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## Heuristic-Systematic Processing in the Classroom

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*This study investigates the impact of immediacy and motivation on student behavior and learning. The investigators apply the heuristic-systematic model (Chaiken, 1980) in order to provide a theoretical account of how instructors can use persuasion to increase student learning and willingness to learn. Overall, the results indicate that immediacy has a positive impact on recall of the instructor's message, valence toward the message and the instructor, and the amount of effort put into thinking about the instructor's topic.*

Teaching behaviors have been shown to impact students' willingness and ability to learn in the classroom. Past research (Andersen, 1979; Andersen, Norton, & Nussbaum, 1981; Christophel & Gorham, 1995; Comstock, Rowell, & Bowers, 1995; Frymier, 1993, 1994; Gorham, 1988; Nussbaum, 1992; Richmond, 1990; Richmond, Gorham, & McCroskey, 1987; Richmond, McCroskey, Kearney, & Plax, 1987; Sorensen, 1989), however, has focused primarily on the outcomes of instructor behaviors rather than the process by which student behaviors are evoked. A student-centered process-oriented approach may help to improve our understanding of this area of research since the social influence of teachers' messages "is by definition inherent in the role of a teacher" (Roach, 1994, p. 236). In addition, an application of persuasion theory can shed light on our understanding of the influence of instructor behaviors on students' willingness to learn.

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Research has examined immediacy for its impact on such things as liking, teaching effectiveness, and student learning (Nussbaum, 1992). Immediacy can be defined as behaviors that increase interaction (Andersen, 1979; Andersen et al., 1981; Comstock et al., 1995; Gorham, 1988), induce liking (Andersen, 1979; Andersen et al., 1981; Comstock et al., 1995; Gorham, 1988; Sorensen, 1989), and reduce physical and psychological distance (Andersen et al., 1981; Christophel, 1990; Comstock et al., 1995; Gorham, 1988; Richmond et al., 1987).

Motivation and its impact on learning have received much attention in the instructional literature. According to Richmond (1990), motivating students involves getting them to *want* to do something rather than feel *commanded* to do it. Richmond (1990) argued that motivation has an impact on learning; motivated students learn more and students who learn more become more motivated. Christophel (1990) tested the relationship between student state motivation and teacher immediacy and their impact on student learning. Her study revealed that immediacy positively influences learning, either directly or indirectly, and in combination with student state motivation, and that highly motivated students reported having more immediate teachers.

Overall, immediacy and motivation can have a persuasive impact in the classroom. While previous research has increased our awareness of the persuasiveness of immediacy and motivation, scholars may benefit from a better understanding of persuasion itself in order to shed light on the *process* through which immediacy and motivation influence students. For this reason, this study applies the heuristic-systematic model of persuasion (Chaiken, 1980). The heuristic-systematic model, developed as an alternative to the elaboration likelihood model (Petty & Cacioppo, 1981, 1986), explains listeners' processing of persuasive messages (Chaiken, 1980, 1982, 1987; Eagly & Chaiken, 1993). The literature on the heuristic-systematic model describes two major processing paths to persuasion: the systematic route and the heuristic route (Eagly & Chaiken, 1993). With the *systematic* route, recipients of a message exert a great deal of effort in order to understand and evaluate arguments and conclusions (Chaiken, 1980). For example, students systematically processing a persuasive message from an instructor would carefully analyze the information before evaluating its worth.

In contrast, the *heuristic* route involves considerably less cognitive effort in evaluating the content of a message. Heuristic cues refer to "any variable whose judgmental impact is hypothesized to be mediated by a simple decision rule" (Eagly & Chaiken, 1993, p. 327). Heuristics are learned through past experience and may require less cognition, and can mediate evaluations of a persuasive message. For example, a student might enact a simple decision rule, such as "boring teachers are not worth listening to" or "I agree with instructors I like" rather than exert a high amount of cognitive effort in assessing a message. Moreover, proponents of the heuristic-systematic model "assume that people are 'economy-minded souls' who wish to satisfy their needs in the most efficient ways possible" (Eagly & Chaiken, 1993, p. 330). When the importance of the message itself outweighs cognitive economic concerns, individuals will tend to employ heuristic over systematic processing to save time and effort.

