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AUTHOR Grunig, James E.
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ABSTRACT

One of the keys to economic behavior is decision making in production and the market place. Traditionally, economists have assumed decision making to be rational and based upon complete information, but this is not the case in actual situations. Actual problem solving is based upon communication behavior and availability of information. If, as is so often true, the communication behavior is irrational and closed (that is, not open to information input), then problem solving will not occur, or, if it occurs, the solutions will be faulty. The Columbian (South America) agricultural system proves this thesis when tested for openness or closedness. That is, the system and the people are closed to new information input, and thus an archaic agricultural system is perpetuated. Communication behavior and information availability must be considered in studies on economics. (CH)

A DECISION-SITUATION MODEL OF COMMUNICATIONS BEHAVIOR: A REVIEW OF RESEARCH AND A STOPPING EXPERIMENT

James E. Grunig
College of Journalism
University of Maryland
College Park, Maryland

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In 1966 while a doctoral candidate in mass communications at the University of Wisconsin, I approached Professor Bruce Westley about a term paper assignment for his communications theory course that deviated a good deal from the general social-psychological theories of communication popular at the time.

I had come out of a masters degree program in agricultural economics and wanted to explore the information and knowledge assumptions of traditional microeconomic theory. Economic theorists generally have assumed that the rational decisionmaker has perfect knowledge or when he lacks information that he utilizes various strategies to overcome his lack of information. The question that interested me was what happens to economic theory when information is a variable rather than a constant--i.e., what is the role of information in economic decision making.

Professor Westley gave me his go-ahead for the project and it was eventually published as a Journalism Monograph.[1] After reviewing the substantial economic, psychological, and sociological literature on decision making, I concluded that rational decision making (weighing alternatives and choosing the one which maximizes or "satifices" a goal) does occur but only rarely. Then I adopted Katona's distinction between genuine decisions and habitual decisions,[2] a distinction closely paralleling the philosophical reasoning of John Dewey[3] and a model of communication and affective relations which had just been published by Carter.[4] The implications for communication of these two types of decision behavior were as follows.[5]

> Although most economic decisions are made on the basis of habit, genuinely rational decisions are made in new situations where the decision maker has little previous decision experience and in important "crossroads" decisions. When rational decisions are made, the role of information is to reduce uncertainty. If the decision maker had access to all relevant information and had the mental capacity to analyze the information and relate it to his situation, he would have little reason not to make a rational decision. He could then easily choose the alternative which would maximize his chances of solving his problem...
>
> However, in situations where the decision maker has previous experience in making similar decisions or in relatively unimportant decisions, habit normally substitutes for genuine decision behavior. Information provided in a genuine decision situation was previously the basis for the formation of this habit, and accurate information is thus extremely important in the earlier situation if "good" habits are to be formed. Once habits have been formed, information may have little function except to reinforce habits--i.e., the decision maker will tend to expose himself to and remember supportive information.

At this point, the model was overly simple, but it did seem to have several advantages. It seemed to explain the differing communication behaviors which Festinger had distinguished between conflict (genuine decision) and dissonance (habit).[6] And as a receiver oriented model, it directed both the researcher and the professional toward the receiver's situation and openness to information rather than to the source's persuasive intent or desire to change attitudes or diffuse innovations. In other words, it told the professional communicator to be an information seeker first if he hoped eventually to give situationally relevant information to his receiver (which should be the most informative and/or persuasive message).

Since that initial publication, the model has changed considerably as it has been applied in a variety of research situations. Research has

been done in both orientational and coorientational situations and on systems other than individuals (organizations, groups, communities). And the model now has gone far beyond its origin in economics. The purpose of this paper, then, is to update the theory, to review past applications, and finally to present the results of a stopping exercise designed to test the predictions of the model in an experimental setting.

Current Conceptualization of the Model

My first two elaborations of the model came with the realization that not all habits are dysfunctional to "rational" cognitive behavior and that the individual in many situations is not free within his situation to choose between alternatives.[7]

The realization that some habits are useful led to a distinction between what Dewey has called routine habits and intelligent habits.[8] Intelligent habits, I realized, are an important part of "genuine decision making," which I had then begun to call problem solving. A "problem solver" formulates and improves upon decision rules whose function is to limit the number of alternatives which he considers in similar future situations and to economize on information seeking. Decision rules are formed when successful outcomes to problematic situations are generalized to apply in future situations. In forming decision rules, then, the problem solver is creating "intelligent habits" which will guide much of his behavior in the future.[9]

Sometimes, however, decision rules degenerate into inflexible or routine habits. When a habit becomes rigid or routine it shuts off consideration of new alternatives within the situation--i.e., there is no

recognition that the situation is either indeterminant or problematic.[10]

At this point, I still had two types of decision processes--problem solving (which now included the use of decision rules) and routine habit. Both of these types, however, were based on the assumption that decision making is solely a function of individual cognitive processes. Then came the realization that the individual can be constrained by the structure of his situation. The result was three more types of decision: constrained decision (where constraints are physical, social, political or economic structures), ignorant habit (where the constraint is the individual's lack of education or mental capacity), and fatalism (where the constraints of the situation result in an absence of cognitive behavior).

The essential difference in the cognitive process for these five types of decisions was the number of discriminations made. In problem solving, the individual discriminates between situationally relevant alternatives. In the other types, he recognizes or has available only one alternative (or a limited range of alternatives), so his only discrimination is recognition.[11]

The importance of the model was not so much that it explained decision making as the fact that it could explain communication behavior. In the original monograph, I had conceptualized the function of information in decision making to be the reduction of uncertainty about alternatives. That function was made possible, I saw later, because information is a type of message which articulates the attributes or consequences of alternatives.[12] Logically, then, information would have utility only for problem solving,

not for any of the other decision types.[13] So the problem solver should be an information giver and seeker, the routine habit individual should seek reinforcing information or give information defending his habit. The others, for different reasons, would seek little information unless perhaps it was relevant to means of eliminating the situational constraints.

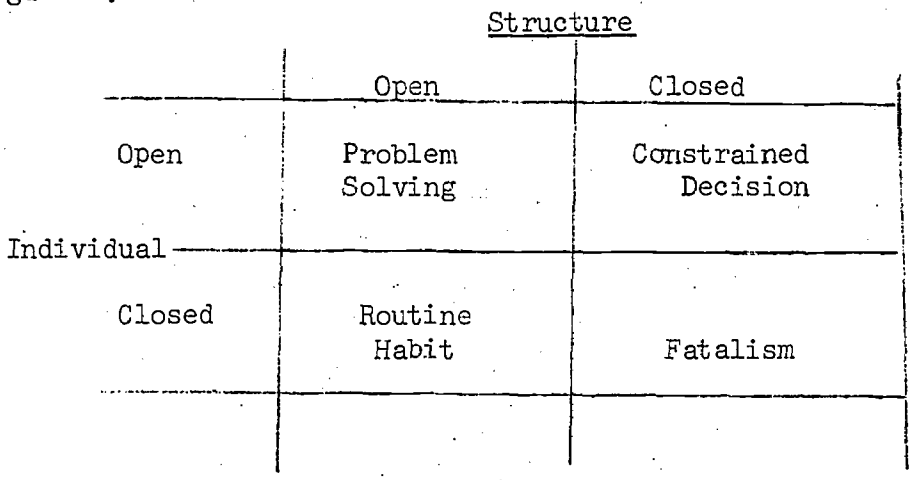
Since I had conceptualized the difference between the five decision types as being the number of discriminations which the individual makes in these situations, I had visualized the model on a one-dimensional continuum of the number of discriminations. Thus, problem solving was at one end of the continuum and the other types were clustered at the opposite end--although there would seem to more discriminations in constrained decision than in ignorant habit, routine habit and fatalism in that order.

