DOCUMENT RESUME

ED 127 619 CS 202 886

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TITLE A Progress Report on a Multi-Systems Theory of Communication Behavior.
PUB DATE 76
NOTE 32p.; Paper presented at the Annual Meeting of the Association for Education in Journalism (59th, College Park, Maryland, July 31-August 3, 1976); Not available in hard copy due to marginal legibility of original document

EDRS PRICE MF-$0.83 Plus Postage. HC Not Available from EDRS.
DESCRIPTORS *Communication (Thought Transfer); *Information Theory; *Intercommunication; *Organizational Communication; Research; Research Reviews (Publications); *Systems Approach

ABSTRACT

Previous research is reviewed in which a multi-systems theory of communication behavior has been used to explain communication behavior of individuals and of several organization-related systems and subsystems. Recent research is then summarized which sought to develop conditional probabilities that communication behavior will occur in each of 16 theoretical situations, to use multiple regression analysis to test the theory, to determine whether motivation to communicate comes from individual or situational attributes, and to determine the effects of the 16 theoretical situations on the likelihood of joining organizations and on communication accuracy. Extensions of the theory to communities, families, and social systems are also proposed. (Author/AA)

A PROGRESS REPORT

ON A MULTI-SYSTEMS THEORY OF COMMUNICATION BEHAVIOR

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Paper prepared for the session on general systems theories, Communication Theory and Methodology Division, Association for Education in Journalism, College Park, Md. July 31-Aug 3, 1976.

A PROGRESS REPORT

ON A MULTI-SYSTEMS THEORY OF COMMUNICATION BEHAVIOR

General systems theory offers both promise and pitfalls for communication research. Its promise stems from what Bertalanffy (1968: 14) calls one of the principal purposes of general systems theory: "to investigate the isomorphy of concepts, laws, and models in various fields, and to help in useful transfers from one field to another." The pitfalls of general systems theory can also be seen in this statement. Most of the communication concepts in general systems theory have been taken from fields far removed from communication--namely cybernetics and information theory--and as a result I believe they are of limited use to communication researchers and practitioners.

Nevertheless, I think it is important for communication researchers to develop theory which explains the communication behavior of many behavioral systems, so that theory is not splintered into such specialties as interpersonal communication, mass communication, organizational communication, marketing communication, etc. Thus, I find Bertalanffy's "isomorphy of constructs" idea appealing along with such general systems concepts as subsystems, suprasystems, boundary, environment, and open vs. closed systems. These concepts, I believe, can be used to develop more powerful communication theories. Communication theories as developed by journalism, speech, marketing, or management researchers, for example, have as their most fundamental differences the system levels at which the researcher is working. The concepts differ also, but not because of any inherent differences in the communication behavior of different behavioral systems, but because the researchers who study these different systems seldom communicate with one another long enough to develop common concepts.

On the other hand, I believe the specific communication concepts of general systems theory are too limited in scope to develop a powerful theory of communication behavior. It is for this reason that I have called my theory of communication behavior a "multi-systems" rather than a "general systems" theory. The most familiar communication concepts in general systems theory are those of information and feedback. According to systems theorists, both matter-energy and information flow between a system and its environment, and systems theorists view both as essential to the survival of a living system. But information in this sense is such a broad concept that it could refer to any stimulus to a system--e.g., bumping into a tree or touching someone. Such a broad theory does little to help a professional communicator because, for example, there is a vast difference between understanding the effects of bumping into a tree and the effects of the media. I believe it makes more sense to define communication as the act of acquiring or disseminating pictures between members of a system or between systems (Carter, 1973). Information, therefore is not everything that is not matter-energy, but it is any message which helps a system acquire a singular picture being disseminated by another system.

The concept of feedback is likewise important in general systems theory. Feedback has traditionally been used to refer to the reaction of the environment to an action of the system. Very often, general systems theorists equate feedback with all information acquisition behaviors of a system. Such a definition, however, forces us to view the behavior of all systems as adaptive behavior, rather than as designed behavior. Systems, in the traditional view, move and then monitor feedback to see if the movement has been resisted by the environment. If it has been resisted, then the system plans another movement and again monitors feedback. When no negative feedback is

encountered the system has adapted to its environment.

Feedback, however, cannot explain communication before a system moves, and the general notion of system adaptation cannot explain systems which consciously design their own behavior or movements (Carter, 1973) in an effort to change their environments or simply to develop understanding within the system and with other systems.

There is also a danger, I believe, in assuming that all social categories are systems, categories such as individual, dyad, small group, organization, and community. Many of these social categories are not behavioral systems, as Carter (1973) defines them. A behavioral system is a collectivity which directs its movement as a unit, or--as in a public--which consists of individuals who design movements in the same way so that for practical purposes they can be considered as a unit even though they do not actually interact in order to design a single movement.