The purpose of this research study was to investigate the impact of immediacy and motivation as persuasion variables on student learning. The investigators focused on the process by which this impact may occur by applying the heuristic-systematic model (Chaiken, 1980). In contrast to traditional approaches to studying the relationship between teacher behaviors and learning, this research study attempted to provide a theoretical account of

how persuasion can be used to increase student learning and willingness to learn. Given the reviewed literature on systematic and heuristic processing, the following hypotheses are proposed:

H1a: There will be a difference in argument (message) recall for students in the high motivation condition and students in the low motivation condition.

H1b: There will be a difference in argument recall for students in the high immediacy and the low immediacy condition.

H2a: There will be a difference in the amount of message-centered statements for students in the high motivation condition and the low motivation condition.

H2b: There will be a difference in the amount of message-centered statements for students in the high immediacy condition and the low immediacy condition.

H3a: There will be a difference in communicator-centered statements for students in the high motivation condition and the low motivation condition.

H3b: There will be a difference in communicator-centered statements for students in the high immediacy condition and the low immediacy condition.

H4: There will be a difference in the amount of perceived cognitive effort in processing the persuasive message among the four conditions.

## METHOD

### *Participants*

Participants were 80 male and female undergraduates enrolled in the basic communication course at a large south central university. The participants were randomly assigned to one of four conditions ( $n = 20$ ) and were asked to fill out a survey instrument under a cover story that they were to evaluate a presentation by a guest lecturer.

### *Procedures*

Each group was exposed to one of the following four conditions: Low motivation/Low immediacy, High motivation/High immediacy, High motivation/Low immediacy, and Low motivation/High immediacy. The experimenter in each condition explained that the class would evaluate a guest lecturer by listening to him and filling out a survey instrument. The experimenter also explained to the students that the guest lecturer would be speaking about group decision-making processes. Two graduate teaching assistants in the communication department each served as guest lecturers for two conditions. To reduce confounding effects on the dependent measures, both lecturers covered identical lecture material and used similar examples in their presentations. Both guest lecturers were white males who were similar in appearance and who dressed similarly for purposes of the study. In addition, both lecturers were approximately the same height, had short, brown hair, and wore dress slacks and shirts with collars.

To incorporate the influence of immediacy, the amount of nonverbal immediacy was manipulated in each of the experimental conditions while the content for each presentation was the same. The nonimmediate guest lecturer was instructed to avoid eye contact, speak in a monotone voice, face the chalkboard throughout the presentation, and avoid interaction with the participants. The immediate guest lecturer was told to provide as much eye contact as possible, vary the tone of his voice, demonstrate an inclusive body posture, attempt to interact with the participants as much as possible, encourage student feedback, lean forward and reduce physical distance, and convey feelings of liking. This operationalization of

immediate and nonimmediate nonverbal instructor behaviors is consistent with the immediacy literature (See Andersen, 1979; Andersen et al., 1981; Christophel, 1990; Comstock et al., 1995; Frymier, 1994; Gorham, 1988; Richmond et al., 1987; Sorensen, 1989). Prior to giving their presentations to the classes, the experimenters trained and evaluated each guest lecturer.

Again, motivation can be defined as the ability to bring people to a state of action (Frymier, 1993; Richmond, 1990; Zorn, 1991). This definition is different from persuasion because motivation does not act to change others' beliefs, attitudes, or behaviors. The experimenters manipulated motivation by telling students in each condition that they either would or would not be tested and graded over the guest lecturer's material. In the high motivation conditions, students were told that they would be tested over the material later in the week; in the low motivation conditions students were explicitly told that they would not be tested on the material.