Then came a new realization which further clarified the model. The five decision types were really only four, and these four were combinations of two dimensions--the openness of the individual and the openness of the structure. An open individual is one who recognizes alternatives--i.e., that a problem exists. An open structure is a structure where alternatives are available or feasible.

At this point also, I realized the semantic difficulties of conceptualizing a "decision" or a "decision process". So instead I saw the typologies as "modes" of making cognitive discriminations, modes which are the direct result of "decision situations" which are combinations of individual and situational characteristics.[14]

The combinations of these two dimensions yields the four decision modes as shown in Figure 1. (Ignorant habit was made a special case of constrained decision.) At this point, then, the conceptualization of the four types is as follows:

Figure 1.



Problem solving is a type of decision situation in which the individual recognizes that alternatives are present and therefore that a problem exists. Alternatives are also available within the structure. The individual in this situation is "rational." He weighs alternatives and chooses among them. Volition, or perceived volition, in making a choice exists. Because the individual evaluates alternatives, information is useful, and information seeking and giving are important aspects of problem solving. Decisions rules, however, may reduce the amount of information seeking of this individual.

Constrained decision is characterized by physical or structural blocks within the system which rule out all but one alternative or a limited range of alternatives. The individual has little perceived volition,

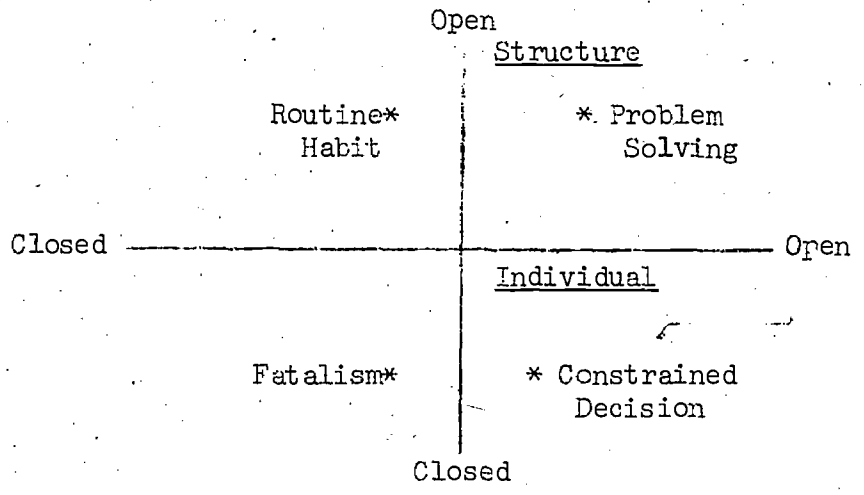
even though he recognizes alternatives that are excluded by constraints in his situation. Because alternatives are constrained, information seeking will be low, although information concerning presently excluded alternatives will not be avoided. The only information that would be sought would be messages offering means for eliminating the constraint.

Routine habit is characterized by a closed-minded individual in an open structure. This individual considers only a habitual alternative. His cognitive process is rigid, and his information seeking is negligible and directed only toward messages which reinforce his habitual alternative. He readily gives information, however, when his alternative is threatened.

In fatalism, the individual neither recognizes a problem nor has alternatives available within his structure. He feels that he has no control over his environment and he has lost interest in controlling it. For these reasons, he is not an information seeker, not even of information about means of removing the constraint.

Some readers may object that these decision modes are too idealized and like most typologies, too inflexible (i.e., there may be middle points between them. This is a valid criticism and for this reason, some may prefer to interpret the decision modes as discrete points on two continuous scales (Figure 2).

Figure 2.



At this point, the model was still an orientational model which could predict individual information giving and seeking based on a combination of individual and structural properties.[15] It seemed to explain well the motivation for the communication act, --i.e., the situations in which individuals stop (a problematic situation)--and it offered further promise of indicating what communication content would be sought out by an individual (that relevant to his perceived problems).[16] As outlined above, it is basically a structural model, although it can easily be elaborated to specify the process within each one of the decision modes.[17] But since the general utility of the model is to specify the situations in which communication is possible, the process aspects have seemed less important thus far than the application of the structural model to predicting readiness for communication.[18]

The model became even more useful in specifying the conditions in which communication is possible when it was extended to coorientational situations. Chaffee and McLeod's coorientation paradigm provided the framework for this new means of analysis.[19] Chaffee and McLeod have applied their paradigm to two types of cognitions--attributes and evaluations. I have applied it to two others--cognitions of problems and cognitions of feasible alternatives within the structure. These, of course, are the two dimensions of a decision situation outlined above. Applying this framework to the decision model led me to look at combinations of decision modes. These combinations should predict when communication will take place between two individuals or systems and what its effects will be.

Of the 10 possible combinations of the four decision situations, only the combination of two problem solvers facing the same problem would seem to allow for communication interaction and success in achieving accuracy, understanding, or agreement--the dependent variables in Chaffee and McLeod's scheme.

On the other hand, two individuals in a routine habit situation could communicate with and reinforce one another if they are attached to the same alternative. Two individuals facing a constrained decision could communicate about a common constraint or could share frustrations about being constrained. And it is feasible that a problem solver could communicate with any individual in one of the other three situations to the extent of achieving accuracy (being able to predict the cognitions of the other person). But this accuracy would be one-sided--i.e., the other

persons would not seek information from the problem solver. In none of the other combinations of decision situations could communication occur with any degree of success.

After coorientation, the model was extended one more time--this time to apply to systems other than individuals. A paper by Westley had given me the idea of expanding communication theories to behavior at more than one system level.[20] The decision model seemed capable of explaining the communications behavior of organizations, groups, communities and other systems. The coorientational combinations seemed especially useful in explaining the reason for effectiveness or lack of effectiveness of communication between organizations (such as the mass media or business) and their publics or audiences. The model now stimulated some fascinating questions: Do routine habit media appeal to similar routine habit audiences? Is a new, innovative (problem solving) organization most likely to use publics relations communication for information seeking as well as giving? And do routine habit organizations use public relations mostly for defensive information giving activities?