Communication researchers deal with systems in two ways. They may simply want to understand the ongoing behavior of different systems so that they can predict when these systems can be communicated with. Or, secondly, they may want to help the systems design new communication procedures to bridge gaps within the system or between that system and other systems (Carter, et al, 1975). The systems I believe we should be most concerned with include individuals, publics, audiences (which usually consist of several publics), organizations (including the mass media), families, and both geographic and non-geographic communities.

Carter, I believe, contributed much to our understanding of system design when he developed his stopping technique and theory of picturing. My work, however, has been mostly concerned with explaining and predicting the behavior of systems under conditions in which the communicator cannot train the system or help it to design its behavior. This is the most common

situation in which a "mass" communicator works.

My theory of communication behavior originally was developed to explain individual decision making and communication (Grunig, 1966, 1973). Recently, it was extended to a variety of organizational communication situations--communication behavior of internal and external publics, interorganizational communication, and the behavior of an organization's public relations department (Grunig, 1975a, 1975b, 1976b). Basic exploratory research over the past two years has added the new concept of involvement to the theory and has greatly improved its explanatory power (Grunig, 1976a). The theory can be most easily described in terms of the individual person as a system, although the term system can easily be substituted for the term person in describing the theory. The theory now consists of four variables: 1) problem recognition--the extent to which a person recognizes that something is lacking in a situation so that he stops to think about it, 2) existence of constraints -- the extent to which a situation allows a person freedom of choice without his behavior being constrained by physical, social, economic, or political forces which he, acting alone, cannot control, 3) level of involvement -- the extent to which a person sees himself involved in the situation, and 4) the presence or absence of a referent criterion in a person's mind as he observes a given situation. (A referent criterion is a decision rule, a "rule-of'thumb," or a learning set which a person has learned in previous situations similar to the one he is now considering (see Carter, 1966).

In general, recognizing a problem motivates a person to communicate to help him deal with that problem. When constraints are present, on the other hand, a person has less motivation to communicate because his behavior is determined by factors outside his control. Likewise, if a person has a referent criterion, he is less likely to communicate because he, in a sense,

carries a ready-made solution to a problematic situation and he needs less information to deal with it. If a person is highly involved in a situation, he is motivated to communicate because the situation affects him directly and relevant information will help him to direct his own behavior within that situation (see Krugman, 1965). If a person is not highly involved he will not seek information at his own initiative, although he will process it if it comes to him at the initiative of another person or from a medium he happens to be using.

These four dimensions of a communication situation can be combined to yield 16 types of conditions that lead to different communication behaviors. The 16 behaviors can be grouped into four major categories, based on combinations of problem recognition and existence of constraints (Figure 1). I have called these four behaviors problem-facing behavior, constrained behavior, routine habit behavior, and fatalistic behavior.

Figure 1

		Level of Constraint: High	Level of Constraint: Low
Level of problem recognition	High	Constrained behavior	Problem facing behavior
	Low	Fatalistic behavior	Routine habit behavior

Research to date has shown that a person is most likely to either seek or process information in problem-facing behavior and constrained behavior (in constrained behavior a person both recognizes a problem and constraints and generally seeks information on means to eliminate constraints) and is lowest for fatalistic behavior. Communication in routine habit behavior depends on whether a person has a referent criterion. If he has a referent criterion, he communicates selectively to acquire information that reinforces

the value position he has already taken as a solution to the problem, as cognitive dissonance theory would predict, for example. If he has no referent criterion, the probability that he will communicate is low.

Level of involvement can then be added as a new condition within these categories. High involvement generally raises the probability of information seeking in problem facing and constrained behavior, lowers it for fatalistic behavior, and either increases or decreases it for routine habit, depending on whether a referent criterion is present. Information processing should not be affected by level of involvement. Finally, the use of a referent criterion will affect communication behavior in each of these situations. With the exception of routine habit behavior, its effect is to reduce the probability of information seeking and processing because it in essence capsulizes previous experience and reduces the need for information. In routine habit, as already stated, it should have just the opposite effect.

This theory has changed and evolved substantially over the years and now appears to be logically and empirically sound. It also can be called a systems theory because it has been used to explain the communication behaviors of several different systems of interest to professional communicators. Although the theory can explain the communication behavior of many different systems, it is not truly a general systems theory that could be used in all--or even many--of the sciences. It is a communications theory that may not help to unify the sciences but which could help to unify communications research.

The rest of this paper will describe some of my recent research with the theory and some of my ideas and plans for applying it to other systems.

Perfecting Measurement and Developing a Predictive Model

The 1975 article, "A Multi-Systems Theory of Organizational Communication" (Grunig, 1975a), concluded that "additional work needs to be done in perfecting the measurement of the concepts. In particular, development of a scale that could be applied in many situations would make the theory much more valuable to the professional . . ." In four studies conducted since that article was written, the principal objectives have been to develop an improved measurement instrument and to develop the theory in a way that would allow the prediction of probabilities of communication behavior. Three of those studies have concentrated on the communication behavior of an organization's(publics systems consisting of individuals with similar decision situations), the fourth on communication behaviors of individuals in a variety of situations.