The dependent variables and their administration are described following the section on coding procedures. Unless otherwise noted, participants' responses were assessed using seven-point Likert-type scales ranging from -3 (strongly disagree) to +3 (strongly agree), or on seven-point bipolar adjective scales. Two Ph.D. students in communication, who were naïve to the study's purpose, independently coded the material and were blind to the experimental conditions. Reliability for all three scales was .88. The persuasion scale yielded .88, the reliability of the nonverbal immediacy scale was .88, and the topic scale had a reliability of .88. Intercoder reliability was determined for the two coders' independent codings of the open-ended questions dealing with argument recall and thoughts about the speaker and his message.

Argument recall. In a timed three-minute period, participants were asked to list as many of the lecturer's main points, supporting arguments, and examples as they could remember. The two coders scored these responses by looking for a main point, a supporting argument, or an example. Coders scored a statement "correct" if they believed it accurately summarized a main point, supporting argument, or an example that appeared in the lecture. The "argument recall" measure was used to assess differences in systematic processing of the message (Chaiken, 1980). The reliability of the argument recall codings was .92 (Frey, Botan, Friedman, & Kreps, 1991).

Thoughts. On the questionnaire, each participant was asked to "list any thoughts" they had about the guest lecturer's presentation in a timed three-minute period. The coders independently scored these thoughts as message-oriented or communicator-oriented (M, C), and as positively or negatively valenced (+, -). Examples of statements corresponding with each category along with intercoder reliability coefficients are: M+ (.73) "The first three steps of the decision-making process are the most helpful"; M- (.77): "The decision-making process is not useful for all groups"; C- (.79): "He was very boring and spoke in a monotone voice"; C+ (.71): "He said that the decision-making process was helpful in reaching a consensus." The "thoughts" measure was used to assess differences in both heuristic and systematic processing of the message. As for thoughts on the lecturer, message-centered statements had a reliability of .82, while communicator-centered statements yielded .80.

Persuasion: Message agreement. To measure persuasion, or acceptance of the lecture material as important, the experimenters asked participants to indicate their agreement with the usefulness of the decision-making process advocated by the lecturers on Likert-type

scales. In addition, participants indicated how important the decision-making process was to them and how likely they would be to adopt it, as well as how valuable they perceived the information to be.

Perceived cognitive effort in learning about the topic. Participants indicated on seven-point scales the amount of effort they spent thinking about the guest lecturer's arguments, their desire to be well informed about the topic, and their interest in the topic (Eagly & Chaiken, 1993).

Manipulation check: Source perception. The experimenters used a measure of source perception as a manipulation check. Participants rated the communicator on bipolar adjective scales. The positive poles of the twelve scales used were warm, knowledgeable, modest, intelligent, approachable, competent, likable, trustworthy, pleasing, sincere, friendly, and unbiased (Chaiken, 1980).

### RESULTS

A 2 (immediacy) X 2 (motivation) analysis of variance (ANOVA) was used to test the first hypothesis. With regard to H1a, there was neither an interaction,  $F(1, 76) = 3.40, p > .05$ , nor a motivation main effect,  $F(1, 76) = .10, p > .05$ . Thus, Hypothesis 1a was not supported; however, Hypothesis 1b received support. The argument recall measure yielded a main effect for immediacy,  $F(1, 76) = 9.77, p < .01$ . The mean for low immediacy was 5.73, and the mean for high immediacy was 7.68.

Regarding Hypothesis 2, ANOVAs were used to analyze the message-centered (positive, negative) and communicator-centered (positive, negative) thoughts generated by the respondents. When analyzing message-centered statements, a main effect for immediacy was found,  $F(1, 76) = 9.76, p < .01$ ; see Table 1.