These are just some of the fascinating questions which these recent extensions of the model open up. Even more fascinating are the questions of how to structure an organization or situation so that communication can take place--i.e., how to change the situation so that constrained decision, routine habit, and fatalistic individuals and systems can become problem solvers who are open to communication.[21]

Most of these theoretical extensions have come during or after

research based on the decision situation model. At this point, then, the paper will back up to review these studies, most of which have been field studies.

A Review of Research

Colombian Landowners and Peasants. Latin American agriculture is characterized by extremes of wealth and poverty--a landed elite and a deprived peasantry. The large landowners (latifundistas) supposedly are traditionals who are embedded in the status quo and who resist change. The peasants (minifundistas), on the other hand, supposedly are irrational and fatalistic--resisting change because of custom and a lack of economic motivation.

Communication, the literature on communication and development would have us believe, can be the force which changes these individuals, makes them more modern, and starts the process of economic development. This kind of thinking, I thought, represented a hypodermic, information-giving approach to communication. It seemed doubtful that communication could have this effect if the individual were not open to information, not just because he is closed-minded but perhaps more importantly because the situation is closed.

The decision model, because it was a receiver-oriented model, seemed perfectly suited for research on the modernization of both latifundistas and minifundistas. The model thus received its first test during a two-year period of research on agricultural entrepreneurs in Colombia.[22]

To apply this model in two Colombian studies, I used Q-factor analysis of survey data to develop six types of large landowners and six

types of peasants. In the analysis, I included three types of variables: 1) pre-cognitive variables, to indicate the opportunity structure and individual differences, 2) cognitive variables, the decision modes and communication variables, and 3) post-cognitive variables--consequences of cognition such as income, adoption of technology, and productivity.

In these two studies, the decision modes were measured through a series of factual and projective questions. The factual questions came immediately after questions which determined each respondent's use of markets, transportation, technology, etc. At this point, the respondent was asked why he chose the alternative he did. The projective questions came later in the interview when the respondent was asked what he would do in several hypothetical situations ranging from crop failure to finding employment off the farm. Each response was coded as one of the decision modes. Each respondent then received an overall percentage score for each mode based on the relationship with the total number of decisions which he was questioned about.

The resulting Q-typologies show that the type of decision mode and the resulting communication behavior depended to a large extent on the structure of the situation. For the large landowners, routine habit became less common as the typologies moved from traditional to modern (Table 1). But importantly, the most traditional types had large amounts of land and could make an extremely high income from routine habit behavior--they had no need for a crossroads decision. The problem solvers were renters, the foreign born (Germans and Japanese), those with less land, and new entrepreneurs in a frontier area.

Likewise, the minifundistas became more characterized by problem solving and less characterized by the other decision modes as the structure offered more opportunities (Table 2). In both studies, the problem solvers were characterized by information seeking and exposure to a variety of information sources. The major exception was that the most traditional latifundista type was most exposed to newspapers--undoubtedly because of the status quo orientation of Colombian news media. The communication variables also correlated with the decision modes as expected (Tables 3 and 4).

Another significant aspect of the study was an R factor that emerged in each of the two studies--a factor which in both cases could be called the problem solving factor (Table 5 and 6). This factor confirmed the conceptualizion of problem solving and in addition appeared to subsume the traditional social psychological variables associated with modernity--adoption, aspiration level, achievement motivation, economic rationality, cosmopoliteness, and literacy. Empathy also loaded positively, although not significantly, on the factor (there was,however, difficulty with the measure used for empathy).

Community Decision in a Suburban County. In the literature on community decision making, influence on the outcome of community decisions is generally traced to individuals or groups with power, authority, or higher relative participation.[23] Although they are concerned with influence, community decision scholars seldom treat communication as an independent concept, more often subsuming it under influence. Seldom, also, do they

directly measure the coorientation of groups within the community. They instead used a reputational measure or a measure of decision process involvement to indirectly determine coorientation.

In a study of a wealthy suburban county of Washington, D.C., I used a measure of the two dimensions of the decision model--problem definition and perceived feasible alternatives--to develop typologies of interest groups, governmental agencies, housing developers, and private employers concerned with a shortage of low-income housing in the county.[24] All groups perceived a housing problem as measured through a key informant, but they defined it in a different way and believed different alternatives possible. The two typologies which resulted differed on whether the problem was social or economic (Table 7) and on the extent of governmental intervention which they thought possible as an alternative solution. As the coorientation aspect of the extended model would predict, the groups communicated most with other groups sharing a similar problem orientation (Table 8). The extent of accuracy, understanding, and agreement between groups in these typologies was not measured, however, because the purpose of the study was to measure coorientation of these groups with the poor and middle-class suburbanites.

Organization-Clientele Communication. The next application of the moedl came in an effort to explain the internal communication network and the organization-clientele communication network of a community development agency in another suburban Washington jurisdiction.[25] In this study, I had expected to be able to use the two decision dimensions to explain the

sociometric linkages within the organization. I also expected to find that individuals lower in the hierarchy would be more "congruent" with the clientele. This congruency could be interpreted as both a cause and effect of more communication with the low-income cleintele.

The first prediction did not hold. Employees reporting sociometric linkages with one another were no more likely to share problem orientations (the most important social problem they thought the agency should solve) and perceptions of feasible alternatives (those alternatives thought possible for the agency). There was, however, a difference in problem orientation between blacks and whites in the organization (Table 9). Blacks, however, were only slightly more likely to communicate with blacks than whites and whites only slightly more with whites than blacks.

My explanation of these findings, which were contradictory to the theory, was that organizational structure and roles can force as well as restrict communication. In this agency, blacks and whites were mixed throughout the organization and thus forced to communicate with one another despite their differing problem orientations. The result was agreement on the clientele's problem orientation but not on self problem orientations. (Table9).

At the same time, blacks were more congruent with the clientele on cognitions of problems and alternatives as well as attributes and evaluations. (Table 10). Blacks, as the model would predict, also had more communication contact with the clientele.

My conclusion was that the staffing policy of this organization

illustrated a desirable means of using structural constraints to facilitate internal and external organizational communication:[26]

> Mixing the differing orientations of blacks and whites at all levels of the organization seems to be a desirable way to facilitate accurate organization-clientele communication. Such a staffing policy allows an organization to be involved with its clientele and yet be detached enough to be pragmatic and technical about problems.

In short, if the decision model shows the natural parochialism of communication, this study showed means of utilizing constraints to overcome that factor.

Internal Organizational Communication. The literature on organizational communication is filled with descriptions of vertical and horizontal networks and exhortations for management to communicate more, but there is little solid theory to explain the descriptions or to tell how to make more communication possible. Thus, the model seemed to provide a means of predicting employee information seeking and giving and a means to determine the information needs of employees.

In a graduate seminar last fall, five graduate students and I set out to use the organizational communication literature to extend the model to an organizational setting and then to apply the extended theory in a case study of the Potomac Electric Power Co. in Washington, D.C.[27] In this study, we again used Q-factor analysis of survey data. Included in 101 items were questions on each employee respondent's job decision situation, job problem orientation, role problem orientation, organization problem orientation, and constraints on some organization orientations.