In the first study, we applied the three-dimensional model (with level of involvement then included) to an analysis of the employee publics of a business firm (Grunig, 1975b). In previous studies of organizational publics, problem recognition and constraints had been measured only for one specific situation related to the organization, comparing alternative jobs for an employee public and choosing a food store for a consumer public. Since the theory has been conceptualized as a situational theory, these single situations could only give a hint of the overall communication behavior of these publics.

In the second study of employee publics, therefore, we again applied the multi-system concepts to a situation in which a person considers alternative jobs, but also asked respondents to estimate with a number between zero and 100 how often they looked for new ways of doing their daily tasks (problem recognition), whether someone or something might prevent them from making changes in their daily routines (constraints), and the extent to which they were involved in decisions affecting their work (level of involvement). In essence, we asked them to generalize about their experience over a number of work-related situations. This measurement procedure actually was quite

similar to the procedure used in two studies of Colombian large landowners and peasants done several years before (Grunig, 1969, 1971), in which scores for each behavior type were computed as the percentage of situations measured in which that behavior had occurred.

The results of this second study of employee publics were remarkably similar to those reported in the 1975 "multi-systems" article. This time, however, we could generalize about the communication behaviors of these publics to more than a single specific situation and thus could predict a broader range of employee communication behavior.

A second objective of this employee study was to develop a set of conditional probabilities for the eight communication behaviors. If we could compute such probabilities, then we believed we could eventually use the behavioral theory, along with management science decision models, to predict the outcome of organizational communication programs aimed at specific publics and conceivably could use such mathematical devices as linear programming to decide how to budget time and money into these programs. It would also be possible, we believed, to apply Bayesian decision theory to communication decision making if our measurement device were good enough to develop conditional probabilities that would be relatively stable for the eight behavioral types measured in different situations.

To develop these probabilities, we dichotomized both the three concepts of the theory and measuresof information seeking and giving. Applying Bayes theorem for conditional probability yielded conditional probabilities of information seeking and giving given the existence of each of the behavioral types. These probabilities generally supported the theory, but because the sample size was only 109, the n's in several of the cells of the matrix were too small to place much faith in the reliability of the probabilities.

Multiple regression analysis also supported the theory in the study, as it had in the studies reported in the 1975 "multi-systems" article. These results, however, will be discussed in more depth later in this paper.

It was apparent, then, that to develop a probabilistic model, we would have to have much larger sample sizes. This could be done much more cheaply by measuring many situations for each individual respondent than by greatly increasing the number of respondents. At the same time, we could develop a clearer picture of the communication behavior of individuals and publics across a wide range of situations. The unit of analysis then clearly was a situation rather than an individual personaltiy, and the measurement instrument matched the situational conceptualization of the theory.

As a first step in developing a more situational instrument James B. Disbrow, in research for an M.A. thesis, administered a questionnaire to 82 student subjects which asked them to estimate on a 100 point "thermometer" scale (Haskins, 1960) the extent to which they recognized a problem, perceived constraints, and were involved in each of 35 problematic situations. His questionnaire read: Here is a list of situations in which a problem could occur. Would you estimate how important each problem is (problem recognition), whether you could do anything about it (constraints), and whether you have ever been involved in such a situation. The 35 situations for 82 subjects produced an n of 2,870. The problematic situations covered a wide range of individual situations and were chosen to fit each of the eight communication situations.

The dependent variable in this study was a series of titles and descriptions of articles that could appear in a newspaper, modeled after Haskins' (1960) title rating technique. One article description was written to indicate the article would contain information relevant to each of the 35 situations.

Again, subjects were asked to rate on a 100 point "thermometer" scale how likely they would be to read each article. Subjects were asked to estimate these scores first if "they had a lot of time available" and then if "they did not have much time available." This distinction was made to test one implication of the level of involvement concept. That implication is that people will be more likely to process information that does not involve them when they have ample time available. In other words, when time is short, the probability of information seeking should be greater for all high involvement conditions than for the low involvement conditions. No such difference should occur when time is plentiful.

Table 1 shows the conditional probabilities computed for each of the behavioral types under both time conditions. Generally, these probabilities were disappointing. Probabilities were higher in the problem facing and constrained behavior situations than in the routine habit and fatalistic behavior categories, but constraints and level of involvement seemed to have no effect. Likewise, the distinction between amount of time available resulted only in uniformly lower probabilities with no distinguishing effects in the eight behavioral categories.

In an attempt to determine whether these eight communication behaviors are situationally derived or personality derived behaviors, we then ran a two-way analysis of variance with the individual and situation as independent variables and the three behavioral variables and information seeking as the dependent variables. Because of the size of the resulting matrix, we had to limit the analysis to 42 individuals and could not test for interaction effects. The results showed conclusively that these communication behaviors are situationally derived. For all of the dependent variables, the situation had a significant main effect at the .001 level while the individual main effect was insignificant at the .999 level.