TABLE 1  
Measure-centered Statements: Mean Scores

|                 | High Immediacy | Low Immediacy |
|-----------------|----------------|---------------|
| High Motivation |                |               |
| Total           | 2.05a          | 1.00b         |
| Positive        | 1.25a*         | .20b          |
| Negative        | .15a           | .15a          |
| Low Motivation  |                |               |
| Total           | 1.45a          | .90a          |
| Positive        | .65a*          | .05b          |
| Negative        | .20a           | .10a          |

Note: Means with same letter in row are not significantly different. \* denotes a significant difference in high immediacy condition.

This result indicates that as immediacy increased, the number of total message-centered statements increased. However, there was no interaction between immediacy and motivation,  $F(1, 76) = .95, p > .05$ . Thus, Hypothesis 2a did not receive support, although Hypothesis 2b did. With positive message-centered statements, main effects were found for both immediacy,  $F(1, 76) = 28.38, p < .05$ , and motivation,  $F(1, 76) = 5.86, p < .05$ . No significant effect for interaction was found,  $F(1, 76) = 2.11, p > .05$ . In addition, there were no significant

differences for negative statements (immediacy,  $F(1, 76) = .38, p > .05$ ; motivation,  $F(1, 76) = .001, p > .05$ ; immediacy X motivation,  $F(1, 76) = .38, p > .05$ ). Tukey's Studentized Range statistic was utilized to locate the significant differences in message-centered statements.

In testing Hypothesis 3, a 2 X 2 ANOVA revealed no significant differences for total communicator-centered statements. However, a main effect for immediacy in positive statements was found,  $F(1, 76) = 4.71, p < .05$ ; see Table 2.

TABLE 2  
Communicator-centered Statements: Mean Scores

|                | Total | Positive | Negative |
|----------------|-------|----------|----------|
| High Immediacy | 1.25a | .65a     | .13a     |
| Low Immediacy  | 1.10a | .30b     | .13a     |

*Note:* Means with same letter in column are not significantly different.

As immediacy increased, the amount of positive communicator-centered statements increased from an average of .30 to .65. There were no significant differences for negative statements in that both immediacy conditions had an average of .13. Thus, while Hypothesis 3a was not supported, Hypothesis 3b received support. Tukey's Studentized Range statistic revealed no significant pairwise differences among communicator-centered statements overall.

The ANOVA used to test Hypothesis 4, which referred to perceived cognitive effort, did not reveal an interaction between immediacy and motivation,  $F(1, 76) = 2.36, p > .05$ , or a main effect for motivation,  $F(1, 76) = .09, p > .05$ . However, a main effect was found for immediacy,  $F(1, 76) = 26.59, p < .01$ ; see Table 3.

TABLE 3  
Cognitive Effort: Mean Scores

|                | High Motivation | Low Motivation |
|----------------|-----------------|----------------|
| High Immediacy | 23.15a          | 25.15a         |
| Low Immediacy  | 19.20a          | 17.85b         |

*Note:* Means with same letter are not significantly different.

This finding yielded partial support for Hypothesis 4. There was a significant difference between high and low immediacy within the low motivation condition,  $t(76) = 4.73, p < .05$ . Perceived cognitive effort in thinking about the topic increased as immediacy increased. Also, in the high motivation condition, effort in thinking about the topic increased as immediacy increased,  $t(76) = 4.84, p < .05$ .

A 2 X 2 ANOVA was also performed of each of the Likert-type scales for purposes of checking the manipulation of the treatments. For the persuasion measure (persuasiveness of the instructor as perceived by the students), there was an interaction between immediacy

and motivation,  $F(1, 76) = 6.76, p < .05$ , and main effects for each of the independent variables (immediacy,  $F(1, 76) = 15.7, p < .01$ ; motivation,  $F(1, 76) = 4.39, p < .05$ ). With the high motivation condition, persuasiveness increased from a mean of 25 within low immediacy to a mean of 31.4 within high immediacy. With the low motivation condition, persuasion decreased from a mean of 30.6 in the high immediacy condition to a mean of 29.5 in the low immediacy condition.