Three types of employees resulted: an older, basically content, worker who because of age and seniority feels constrained in his job; a younger worker who considers alternative jobs, has high aspirations, and is currently dissatisfied with his job; a management type of higher echelon employees.

We first asked questions to determine each respondent's job decision situation. Had respondents considered other jobs? Why or why not? Responses were coded as to whether a problem was recognized (looked for other jobs) and whether any constraints were mentioned as reasons for not looking or not going elsewhere. These results (Table 11) showed the Constrained Older Workers to be in the range of fatalism to constrained decision, Dissatisfied Younger Workers to be problem solvers, and Management to be somewhat in the range of routine habit.

A series of questions on communications exposure showed the model's predictions to hold well. The older workers were least exposed to all media, management was most exposed to the company's own publication (which should provide reinforcement to management, and the younger workers were most exposed to the newsy company media and the grapevine, both of which gave them the situationally relevant information they sought.

Questions on job orientations (how they choose a job--i.e., the way they see the problematic situation) role orientation (the problem they see to be solved in their own job) and organization orientation (most important problem for the organization to solve) yielded data highly useful in discovering information needs as well as coorientational discrepancies between management and workers (Tables 12, 13, 14).

Stopping Experiments in Science Communication. Over the past two years, I have been using Carter's Stipulated Stopping Technique to measure the impact of manipulating textual variables in science articles written for the lay public.[28] In general, I have been attempting to learn whether analogies, examples, and parables lead to more total stopping and to more stopping to think. In a final experiment the think stipulation was split so that subjects could specify a stop to think about implications and a stop to think because of confusion.

I could find little difference in stopping between these different writing techniques, although analogies and parables seem to lead to more stopping to think about implications. In order to control for problem recognition, one passage in the story was written to say in essence that this subject matter should be a problem for the reader. The results showed that those who stopped to agree or think at that point then stopped more often and more often to think in most treatments.

In the last experiment I substituted a direct measure of the four decision modes in place of the indirect measure of problem recognition. One question asked: "Is the problem discussed in this article important to you?" (problem recognition). The other, "Do you think ordinary citizens like you could use information like that presented here to have an impact on government policy?" (constraints). The four yes and no combinations yielded the four decision modes.

The results for all treatments (Table 15) showed that subjects in the constrained decision mode and problem solving mode stopped significantly more than those in routine habit and fatalism--i.e., problem recognition

seemed to influence total stopping more than did perception of structural constraints.

Problem solvers, however, stopped significantly more to think about implications than did the other three types. Constrained decision subjects disagreed significantly more than the others, and routine habit subjects agreed less than did the others (the latter finding can be explained, the former cannot).

Likewise, subjects were asked after reading the exercise whether they would seek more information on the subject and give the information to others. They were also asked how well they had understood the article. The results showed problem solvers to be highest on both seeking and giving, routine habit and constrained decision to be in the middle and fatalism to be at the bottom--i.e., both information seeking and giving were highest when both decision dimensions were positive, lowest when both were negative. (Tables 16 and 17). Understanding followed the same pattern although the differences are not as great. (Table 18).

In summary, the results of this study showed that the decision modes are better predictors of certain reasons for stopping, for stopping in general, and for information giving, seeking, and understanding than were the three communications devices tested. This is the utility of the model--it shows when communication is possible. If the individual and his situation are closed communications devices have little effect on him. If individuals already have a propensity to communicate about the problem in question, the devices have little additional effect.

An Experimental Test of the Model

As the previous section shows, the decision-situation model has proved useful and has been highly predictive in a variety of field settings and in one stopping exercise in an experimental setting.

A question that has intrigued me for some time, however, has been whether an experimental procedure could be devised to test out the model's information seeking and giving predictions. The difficulty is that subjects are or are not in one of the decision situations in regard to particular problems and that it is difficult to experimentally manipulate subjects into the situations. The decision types predicted well in the science communication exercise cited above, but in that case the decision types explained the lack of results from another experimental manipulation. The modes themselves were not manipulated.

A few years ago, Carter and Ruggells suggested a technique which they called the Prototypic Projective Protocol (PPP)[29]. With that technique, the experimenter wrote a story about a character but left part of the story open for the subject to complete. The story characters could be manipulated, leaving open only the predicted experimental finding. The subject's story completions could be expected to be a projection of the subject into the story character facing conflict, dissonance, or some similar situation. According to Carter, the principal fault with the technique was the difficulty of coding the projections. At that time also, Carter moved on to his stopping methodology and dropped the PPP.[30]

The technique seemed useful to me, however, because it allowed for

the possibility of writing a story about four characters, each one typical of one of the four decision situations. The communications behavior of the characters could be left open for the subjects to complete. The problem, though, was that the subject might not even project a communication behavior into that situation. It would be difficult to constrain him to do so.

Carter's stopping procedure, however, gave me another idea--that of combining the PPP and the SST. The experimental method I came up with was to write a story about characters in each of the decision modes, and in one version of the exercise have the character communicate as the model predicts and in a second version communicate in a manner contrary to predictions of the model. The character could both seek and give information in an orientation setting and coorient with other characters.

Subjects could be instructed to read the story and to stop for one of two reasons--to agree that people he knows who are similar to the character in the story would behave as the story indicates or to disagree that people he knows would behave that way. It seemed important to instruct the subjects that they were to think in terms of people similar to the story character whom they know and not just to think in terms of whether they themselves would behave that way. This is because the subject himself may never have been in one of the decision modes.

The prediction, then, was that subjects would stop to agree more than disagree with the correctly described communication behaviors and stop

to disagree more than agree with the incorrectly described behaviors. This, then, was the plan of the experiment.

Operationalization. The experiment described was conducted in April 1973 on 140 sophomore university students in the introductory mass communications course at the University of Maryland. The experiment was conducted during the time of pre-registration for fall semester so the stories were written about journalism students choosing a subject minor or courses for the upcoming semester. Information seeking and giving was portrayed by have the characters go to an adviser for information, following his suggestions, reading the catalog, and getting information from other departments. Co-orientation was portrayed as the character striking up a conversation with other students about minor area and course choices. All of these descriptions were in accord with the theory hypothesized in the first section of this paper.

Before the exercise began, the subjects were instructed to read through the exercise quickly to get an idea what it was about and then to go through it carefully, stopping to agree or disagree at any point they felt appropriate.

The responses were organized in contingency tables, with categories for stopping to agree more times than to disagree at each described correct and incorrect communications behavior, stopping to disagree more than to agree, stopping to agree and disagree an equal number of times, and not stopping at all. Correctly and incorrectly described communication behaviors were varied randomly so that each of the two versions had half correctly

and half incorrectly described behaviors.