Because the eight behaviors had previously been believed to be more individual characteristics when involvement is low (Grunig, 1976a), we then ran additional analyses of variance with problem recognition, constraints, and information seeking after first sorting the cases into high and low involvement categories. The results were precisely the opposite of what we had expected. There was no significant individual effect under low involvement, but under high involvement there was a significant individual effect for problem recognition (at the .009 and .108 level for two sets of individuals) and constraints (at the .029 and .335 level). Thus, the results show that when an individual is involved in situations his behavior can become routinized or programmed. Then, he does not change with the situation but behaves in consistent patterns.

To determine if the probabilities of information seeking could be improved when these "programmed" individuals were removed from the analysis, all individuals with standard deviations 10 points below the mean standard deviation on the 100 point scale were eliminated from the analysis.' The resulting set of probabilities also appears in Table 1. The probabilities did not change greatly, but the time distinction now showed a difference. For problem facing behavior, the probability of information seeking was higher under high involvement when time was scarce and higher under low involvement when time was ample. The differences, however, were small.

More than anything, however, this study showed that the measurement instrument still had not been perfected. Estimating the importance of a problem was not the same thing as recognizing a problem. Being able to do something about a situation did not necessarily indicate the absence of constraints. And having been involved in a situation in the post was not the same thing as seeing oneself in the situation now. In conceptualizing the effect of level of involvement, we had also distinguished between

active information seeking and passive information processing. In retrospect, the newspaper article descriptions measured information processing rather than information seeking. If that were true then the small differences in probabilities in Table 1 could be expected from the theory. Finally, the 100 point scale seemed to introduce error in the measure, since analysis of the distribution of the behavioral variables generally showed it to be bimodal. In other words, people think of these variables in either/or terms and adding additional points simply introduced response bias. In addition, pretesting the questionnaire for telephone interviews in a subsequent study showed that anything other than a dichotomous scale could not be administered over the phone.

The model was then applied in two field studies using different wording and scaling. Problem recognition was measured by asking if a person "stopped to think" about each situation, constraints by whether he could "personally do anything about the situation, and involvement as whether he "saw himself or someone close to him involved" in the situation. In addition, we added a measure of a referent criterion (do you know a solution to this problem?"), in an attempt to improve the model's ability to predict information seeking and processing. The exact wording of the questions appears in the Appendix to this paper. To distinguish information processing from information seeking in the first study, we asked respondents to estimate on a 10-point scale whether they would read articles based on article titles and then whether they would send for a free brochure on the same subject. In the second study, we listed a separate set of brochure titles, and that measure seemed to be a more valid measure of information seeking than the one used in the first study.

The first of these studies was of the external publics of the Prince Georges General Hospital in Cheverly, Md.; the second was a study supported

by a National Wildlife Federation fellowship designed to analyze publics resulting from environmental issues. In the hospital study seven situations were measured for 139 subjects (n=973), and in the environmental study eight situations were measured for 231 subjects (n=1,848). The conditional probabilities computed in these two studies appear in Table 2. Although the probabilities are similar, those computed in the environmental study fit the theory best, probably because the n's in the high involvement routine habit and fatalistic behavior categories were still small in the hospital study and because the measure of information seeking was better in the environmental study.

In general, the probabilities from the hospital study confirm the theory but, in some instances, change and improve our understanding of the theory. For example, for a person who feels highly involved, the results indicate that there is little difference between the four major types of behavior in either information processing or seeking. In other words, being involved in a situation appears to provide the greatest motivation for a person to communicate about that situation. It is also interesting to note that for problem-facing behavior under low involvement, the referent criterion had the opposite effect as under high involvement. In a sense, having a solution thought out to a problematic situation motivates a person to communicate about that solution when he is not involved in the situation. Without a criterion to signal his attention a message would not attract his attention. Table 1 also shows that a referent criterion does not seem to motivate a person to seek reinforcing information in routine habit behavior, as was expected. These probabilities instead can be interpreted to show that a person does not seek, because he does not need, information about a problem for which he already has a fixed solution.

The probabilities computed from the environmental study, on the other hand, reflect the conceptualization of the theory almost perfectly. First, the probabilities of information processing are relatively high across all conditions and differ little between high- and low- involvement situations. As expected, however, they are highest for problem-facing behavior and lowest for fatalistic behavior.

For information seeking, there is little difference in the probabilities between the high- and low-involvement situations for both problem-facing and fatalistic behavior. The probabilities are high and low for the respective behavioral patterns. For constrained behavior, the probabilities drop substantially from high to low involvement, indicating that when involvement is high, constraints can motivate a person to seek information on how the constraint might be removed or circumvented.

