of interaction between a fast, associative information-processing mode based on low-effort heuristics, and a slow, rule-based information processing mode based on high-effort systematic reasoning. Wathen and Burkell proposed (but did not test) that if an individual determines that an online source does not meet an appropriate level of credibility at any one stage, then he or she will leave the site without further evaluation. They theorized that this "easy to discard" behavior was indicative of information-rich environments, where the assumption is that many other potential sources of information exist, and spending too much time on any one source is potentially wasteful.

Direction of Future Research

Originally the heuristic-systematic model was developed to apply to "validity seeking" persuasion setting in which peoples' primary motivational concern is to attain accurate attitudes that square with relevant facts. Chaiken assumes that the primary processing goal of accuracy-motivated recipients is to assess the validity of persuasive messages, and that both heuristic and systematic processing can serve this objective. Other motives beyond the validity-seeking persuasion context were identified by Chaiken and colleagues (1989) who proposed an expanded model that posits two additional motives that heuristic and systematic processing can serve; defense-motivation and impression-motivation.

Defense-motivation is the desire to form or defend particular attitudinal positions.

Impression-motivation is the desire to form or hold socially acceptable attitudinal positions.

Contrary to previous viewpoints, the Heuristic-Systematic Model and the Elaboration Likelihood Model should be treated as complimentary models to create a dual-processing framework for use in future research for understanding a variety of social influence phenomena.

Future research should seek to link persuasion more closely with impression formation, which has previously focused on impressions based on agents' behaviors. An example would be to test if

perceived expertise of a communicator is more stable over time and more resistant to counterfactual evidence if it is based on systematic processing than when it is based on a short description. Research has revealed that two-sided messages might not only be more persuasive but might also enhance the perceived credibility of a communicator.

Criticisms

A major criticism of HSM is that the model closely relates to ELM, which is also a dual-processing model discussing paths to persuasion. The main similarity between the two models is that they both discuss two routes of persuasion, which either examines central or systematic processing in particular. The differences between HSM and ELM are that ELM discusses two main routes of persuasion processing: central route processing and peripheral route processing unlike HSM. These two routes of processing define related theories behind attitude change. The central route is reflective and requires a willingness to process and think about the message. The peripheral route occurs when attitudes are formed without extensive thought, but more from mental shortcuts, credibility, and appearance cues. The route of persuasion processing depends on the level of involvement in the topic or issue. High involvement or elaboration increases central route processing especially when motivation and ability in the message exists. Therefore, low involvement increases peripheral route processing when motivation and ability conditions of persuasion do not exist. However, if the topic or idea is irrelevant to the individual, then the message takes the peripheral route.

HSM specifically examines "validity seeking" persuasion settings concerning people's motivations within the social environment (p. 326). The limitation of HSM exists in the inability to define the specific motivations of persuasion, which is why Chaiken expanded HSM to illustrate that heuristic and systematic processing can "serve defense-motivation, the desire to form or defend particular attitudinal positions, and impression-motivation, the desire to form or hold socially acceptable attitudinal positions" (p. 326).

Major assumptions exist with both HSM and ELM, which is why both models have generated debate and are often misconstrued. Systematic processing assumes that persuasion has been "mediated by the recipients understanding and cognitive elaboration of persuasive argumentation" (p. 327). In addition, researchers hypothesize that systematic processing actually requires and "consumes cognitive capacity, whereas heuristic processing makes few capacity demands" (p. 328). Furthermore, both HSM and ELM assume that "capacity and motivation are important determinants of systematic process" which results in biased modes of processing (p. 327). With heuristic processing, there is less need to process information and cognitively in comparison to systematic processing. Heuristic processing occurs when people simply form immediate decisions and conclusions based on the information available versus analytical processing of information given that obviously requires more cognition. Heuristic processing as defined by HSM, illustrates

that people can formulate decisions utilizing basic rules such as "experts' statements can be trusted" and "consensus implies correctness" to establish validity within messages (p. 327). Therefore, individuals who process messages through heuristic processing routes of persuasion, likely formulate decisions based on experts' opinion and what the consensus believes opposed to fully processing the message in its entirety.

This leads to another similarity between HSM and ELM, as attitudes and opinions developed through heuristic processing will tend to be "less stable, less resistant to counter-propaganda, and less predictive of behavior" in comparison to attitudes and opinions formed through detailed information within systematic processing (p. 327).

The main assumption is that HSM postulates that heuristic and systematic processing can influence both "independent" and "interdependent" effects on decision making by occurring simultaneously (p. 328). Unlike HSM, ELM does not postulate whether central route processing and peripheral route processing can co-occur or not. Another assumption by Chaiken and her colleagues is that systematic processing does in fact provide people with more "judgment relevant information" in comparison to heuristic processing of information, which does not account for any weaknesses in expert subject matter material, which can exist (p. 328). Therefore, while systematic processing may be prevalent within many social environments, HSM, unlike its model counterpart ELM, does illustrate "the possibility that heuristic processing can exert a significant and independent influence on persuasion" (p 329).