Results. Tables 19 through 22 show the results for the communication descriptions of the basic orientation situations. Table 19 shows that for problem solving, there is a significant relationship as was hypothesized--subjects agreed more with the correctly described behavior and disagreed more with the incorrectly described behavior. The fourth column also shows that about twice as many subjects failed to stop at all for the correct behavior as for the incorrect behavior. This column could be interpreted in several ways, but perhaps the best interpretation is that subjects do not stop if they see nothing wrong with the described behavior. This column, then, would provide further support for the problem solving predictions.

Table 20 also shows a significant chi-square for the routine habit predictions--but in the opposite direction from the predictions. An equal number of subjects agreed with the correct and incorrect descriptions but more disagreed with the correct communication. Likewise, more subjects failed to stop for the incorrect communication than for the correct.

For the constrained decision mode, Table 21 shows no significant different between the correct and incorrect descriptions. Table 22, however, shows a significant difference in favor of the hypothesized relationship for the fatalism mode--although the results for the incorrect treatments are somewhat ambiguous.

These results, then, partially support the predictions of the model--they support the problem solving and fatalism predictions, but not those for routine habit and constrained decision.

Further analysis of individual exercises at this point, however, showed that many subjects had disagreed or agreed with the descriptions of students who characterized the decision modes--i.e., the descriptions in the stories presented before the correct and incorrect descriptions of communications behavior. So, a second analysis was done after eliminating those subjects who had disagreed with the basic descriptions of the characters who fit the decision modes.

These data manipulations (Tables 23-26) raised the chi-square scores for problem solving and fatalism in the expected direction and reduced the chi-square scores for routine habit and constrained decision so that they were less significant in the direction opposite to that expected. This data manipulation thus supports all of the predictions of the model.[31]

The results for the coorientation manipulations showed significant differences only for the problem solving mode (Tables 27-30). The differences are insignificant for the other modes although slightly contrary to those expected. Eliminating those subjects who disagree with the described characters changed the chi-squares only slightly for the coorientation conditions.

Discussion. The results of the experiment give strong support only to the orientation descriptions for the two extreme types of decision situation --problem solving, where both the individual and the structure are open, and fatalism, where both are closed. The mixed-dimension types yielded insignificant differences or differences contrary to those expected.

These results could be interpreted to mean that the model's predictions need revision for constrained decision and fatalism--that perhaps individuals

in a constrained decision situation do seek and give information and that routine habit individuals seek more than reinforcing information.

A better interpretation, though, is that the experimental manipulations simply failed to work for all of the subjects. This latter interpretation can be supported by the fact that eliminating those subjects who disagreed with the characters described changed all of the chi-square scores in the expected direction. Subjects probably projected themselves into the characters even though they had been instructed to think of other students like those described. Or they had possibly never met a student similar to the one described. Many subjects wrote comments in the margins expressing doubt that any student would not seek information about courses and listen to their advisers. In short, those subjects who were information seekers themselves simply could not conceive of others as not being information seekers. And they did not seem to think of the communications descriptions in association with the type of person described.

The lack of significant coorientation results can be attributed to a similar factor. In the coorientation descriptions, the students described talked to another student in class, on the sidewalk, or in a fraternity house about courses and minors. These hypothetical students talked with other students with similar problems, habits, or constraints in the correct condition but did just the opposite in the incorrect condition. The problem appeared to be that subjects simply did not believe any students would turn around in class or seek out an acquaintance on the sidewalk just to talk about courses. Thus, the total coorientation manipulation seemed to be a failure.

So the experiment, more than anything else, shows the difficulty of testing the decision situation model experimentally. It is difficult to get a subject to

project himself into a situation other than one he has experienced, and thus it is probably not possible to obtain direct experimental support of the model.

Conclusions

This paper has updated and expanded the decision situation model which I introduced in a monograph over six years ago. Research results have been presented which show the model to be a highly useful predictor of an individual or organizational propensity to communicate. Without such a propensity, even the best-devised communication techniques or procedures can have no effect, as, for example, the results of the science communication stopping exercises have shown.

The results presented from an experimental test of the model shows the difficulty of supporting the model experimentally. But perhaps such support is not necessary. The worth of any theory is its ability to generate research and explain phenomena in a variety of systems and situations. This, the model has already done. In summary, it has been useful in explaining the incidence of communication behavior in field situations and as a control condition for experimental manipulations of communications devices and procedures.

FOOTNOTES

1. James E. Grunig, "The Role of Information in Economic Decision Making," Journalism Monographs No. 3, December 1966.

2. George Katona, "Rational Behavior and Economic Behavior," Psychological Review 60 (1953): 307-318.

3. John Dewey, Human Nature and Conduct (New York: The Modern Library, 1922).

4. Richard F. Carter, "Communication and Affective Relations," Journalism Quarterly 42 (1965): 203-212. Carter had distinguished between saliences and pertinences--saliences being the attachment to an object and pertinences the relative possession of an attribute. Similar to what I had called habit was Carter's one-object situation (goal seeking mode) in which saliences predominate and similar to decision was his two-object situation (evaluative mode) where both saliences and pertinences can operate.

5. Grunig, Op. cit., pp. 40-41.

6. Leon Festinger, Conflict, Decision, and Dissonance (Stanford, Calif.: Stanford University Press, 1964).

7. The first idea was stimulated mostly by Bryant Kearl, the second by Marion Brown--both members of my graduate committee at Wisconsin.

8. Dewey, Op. cit., pp. 68-71.

9. The idea of decision rules comes from Cyert and March and Katona. Richard M. Cyert and James G. March, A Behavioral Theory of the Firm (Englewood Cliffs, N.J.: Prentice-Hall, 1963). George Katona, Psychological Analysis of Economic Behavior (New York: McGraw-Hill, 1951).

10. In Dewey's words: "Rigid habits sink below the level of any meaning at all. And since we live in a moving world, they plunge us finally against conditions to which they are not adapted and so terminate in disaster." Op. cit., p. 211.

11. This is Carter's terminology, Op. cit.

12. See Steven H. Chaffee and Leonard P. Tipton, "Conflict, Information-Seeking and the Discriminating Attribute," in Steven H. Chaffee et al, "Experiments on Cognitive Discrepancies and Communication," Journalism Monographs No. 14, December 1969. My definition of information was based on McDonough's three types of messages: data are unevaluated messages, information is data evaluated to apply in a specific problem situations and knowledge in data evaluated for future use in general. Adrian M. McDonough, Information Economics and Management Systems (New York: McGraw-Hill, 1963), p. 76.

13. See Chaffee et al., Op. cit. for a discussion of the utility factor in information seeking.

14. Essentially this is thinking in operant conditioning terms, in which the individual personality and the situation are mutually derived.

15. Tichenor has also recognized the need for a structural model of communication. Phillip J. Tichenor, et al., "Mass Communication Research: Evolution of a Structural Model," Head's Address to the Theory and Methodology Division, Association for Education in Journalism, Carbondale, Ill., August 1972.

16. This again is Carter's terminology. See Richard F. Carter, et al., "Application of Signaled Stopping Technique to Communication Research," in Vol. 2 of the Sage annual series in communications research, in progress.