The probabilities for the routine habit situations indicate the role of the referent criterion in selective exposure and in the creation of cognitive dissonance. First note that information processing is higher under low involvement than under high involvement. This is because only under high involvement can dissonance exist and result in the avoidance of information. Likewise, the probability of information processing is higher when a referent criterion is present, probably because reinforcement is being sought. For information seeking, the effect of the referent criterion is the same, but only when involvement is high. When involvement is low, routine habit behavior does not result in information seeking unless a referent criterion is present. Then, routine habit can more accurately be called nonbehavior. In a nonbehavior situation a person is not involved in a problematic situation and although he once formulated a referent criterion he no longer thinks about the situation. If he then sees a brochure title which alerts him to that situation he may begin to think about it again--to recognize a problem--and seek the information. This also could be

the reason why information processing and seeking were high under high involvement routine habit, with no referent criterion, in the hospital study. Here the situation did involve a person, but he did not think about it. The article title then got him to think about the situation and, in essence, moved him into problem facing behavior in which he will seek the information. In both studies, however, there were few situations in which people were involved and did not recognize the problem. The category of nonbehavior is, however, an important theoretical advancement, a type of behavior which had not been distinguished from routine habit. It is quite different from the closed mindedness of routine habit and represents a communication situation where information which a person hears about or has given to him can have a substantial effect in motivating him to design a behavior that would not have occurred otherwise. In high involvement situations it can be distinguished from routine habit by whether or not a referent criterion is present. In low involvement routine habit situations all behavior would be non-behavior, but a referent criterion is necessary for any communication to occur.

For problem-facing behavior the referent criterion had almost an identical effect in both the hospital and environmental studies. When involvement was high, it reduced information seeking and processing, when involvement was low it stimulated information seeking. The result for information processing differed in the two studies, however, in low-involvement problem facing situations. This seems to indicate that a referent criterion has less of an effect on information processing than on information seeking, and as a result the probabilities were not consistent.

In each of the four studies described thus far, multiple regression analysis was also used to test the validity of the theory. In general these results were less useful than the conditional probabilities because they did not show the interactions of the four variables as well. The most useful multiple regressions

however, resulted when cases were selected for high and low involvement and a regression run on the subsamples with the other three behavioral variables as independent variables. Except in the employee communication study in which our measurement was not as well perfected, the results were almost identical in the four studies.

When involvement was correlated with problem recognition, the correlations were moderately high (.25-.50 with either Pearsonian or non-parametric correlations, depending on the nature of the data in the different studies). Thus, when involvement was entered first in a stepwise multiple regression problem recognition had relatively little effect. If problem recognition entered first, then involvement had little effect. This relationship between the two concepts could indicate that they are measuring the same thing. A more likely explanation, however, is that a person who is involved in a situation seldom fails to recognize a problem--i.e., that something is lacking in the situation.

The strength of this explanation can be seen in Table 3. When cases were selected for high involvement, the other three variables had little effect in the multiple regression, and both simple and multiple R's were extremely small. When involvement was low, however, the other variables correlated highly with the communication variables. What this indicates is that involvement alone is sufficient to motivate communication behaviors. When involvement is low, however, the other variables are extremely good predictors of communication behaviors. This explanation also seems to explain the abnormally high probabilities for high involvement routine habit and fatalistic behavior in the hospital study.

To again test the situationality of the theory, we correlated each of the behavioral variables with the measure of the same variable for the seven situations in the hospital study and eight situations in the environmental study. These correlations were moderately high in both studies for all four behavioral variables and for information seeking and processing, although for

problem recognition and constraints some situations did not correlate highly with the others. These results seem to indicate that in specific situations that are related to one another, behaviors will be similar. When the situations are widely different, as in the Disbrow study of multiple situations, then an individual's behaviors will differ substantially. (An analysis of variance will also be run on the data from one of the latter two studies..but was not yet completed at the time this paper was written).

Because these correlations were moderately high, it seemed justified to construct an additive scale for each of the four behavioral variables and for the two communication variables. Table 4 shows a multiple regression analysis based on these scales, again after selecting for high and low involvement. These results are much like those of the multiple regression analyses based on single situations. Now, however, the simple and multiple correlations are higher, perhaps because the data were then on a ratio scale and were more appropriate for the statistical analysis.

Some Other Effects of the Behavioral Patterns

Besides communication behavior per se, communication professionals often are interested in the movement consequent to communication. For example, interest groups often want to organize individuals to apply group action to the solution of a problem. Thus, in the National Wildlife Federation study we asked respondents to indicate how likely they would be, on a 10-point scale, to join an organization to do something about each of the eight environmental situations analyzed. Although little previous research had been done on the relationship of the theory to organization, we had expected individuals in constrained behavior situations to be most likely to join organizations. Because these individuals recognize problems which they alone can do little about, group action would seem to offer the only means of eliminating the constraint.

Table 5, which contains conditional probabilities of joining an organization for each of the 16 behavioral patterns, supports this hypothesis to some extent. It shows, however, that constrained behavior individuals are motivated to join organizations only in high involvement situations. When they are not involved, there would be no need to remove the constraint.