### DISCUSSION

The purpose of this study was to test the heuristic-systematic model in the context of the classroom. Specifically, the authors were interested in the impact of motivation and immediacy on systematic and heuristic routes to persuasion. The reviewed literature suggests that teacher behaviors can have an impact on students' willingness to accept and learn classroom material. The results indicate that as immediacy increases, so does argument recall. However, motivation does not appear to affect students' abilities to remember the speaker's main points. This finding is consistent with previous research (Andersen, 1979; Frymier, 1993; Gorham, 1988) linking high immediacy with teaching effectiveness and student learning. However, this finding is inconsistent with previous literature dealing with motivation and systematic processing (Chaiken, 1980). Perhaps the way motivation was operationalized in this study did not capture the different factors that motivate students to learn. For example, grades may not be a strong enough motivator to entice students to remember as many arguments as possible. Previous research on heuristic-systematic processing (and the elaboration likelihood model) reveals that motivation is a difficult variable to operationalize and manipulate (Eagly & Chaiken, 1993). It also can be argued that the behaviors of the immediate instructor may have motivated the students to recall more arguments. For example, Roskos-Ewoldsen & Fazio (1992) found that feelings of liking for a message source increases the likelihood of acceptance of that message, as well as the ability to recall specific aspects of it.

In the present study, positive message-centered statements increased as immediacy and motivation increased. This finding is consistent with prior research (Roskos-Ewoldsen & Fazio, 1992) in that the more students like the source of a message, the more they will positively evaluate the message. The increase in positive message-centered statements may demonstrate how a heuristic cue can bias systematic processing. In terms of motivation, the accountability of a grade may have motivated students to favor the message itself. This accountability also is consistent with prior research (Maheswaran & Chaiken, 1991).

Regarding communicator-centered statements, as immediacy increased, so did the number of positive communicator-centered statements in the high motivation condition. Conversely, as immediacy decreased, the number of negative statements increased in the low motivation condition. The heuristic cue (immediacy) affected the valence of communicator-centered statements in both the high and low motivation conditions. This finding is consistent with research that demonstrates heuristic processing can bias systematic processing, and that in low motivation conditions, individuals will be influenced by heuristic cues (Chaiken & Maheswaran, 1994).

Students in the low motivation and high immediacy condition were more persuaded by the speaker's message than students in the high motivation and low immediacy condition. This finding is consistent with previous research in that in low motivation conditions, individuals tend to be more influenced by heuristic cues (Chaiken, 1980). In other words,

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| Low Motivation |
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| 25.15a         |
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students may be acting as cognitive misers in both high and low motivation conditions. This miserly behavior could be due to the heuristic processing of immediacy and its influence on systematic processing. Also, individuals in high motivation conditions can be influenced by heuristic cues to the point that systematic processing is reduced to negligible levels (Maheswaran & Chaiken, 1991). Although students may have been motivated by a grade, the nonimmediacy heuristic cue possibly influenced how persuaded they were by the message.

One limitation of this study could be the operationalization of motivation. This study used a test/no test manipulation as the sole motivator when other motivating factors may be present in the classroom (e.g., personal relevance, positive or negative teacher behaviors, students' educational background). While the "threat" of being tested is very realistic in the classroom, future studies of the heuristic-systematic model could take other motivational factors into account in order to broaden the conceptualization of motivation. While some motivational tactics serve as a "threat" (as with a test or quiz) or may carry a more negative tone, other tactics may be more positive or may appeal to what students perceive as personally or academically relevant to them. Another limitation may be the emphasis on immediacy as a heuristic cue. While this study provides support that immediacy can influence heuristic and systematic processing of messages, there are a number of heuristic cues which may have the same effect. Future studies should consider other possible heuristic cues, such as source credibility (e.g., professors vs. teaching assistants) and students' perceived involvement with the topic, and incorporate them into the research design.

Researchers also may wish to examine the effect of heuristic and systematic processing during various times in a semester. Researchers may benefit from attempting to better understand the process of persuasion in the classroom setting, especially in terms of its possible relationship with immediacy and motivation.

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