17. See, for example, Chapter 2 of my dissertation. James E. Grunig, "Information, Entrepreneurship, and Economic Development: A Study of the Decision-Making Process of Colombian Latifundistas, Doctoral Dissertation, University of Wisconsin, 1968.

18. For discussion of process models in communication see Richard F. Carter, "Cognitive Discrepancies and Avoidance," Paper presented to the Association for Education in Journalism, Boulder, Colorado, August 1967.

19. For an up-to-date review of coorientational research, see the March/April 1973 issue of American Behavioral Scientist.

20. Bruce H. Westley, "The Functions of Public Communication in the Process of Social Change," Paper presented at the AID-MSU Seminar on Communication and Change, East Lansing, Mich., April 1966.

21. In a recent paper I have suggested means of doing this in underdevelpped countries. James E. Grunig, "New Directions for Research in Communications and International Development: From the Study of Individuals to the Study of Formal Organizations," Paper presented to the International Communication Association, Montreal, April 1973.

22. James E. Grunig, "Information and Decision Making in Economic Development," Journalism Quarterly 46 (1969): 565-575. James E. Grunig, "Communication and the Economic Decisionmaking Processes of Colombian Peasants," Economic Development and Cultural Change 19 (July 1971): 589-597.

23. See, e.g., Terry N. Clark, Community Structure and Decision Making: Comparative Analyses (San Francisco: Chandler Publishing Co., 1968): Willis D. Hawley, The Search for Community Power (Englewood Cliffs, N.J.: Prentice-Hall, 1968).

24. James E. Grunig, "Communication in Community Decisions on the Problems of the Poor," Journal of Communication 22 (1972): 5-25.

25. James E. Grunig, "Organization-Clientele Communication and Community Development," Preliminary report for the Bureau of Governmental Research, University of Maryland, 1972.

26. Ibid.

27. James E. Grunig, "Information Seeking in Organizational Communication: A Case Study of Applied Theory," Paper presented to the International Communication Association, Montreal, April 1973.

28. James E. Grunig, "Stopping Experiments on the Communication of Science," article in progress.

29. Richard F. Carter and W. Lee Ruggels, "Prototypic Projective Protocol," Paper presented to the Association for Education in Journalism, Boulder, Colorado, August 1968.

30. Richard F. Carter, personal correspondence.

31. A similar analysis of only those subjects who had stopped to agree with the descriptions of the characters did not yield similar results. In all four modes, these subjects agreed more than disagreed with both the correct and incorrect versions, demonstrating some sort of tendency for these subjects to agree with everything.

TABLE 1: Latifundista Study:

Relative Importance of Four Decision Variables in Determining the Six Q Typologies

	(Z-Scores)[a]			
	Problem Solving	*Routine Habit*	*Constrained Decision*	*Ignorant Habit*
Traditionals - Valle	-2.19	2.48	0.04	1.58
Successful Entrepreneurs - Valle	0.45	-1.73	-0.13	-1.18
Unsuccessful Entrepreneurs - Valle	0.44	-1.05	0.75	-0.73
Traditional Resident Farmers - Meta	-1.39	1.66	0.68	1.31
Part-Time Livestock Producers - Meta	1.01	0.36	-0.33	-0.15
New Entrepreneurs - Meta	1.39	-1.49	-0.29	-0.91

[a] In a standard normal distribution, about 68% of the Z-scores fall between -1 and +1, 95% between -2 and +2, and 99% between -3 and +3. The mean is zero, standard deviation one.

TABLE 2: Minifundista Study:

THE RELATIVE IMPORTANCE OF FIVE TYPES OF DECISION BEHAVIOR IN DETERMINING SIX *Q*-TYPOLOGIES OF MINIFUNDISTAS

	TYPE OF DECISION (*Z*-SCORE)*				
Q-TYPOLOGY	Problem Solving	Constrained Decision	Ignorant Habit	Routine Habit	Fatalism
Apathetic Campesinos	−1.23	0.12	0.68	3.32	0.94
Subsistence-Level Campesinos...	−1.89	1.94	1.20	1.21	1.77
Noninnovative Coffee Growers..	−0.92	−0.26	2.07	−0.50	0.40
Frustrated Entrepreneurs.....	0.00	1.41	−0.23	−1.14	−0.47
Frontier Settlers	0.62	0.55	−0.57	−0.87	−0.61
Entrepreneurs	1.75	−1.80	−1.90	−1.24	−0.99

* In a standard normal distribution, about 68 percent of the *Z*-scores fall between −1 and +1, 95 percent between −2 and +2, and 99 percent between −3 and +3. The mean is zero, standard deviation 1.

Table 3: Latifundista Study:

Correlations of Four Decision Variables with Eight Communication Variables

	Problem Solving	*Routine Habit*	*Constrained Decision*	*Ignorant Habit*
Information Seeking	.38	−.45	.16	−.23
Perception of Usefulness of Information	.53	−.53	.10	−.38
Newspaper Exposure	−.05	.12	.06	.10
Agricultural Magazine Exposure	.30	−.24	−.02	−.16
Authoritative Sources	.45	−.45	−.01	−.11
Commercial Sources	.27	−.29	.02	−.16
Peer Sources	.21	−.29	.18	−.18
Private Sources	.10	−.19	.14	−.02

Significance (<.05, t = 86 d.f.) = .21

Table 4: Minifundista Study:

CORRELATIONS OF FIVE TYPES OF DECISION BEHAVIOR WITH TWELVE COMMUNICATION VARIABLES*

	TYPE OF DECISION				
COMMUNICATION VARIABLE	Problem Solving	Constrained Decision	Ignorant Habit	Routine Habit	Fatalism
Information seeking	.374	−.060	−.139	−.341	−.225
Perceived usefulness of information	.250	.045	−.039	−.264	−.405
Newspaper exposure	.238	−.139	−.081	−.117	−.157
El campesino exposure	.058	.080	−.075	−.099	−.105
Radio ownership	.095	−.110	−.029	.010	−.018
Exposure to agricultural radio programs	.137	−.081	−.045	−.190	.092
Authoritative sources	.464	−.233	−.284	−.234	−.186
Commercial sources	.149	−.006	−.104	−.115	−.123
Peer sources	.218	−.019	.088	−.323	−.221
Situational relevance of content	.453	−.251	−.311	−.191	−.140
Market information	.436	−.245	−.174	−.255	−.220
Technical assistance with credit	.450	−.321	−.316	−.191	−.143

* Significance (< .05, t = 103 df) = .199.

Table 5. Minfundista Study: An R Factor Entitled Problem Solving.