Table 5 also shows, however, that problem-facing behavior is even more likely than high-involvement constrained behavior to lead to joining an organization. And, in problem-facing situations high and low-involvement makes no difference. The table also shows that in problem-facing behavior a referent criterion stimulates joining of organizations. If a person has no referent criterion he stops to communicate, it appears, but once he gains a criterion then he is ready to direct his movement--in this case to join an organization.

In routine habit behavior, however, having a referent criterion reduces the likelihood of joining an organization when involvement is high but encourages it when involvement is low. An individual who sees nothing lacking in a situation in which he is involved sees no need to organize to change it. If he is not involved, however, he probably is willing to organize to deal with someone else's problem for which he has a solution. Without a referent criterion under high involvement the person is likely to join an organization. Again, this seems to be nonbehavior--if a person has never stopped to think about a situation which involves him, learning of an organization may alert him to the problem and move him into the problem-facing category.

For fatalistic behavior, the probability of joining an organization is low, unless the person has a referent criterion, a solution for a hopeless situation which the presence of an organization might make appear less hopeless.

Table 6 examines these same data through multiple regression analysis. It indicates that each of the four behavioral variables are positively related to joining an organization. Contrary to previous expectations, it does show,

however, that constraints alone discourage, rather than motivate organization. Only when combined with high involvement, as shown in Table 5, do constraints encourage a person to join an organization.

Finally, Table 7 indicates that behaviors in which the probability of communication is high also are likely to result in effective communication. As part of the employee communication study, we conducted a coorientational analysis of the ability of each employee respondent to predict the responses of a sample of the firm's customer public to four questions administered in a separate survey. Table 7 shows the results for one of these questions: an evaluation of satisfaction with company service.

These results mirror the multiple regression analyses in Table 3. Involvement alone--in this case in decision making affecting one's own job--resulted in high communication accuracy. But when the regression was run on subsamples selected for high and low involvement, the other two variables had no effect when involvement was high, but a substantial effect when involvement was low.

Implications for Other Behavioral Systems

With the improvements and refinements of the theory reported in this paper, some obvious new implications come to mind for the behavior of other systems. The first of these implications is for organizations. In the original multi-systems article and in Grunig (1976b) problem recognition and constraints were used to explain the public relations behavior of the total organization. In that study, organizational behavior and communication were conceptualized and measured as cross-situational behavioral patterns because most of the research on organizational structure is based on cross-situational attributes. Perhaps, however, organizations adapt to different situations just as individuals apparently do. But their technology and tasks could vary little and their structure could be designed to fit that task environment, so that as a result

organizations seldom change their behavioral patterns. The data in this paper indicate, for example, that an individual's behavior patterns are more consistent when situations are similar than when they are different.

The inclusion of level of involvement in the theory also has important implications for organizational behavior. Structure, programmed behavior, rigid codes and similar attributes, for example, could have less effect on organizational behavior when involvement is low.

The theory also seems to provide clues to the behavior of systems other than those related to organizational communication. If it is extended to social systems in general, we can derive new insights on such phenomena as specialized media, the reinforcing nature of the community press, opinion leaders, agenda setting, and other effects of mass media.

If social systems fit the behavior categories described in this paper, then specialized media can be explained as media which service either high or low involvement problem-facing systems which face a specialized problem. The community press probably reinforces because it services a routine habit system. There is evidence, however, that community-oriented individuals read community newspapers more for specialized information about the community than for reinforcement (Beard, 1974). Donohue et al. (1975) have shown likewise that a knowledge gap does not exist in a community when an issue directly affects that community--i.e., when involvement apparently is high. Thus, there seems to be evidence that the kinds of behaviors outlined by the multi-systems theory exist for social systems in general and that the behavior of the media servicing these systems varies as the theory predicts.

Similarly, the theory seems capable of solving the dilemma of what, if anything, opinion leaders do. In routine habit systems, they probably reinforce values (they are usually typical members of a system) and selectively seek information from the media (a backwards two-step flow). But in problem-

facing systems opinion leaders would function as liaisons whose rule in the system is to monitor specialized information relevant to the system.

Agenda setting has received great attention from communication researchers, but no one has yet adequately explained the conditions under which it occurs. This theory would indicate that agenda setting would be most likely to occur under low-involvement conditions. It could, however, occur in high-involvement problem-facing when the individual or system's only source of information is the media and his information search is limited to items on the media's agenda. The nonbehavior pattern also seems ripe for an agenda to be set--in particular when an individual is involved in a situation but has never thought about it. Information about that situation, if it appears on the agenda of the media could then motivate that person to direct his movement in such a situation.

It also seems possible to apply the theory to families as social systems and thus explain family communication patterns and media use of family members. Although Chaffee and McLeod's (1970) "idea" and "socio" dimensions of family communication are different from my dimensions of a situation, their resulting typologies are remarkably similar to mine. For example, consensual patterns are much like routine habit, pluralistic much like problem-facing, protective somewhat like constrained behavior, and laissez faire somewhat like fatalistic behavior. The resulting communication behaviors are also much like the multi-systems theory would predict.

I am now completing work on a study which will apply the theory to social systems in a unique way. The assumption of the study is that the ways in which people spend their time is an excellent operational measure of the three dimensions of the theory taken together. Thus, I am trying to use time budgets to explain media exposure patterns. I have constructed a time budget for each

of 200 respondents for one day, but sampled people, both on weekdays and weekends and throughout the year. Then I used the title-rating device to estimate how likely respondents would be to expose themselves to 20 different types of media content. I am now in the process of using discriminant function analysis to discover how patterns of time use relate to patterns of media content use. Hopefully, the result should be a picture of the time-use patterns of different types of social systems and the resulting media content preferences of these systems.

Table 1. Conditional probabilities of information processing for 16 communication behaviors when time is ample and short.

	High Involvement		Low Involvement	
	Ample Time	Shortage of Time	Ample Time	Shortage of Time
Problem Facing Behavior				
All cases	61%	54%	64%	54%
Cases with high standard deviations	57%	61%	62%	58%
Constrained Behavior				
All cases	64%	56%	66%	52%
Cases with high standard deviations	60%	62%	63%	57%
Routine Habit Behavior				
All cases	43%	35%	41%	34%
Cases with high standard deviations	38%	33%	38%	32%
Fatalistic Behavior				
All cases	53%	43%	40%	33%
Cases with high standard deviations	48%	44%	37%	40%

Probability of information processing for all cases over all conditions for ample time was 53%, for a shortage of time, 46%.; for sample with cases with low standard deviations probability for ample time was 53%, for a shortage of time, 47%

Source: James B. Disbrow, unpublished data for M.A. thesis, University of Maryland.

Table 2. Conditional probabilities of information processing and information seeking for 16 communication behaviors in hospital and environmental situations.

	High Involvement				Low Involvement			
	Information Processing		Information Seeking		Information Processing		Information Seeking	
	Hospital	Environment	Hospital	Environment	Hospital	Environment	Hospital	Environment
Problem Facing Behavior								
With referent criterion	79%	70%	39%	51%	72%	70%	48%	51%
Without referent criterion	81%	77%	51%	55%	60%	78%	40%	49%
Constrained Behavior								
With referent criterion	68%	63%	33%	45%	76%	57%	31%	31%
Without referent criterion	76%	69%	38%	50%	68%	62%	34%	30%
Routine Habit Behavior								
With referent criterion	70%	57%	39%	48%	59%	63%	17%	[illegible]%
Without referent criterion	93%	41%	57%	35%	65%	44%	35%	41%
Fatalistic Behavior								
With referent criterion	80%	43%	30%	12%	53%	39%	26%	12%
Without referent criterion	73%	36%	44%	13%	46%	32%	16%	13%

Probability of information processing over all conditions was 69%, of information seeking, 34% in the hospital study. In the environmental study, it was 61% for information processing, 40% for information seeking.

Table 3. Four multiple regression analyses for communication behavior variables and information seeking and processing.

	R		Multiple R[d]		Beta Weight	
	High Involvement	Low Involvement	High Involvement	Low Involvement	High Involvement	Low Involvement
Employee Situations [a](n = 109)						
Comparing Jobs:						
Problem Recognition	.67	.64	.67	.64	.64	.64
Existence of Constraints	-.23	--[e]	.69	--	-.17	--
Daily Tasks						
Problem Recognition	.31	.30	.31	.30	.32	.29
Existence of Constraints	-.18	.20	.36	.35	-.19	.19
Multiple Situations [b](n=2,870)						
Ample Time:						
Problem Recognition	.20	.29	.20	.29	.23	.29
Lack of Constraints	-.09	--[e]	.22	--	-.09	--
Shortage of Time:						
Problem Recognition	.18	.28	.18	.28	.18	.28
Lack of Constraints	-.05	.06	.19	.28	-.07	.004
Hospital Situations (n=973)						
Information Seeking:						
Problem Recognition	-.02	.19	.12[f]	.19	-.01	.18
Lack of Constraints	.04	.12	.12	.21	.09	.10
Referent Criterion	-.07	.07	.08	.21	-.12	-.02
Information Processing:						
Problem Recognition	.00	.25	.08[g]	.25	.01	.24
Lack of Constraints	-.04	.09	.04	.26	.07	.05
Referent Criterion	.04	.11	.07	.26	-.06	.02
Environmental Situations [c](n=1,848)						
Information Seeking:						
Problem Recognition	.10	.30	.10	.30	.10	.24
Lack of Constraints	.10	.30	.14	.38	.10	.24
Referent Criterion	.04	.15	.14	.38	-.01	.01
Information Processing:						
Problem Recognition	.15	.32	.15	.33	.15	.30
Lack of Constraints	.13	.19	.19	.35	.12	.13
Referent Criterion	--[e]	--[e]	--	--	--	--

[a]The dependent variable can best be interpreted as information seeking.
[b]The dependent variable can best be interpreted as information processing.
[c]Multiplicative interactions were included in these analyses, but they did not substantially increase the multiple R's.
[d]Stepwise multiple regressions, so that multiple R's below reflect the R after each successive variable is entered into the analysis.
[e]Insufficient F-ratio to be included in the stepwise multiple regression.
[f]The variables were entered in the following order: referent criterion, lack of constraints, problem recognition.
[g]The variables were entered in the following order: lack of constraints, referent criterion, problem recognition.