Variable	Loading
Problem Solving Decision Behavior	.711
Adoption	.547
Level of Aspiration	.527
Achievement Motivation	..521
Authoritative Information Sources	.514
Information Seeking	.509
Situational Relevance of Information Content	.480
Input Scarcity a/	.478
Market Information	.465
Technical Assistance with Credit	.450
Literacy	.447
Perceived Usefulness of Information	.416
Cosmopoliteness	.405
Economic Rationality Decision Criterion	.348
Peer Information Sources	.304
Commercial Information Sources	.187
Off-Farm Income	.185
Social-Psychological Values Decision Criterion	-.153
Work Days Lost for Sickness	-.214
Risk and Uncertainty Decision Criterion	-.245
Anomie	-.267
Tenure and Title	-.279
Percent Income of Total Costs a/	-.360
Land Taxes	-.382
Percent Income of Variable Costs a/	-.383
Age	-.384
Miscellaneous Decision Criteria	-.495
Ignorant Habit Decision Behavior	-.504
Fatalism Decision Behavior	-.508
Routine Habit Decision Behavior	-.516
Subjectivity of Land to Productive Limitations	-.524

a/ Input scarcity generally represented how many modern inputs were utilized; thus it was related to adoption and the rest of the factor. The percent income figures were likewise negatively related to input and capital use.

Table 6. Latifundista Study: An R Factor Entitled Problem Solving.

Variable	Loading
Adoption	.770
Problem solving decision behavior	.613
Information Seeking	.557
Salary of farm manager	.556
Level of education	.535
Economic rationality decision behavior	.525
Market used (degree of control)	.525
Magazine exposure	.521
Authoritative information sources	.521
Land use	.510
Perceived usefulness of information	.506
Quality of farm manager	.499
Land value	.485
Fixed costs per hectare	.478
Peer information sources	.467
Number of transportation alternatives	.466
Voluntary organizations	.463
Type of transportation used	.418
Responsibility given to farm manager	.414
Cosmopoliteness	.410
Productivity	.400
Variable costs per hectare	.398
Man-days labor per hectare	.395
Commercial information sources	.393
Private information sources	.381
Transportation information content	.345
Labor problems	.327
Political efficacy	.309
Labor cost per man-day	.272
Agricultural education	.267
Political connections	.225
Labor productivity	-.111
Family size	-.218
Ignorant habit decision behavior	-.279
Medical services	-.346
Number of hectares	-.381
Traditional social values	-.410
Age	-.420
No decision criterion	-.434
Tenure	-.452
Management ease decision criterion	-.458
Routine habit decision behavior	-.658

Table 7: Community Decision Study:

Components of the Decision Situation Defining Typologies

	Liberal (n = 13)	Liberal Sub-type (n = 4)	Economic (n = 9)
Problem Definition		(number mentioning)	
Restrictions on builders	0	0	4
Need for economic development	7	0	9
No community interest in poor	10	4	0
Need for better community	3	0	0
Possible Alternatives[a]			
Rehabilitation and continue present moderate programs	3	1	0
Government incentives to builders	3	2	6
Government restrictions and intervention	7	1	3

[a] Most difficult alternative considered possible. No groups considered "no possible alternatives or alternate services" impossible and all considered "expansion of public housing in new and established areas" and "public or low-cost housing for Washington poor" to be impossible.

Table 8: Community Decision Study:

Percentage of Possible Communication Contacts Within and Between Typologies

	From "Liberal" Typology	From "Economic" Typology
To "Liberal" Typology	77%	50%
To "Economic" Typology	46%	43%

Only the 77% of the From Liberal typology to Liberal Typology differs significantly from the others. The minimum t of the three t's testing the equality of this value with the other three %'s was 4.75, $p < .01$.

Table 9: Organization-Clientele Study:

Number of persons naming each of three alternative problem definitions (for themselves and for the clientele), by race.

	First Problem Mentioned			Any Problem Mentioned		
	Housing	Employment	Services	Housing	Employment	Services
Self Conception or Problem						
Blacks (n=14)	8	2	4	9	6	6
Whites (n=6)	1	5	0	2	6	0
Perception of the Clientele's Problem Conception						
Blacks	12	1	1	12	4	3
Whites	4	0	2	4	2	2

Table 10: Organization-Clientele Study:
Level of congruency of blacks and whites in the organization with the clientele, on problems, alternatives, attributes, and evaluations.

Number of persons with self concept congruent with perception of clientele's concept	Blacks (n=14)	Whites (n=6)
First problem mentioned	8	1
Any problem mentioned	9	2
First alternative mentioned	6	2
Any alternative mentioned	9	2
Some attributes	9	3
All attributes	3	0
Evaluation of alternatives	9	3

Table 11: Internal Organizational Communications Study:
Decision situation variables for three employee types, in Z-scores.

Type	Recognize Problem	Face Constraints
Constrained older workers	-1.6	1.8
Dissatisfied younger workers	1.2	-1.4
Management	- .4	- .9

Table 12. Internal Organizational Communications Study: Job orientation of three employee types and predictions by workers for management and management for workers, in Z-scores.[1]

Type[2]	Salary-Benefits	People	Working Conditions	Achievement	Job Ease
Constrained older workers					
Self	1.2	.1	.9	-1.3	.7
Management	1.3	- .8	.4	-1.2	.4
Dissatisfied younger workers					
Self	- .2	- .6	- .1	.9	.7
Management	-1.1	.2	- .2	1.6	1.4
Management					
Self	-1.1	.5	- .9	.6	-1.1
Workers[3]	- .1	.4	- .1	.1	- .9

[1] Z-scores indicate the importance of each variable in defining the type.

[2] Although variables are in Z-scores, comparison of self and other scores give an approximation of coorientation levels. Comparison of self and other scores for the same type indicates congruency, comparison of self scores between types indicates overlap (agreement), and comparison of predicted other scores with the self score for that type indicates accuracy.

[3] Since some non-managerial respondents loaded on this type, some of the 'other' scores were predictions for management rather than for workers.

Table 13. Internal Organizational Communications Study: Orientations three types of employees think Pepco should have as an organization and predictions by workers for management and management for workers, in Z-scores.

Type[1]	Orientation: Profits	Consumers	Efficiency	Employees	Environment
Constrained older workers					
Self	-1.3	-1.6	1.4	1.7	.9
Management	1.3	- .8	- .6	- .5	.6
Dissatisfied younger workers					
Self	.2	- .1	-1.5	.2	1.6
Management	1.3	- .6	- .1	- .2	.4
Management					
Self	.7	1.6	- .1	-1.6	-1.9
Workers[2]	-1.7	1.3	.6	.6	- .9

[1] For interpretation of coorientation variables, see footnote 2, Table 7.

[2] For limitations of these scores, see footnote 3, Table 12.

Table 14. Internal Organizational Communications Study: Orientations three types of employees have in their job roles and predictions of workers of what management thinks their role orientation should be and of management of what workers think its role should be, in Z-scores.

Type[1]	Orientation				
	Profits	Consumers	Efficiency	Employees	Environment
Constrained older workers					
Self	.9	-1.9	.8	.6	1.1
Management	2.0	- .8	- .2	- .9	.9
Dissatisfied younger workers					
Self	.0	1.3	- .3	- .8	.2
Management	- .1	1.1	- .4	- .4	.5
Management					
Self	- .7	1.1	.1	- .4	-1.1
Workers[2]	-1.4	.2	.9	1.0	- .7

[1]For interpretation of coorientation variables, see footnote 2, Table 12 (note: accuracy is not applicable here).

[2]For limitations of these scores, see footnote 3, Table 12.

Table 15. Science Communication Study: Reasons for Stopping and Total Stopping by Decision Types.

Decision Type	Dis-Agree	Ask Question	Think-Confused	Think Implications	Other	Total
	(Stops per 100 lines)					
Problem Solving (n=55)	1.76 0.76	1.25	1.83	2.26	0.30	8.19
Routine Habit (n=44)	0.99 0.53	1.46	2.13	1.24	0.27	6.65
Constrained Decision (n=27)	1.95 1.81	1.56	1.95	0.94	0.47	8.66
Fatalism (n=32)	1.23 0.76	1.12	2.10	1.33	0.40	6.92

Significance levels in t-scores, with probability of error.
Total stops: PSxRH=1.51(.15), PSxFat=1.17 (.25), RHxCD=1.83(.10), CDxFat=1.50 (.15).
Think Implications: PSxRH=2.83 (.01), PSxCD=3.67 (.01), PSxFat=2.38 (.05)
Disagree: CDxPS=3.28 (.01), CDxRH=4.00 (.01), CDxFat=3.00 (.01).
Agree: RHxPS=2.08 (.05), RHxCD=2.29 (.05).

Table 16. Number of Subjects Indicating Various Levels of Future Information Seeking, Science Communication Study.

Decision Type	Will Seek Information: Yes	Perhaps	No
Problem Solving (n=55)	16	27	12
Routine Habit (n=44)	1	23	20
Constrained Decision (n=27)	3	17	7
Fatalism (n=32)	1	12	19

X^2=28.43, significant at .001 level.

Table 17. Science Communication Study: Number of Subjects Indicating Various Levels of Future Information Giving.

Decision Type	Yes	Perhaps	No
Problem Solving (n=55)	4	36	15
Routine Habit (n=44)	2	21	21
Constrained Decision (n=27)	3	9	15
Fatalism (n=32)	0	6	26

X^2=34.97, significant at .001 level.

Table 18. Science Communication Study: Level of Understanding of Stories, by Decision Types.

Decision Type	Self Reported Level of Understanding		
	Very Well	Moderately Well	Poorly
Problem Solving (n=55)	11	41	3
Routine Habit (n=44)	3	33	8
Constrained Decision (n=27)	5	16	6
Fatalism (n=32)	5	15	12

X^2=17.75, Significant at .01 level.

Table 19. Experimental Study: Number of Subjects Stopping at Communication Description for Problem Solving.

	Agree more than disagree	Disagree more than agree	Equal agree & Disagree	No Stop	Total
Correct Communication	26	22	7	15	70
Incorrect Communication	21	38	4	7	70
Total	47	38	11	22	140

X^2=8.52, significant at .05 level.

Table 20. Experimental Study: Number of Subjects Stopping at Communication Description for Routine Habit.

	Agree more than disagree	Disagree more than agree	Equal agree & disagree	No Stop	Total
Correct Communication	29	23	6	12	70
Incorrect Communication	30	10	1	29	70
Total	59	33	7	29	140

X^2=15.76, significant at .001 level.

Table 21. Experimental Study: Number of Subjects Stopping at Communication Description for Constrained Decision.

	Agree more than disagree	Disagree more than agree	Equal agree & disagree	No Stop	Total
Correct Communication	38	14	3	15	70
Incorrect Communication	35	19	0	16	70
Total	73	33	3	31	140

X^2=3.92, not significant.

Table 22. Experimental Study: Number of Subjects Stopping at Communication Description for Fatalism.

	Agree more than disagree	Disagree more than agree	Equal agree & disagree	No Stop	Total
Correct Communication	33	9	3	25	70
Incorrect Communication	19	19	1	31	70
Total	52	28	4	56	140

X^2=8.98, significant at .05 level.

Table 23. *Experimental Study:* Number of Subjects Stopping at Communication Description for Problem Solving with Subjects Disagreeing with Initial Description Eliminated.

	Agree more than disagree	Disagree more than agree	Equal agree & disagree	No Stop	Total
Correct Communication	25	14	6	13	58
Incorrect Communication	19	36	4	6	65
Total	44	50	10	19	123

$X^2 = 13.12$, significant at .005 level.

Table 24. Experimental Study: Number of Subjects Stopping at Communication Description for Routine Habit with subjects disagreeing with initial Description Eliminated.

	Agree more than disagree	Disagree more than agree	Equal agree & disagree	No Stop	Total
Correct Communication	25	13	4	9	51
Incorrect Communication	20	6	1	20	47
Total	45	19	5	29	98

$X^2 = 8.97$, significant at .05 level.

Table 25. Experimental Study: Number of Subjects Stopping at Communication Description for Constrained Decision with Subjects Disagreeing with Initial Description Eliminated.

	Agree more than disagree	Disagree more than agree	Equal agree & disagree	No Stop	Total
Correct Communication	36	11	3	13	63
Incorrect Communication	31	16	0	16	63
Total	67	27	3	29	125

$X^2 = 4.62$, not significant.

Table 26. Experimental Study: Number of Subjects Stopping at Communication Description for Fatalism with Subjects Disagreeing with Initial Description Eliminated.

	Agree more than disagree	Disagree more than agree	Equal agree & disagree	No Stop	Total
Correct Communication	32	5	2	23	62
Incorrect Communication	13	17	1	26	57
Total	45	22	3	49	119

X^2=18.85, significant at .001 level.

Table 27. Experimental Study: Number of Subjects Stopping at Communication Description for Problem Solving Coorientation Situation.

	Agree more than disagree	Disagree more than agree	Equal agree & disagree	No Stop	Total
Correct Communication[1]	65	11	0	64	140

[1]Because of a clerical error, both treatments had the correct communication description in this treatment. Thus, no significance tests were calculated.

Table 28. Experimental Study: Number of Subjects Stopping at Communication Description for Routine Habit Coorientational Situation.

	Agree more than disagree	Disagree more than agree	Equal agree & disagree	No Stop	Total
Correct Communication	33	11	1	25	70
Incorrect Communication	33	5	0	32	70
Total	66	16	1	57	140

X^2= 4.12, not significant.

Table 29. Experimental Study: Number of Subjects Stopping at Communication Description for Constrained Decision Coorientation Situation.

	Agree more than disagree	Disagree more than agree	Equal agree & disagree	No Stop	Total
Correct Communication	14	12	6	38	70
Incorrect Communication	23	13	6	28	70
Total	37	25	12	66	140

$X^2 = 3.74$, not significant.

Table 30. Experimental Study: Number of Subjects Stopping at Communication Description for Fatalism Coorienation Situation.

	Agree more than disagree	Disagree more than agree	Equal agree & disagree	No Stop	Total
Correct Communication	21	26	1	22	70
Incorrect Communication	30	20	2	18	70
Total	51	46	3	40	140

$X^2 = 3.10$, not significant.