Table 4: Two multiple regression analyses for communication behavior variables added across seven and eight similar situations and information seeking and processing.

	R		Multiple R[a]		Beta Weight	
	High Involvement	Low Involvement	High Involvement	Low Involvement	High Involvement	Low Involvement
Hospital Situations (n=139)						
Information Seeking:						
Problem Recognition	-.01	.45	.25[b]	.45	.02	.45
Lack of Constraints	.12	.34	.12	.50	.28	.45
Referent Criterion	-.11	.08	.25	.57	-.28	-.36
Information Processing:						
Problem Recognition	.13	.52	.19[c]	.52	.12	.52
Lack of Constraints	.15	.29	.15	.54	.18	.28
Referent Criterion	.04	.15	.20	.57	-.09	-.21
Environmental Situations (n = 231)						
Information Seeking:						
Lack of Constraints	.23	.32	.23	.32	.26	.25
Problem Recognition	.16	.28	.25	.35	.15	.19
Referent Criterion	.02	.10	.29[d]	.35[f]	-.16	-.08
Information Processing:						
Lack of Constraints	.27	.39	.27	.39	.25	.32
Problem Recognition	.26	.35	.33	.42	.23	.28
Referent Criterion	.10	.03	.34[e]	.47[g]	-.11	-.22

[a]Stepwise multiple regressions.
[b]Variables entered in order: lack of constraints, referent criterion, problem recognition.
[c]Variables entered in order: lack of constraints, problem recognition, referent criterion.
[d]Adding multiplicative interactions raised multiple R to .32.
[e]Adding multiplicative interactions raised multiple R to .40.
[f]Adding multiplicative interactions raised multiple R to .45.
[g]Adding multiplicative interactions raised multiple R to .55.

Table 5. Conditional probabilities of joining an organization concerned with environmental problems in 16 communication behaviors.

	High Involvement	Low Involvement
Problem Facing Behavior		
With referent criterion	60%	56%
Without referent criterion	51%	49%
Constrained Behavior		
With referent criterion	49%	35%
Without referent criterion	50%	35%
Routine Habit Behavior		
With referent criterion	48%	56%
Without referent criterion	59%	44%
Fatalistic Behavior		
With referent criterion	43%	24%
Without referent criterion	36%	25%

Probability of joining an organization over all conditions was 46%.

Table 6. Multiple regression analysis of communication behavior variables and likelihood of joining environmental organizations.

	R	Multiple R[a]	Beta Weight
Individual Situations (n=1,848)			
Problem Recognition	.23	.23	.23
Lack of Constraints	.21	.28	.12
Involvement	.22	.29	.10
Referent Criterion	.15	.30[b]	.04
All Situations Added (n=231)			
Lack of Constraints	.37	.37	.25
Problem Recognition	.34	.42	.19
Involvement	.31	.43	.12
Referent Criterion	.19	.43[c]	-.06

[a]Stepwise multiple regression.
[b]Adding interactions did not increase multiple R.
[c]Adding interactions raised multiple R to .47 .

Table 7. Multiple regression analysis of communication behavior variables and accuracy of organizational employees predictions of customer evaluation of company service.

	R		Multiple R		Beta Weight	
	High Involvement	Low Involvement	High Involvement	Low Involvement	High Involvement	Low Involvement
Problem Recognition	-.03[a]	-.42	.09	.42	-.02	-.43
Existence of Constraints	-.09	.19	.09	.47	-.09	.21

[a]Negative scores indicate high inaccuracy; dependent variable is measured in difference scores.

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APPENDIX

OPERATIONALIZATION OF BEHAVIORAL MODEL IN ENVIRONMENTAL STUDY

I would like you to think of several situations in which environmental problems might exist. I will name each problem, and then ask you four questions about the problem. Please answer yes or no to each question.

The first problem I would like you to think about is polluted air. (Repeat this and following for each problem)

1. Is this a problem you stop to think about?

2. Do you know a solution to this problem?

3. Do you see yourself or someone close to you in a situation where this problem would occur?

4. Could you personally do anything about this problem?

Problem	Think about	Have a solution	See yourself in situation	Could you do anything
	(Check if yes)			
Polluted air.	____	____	____	____
Superhighways cutting through urban neighborhoods.	____	____	____	____
Whales becoming extinct . .	____	____	____	____
Disposable cans & bottles .	____	____	____	____
A shortage of gasoline, oil & natural gas	____	____	____	____
Strip mining of coal . . .	____	____	____	____
Polluted lakes & streams. .	____	____	____	____
Oil spills in oceans & bays	____	____	____	____