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ABSTRACT

Using data drawn from ten initial physician/patient interviews, an original category system was employed to analyze patterns of physician/patient communication. Static analysis, interaction analysis, and Markov chain analysis were used to discover the underlying communication patterns associated with patient satisfaction. Results revealed that patient satisfaction was correlated with the physician talking more than the patient and controlling the topics of communication, with the physician spending relatively equal amounts of time prescribing what to do and giving cognitive information, with the physician preceding or following explanatory information with directives, with the physician and patient responding to each other in basically the same content areas, and with the physician meeting patient expectations (such as responding appropriately to patient questions). (Author/RL)

PATTERNS OF PHYSICIAN-PATIENT COMMUNICATION ASSOCIATED WITH PATIENT SATISFACTION

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For years the physician has been systematically taught how to use scientific principles and instruments to diagnose and treat illness. This training is in sharp contrast to the manner in which the physician learns to communicate with the patient. To a large degree, the physician must rely on self-acquired methods to elicit information, explain a disease to a patient, and participate in a multitude of other communicative processes (Raimbault, 1975).

Medical students are becoming concerned about this void in their medical training. Mark Benson, a medical student, points out this concern in a vivid way:

> As physicians we will be called upon to perform many tests, most of which we hopefully, will handle quite well due to our fine medical training. But there is one thing we are not going to be taught in school and that is how to deal with other people on their level, not merely on a scientific factual basis, but on a one-to-one, person-to-person level (Benson, 1975, p. 13).

Efforts have been made in some medical schools to help the physicians communicate effectively. Basically, the courses have tried to aid the doctor in their interview technique. The results have been moderately successful (Werner, 1974); yet, instruction in the drawing of medical histories and patient information has not aided the physician in other communication processes operating at more of an interpersonal level.

Medical students are not the only ones concerned with communication. Patients are becoming increasingly aware of communication problems with their physicians. Many observers blame the rash of malpractice suits on communication problems. One patient stated ". . . maybe things would be better if the doc understood us and if we always knew what the hell he was driving at" (Kane & Deuschle, 1967, p. 260).

Lack of time with the physician, technical language, and social distance are just some of the other common complaints of medical patients (Skipper, Mauksch, Tagliacozzo, 1963).

The concerns of medical students and patients prompt as well as warrant the study of physician-patient interaction. Studies by various scholars have established that patient satisfaction is one of the critical outcomes of the physician-patient communication process (Korsch, Gozzi, & Francis, 1968; Francis, Korsch, & Morris, 1969). Korsch and Negrete (1972) found that when patient satisfaction was high, the patient was more highly compliant with treatment prescribed by the physician. Conversely, when patient satisfaction was low, patient compliance was low. Since patient satisfaction has been shown to vary with patient compliance, researchers have attempted to explain the various levels of patient satisfaction in terms of the physician-patient communication process. However, efforts to understand patient satisfaction by analyzing physician-patient communication have been only moderately successful (Arnston, Philipsborn, Hurlow, Gluckman, Schulman, & Kirkwood, 1976). This paper seeks to uncover previously undiscovered relationships between communication behavior and patient satisfaction by first considering a new and more appropriate interaction analysis system than those used in the past. Secondly, this interaction analysis system is used to analyze several physician-patient interviews in an effort to determine what communication patterns are associated with patient satisfaction. The discussion presented below is organized under five major headings-the interaction analysis system, procedures, results, conclusions, and future research.

Physician-Patient Interaction Analysis System

Holsti (1969) defines content analysis as "any technique for making inferences by objectively and systematically identifying specified characteristics of messages" (p. 14). Most content analysis systems seek to describe the nature of communication

by classifying or categorizing the various aspects of the communication event (Holsti, 1969). Content analysis was the predecessor of interaction analysis and differs from interaction analysis systems in that it focuses on the individual message units. Interaction analysis systems focus on message sequences (Rogers & Farace, 1976). An interaction analysis system uses as its base a classification scheme and seeks to determine the patterns of messages (Hewes, 1977). The focus of interaction analysis is the interaction of the various messages and allows the researcher to investigate communication as a process rather than a static event (Hewes, 1977).

A variety of useful content and interaction systems have been proposed by past scholars; however, selection of the appropriate system to use in the physician-patient context should be guided by some logical process. Fisher (1977) proposed three criteria that should be used in the selection or development of an interaction analysis system -- appropriateness, theory-based, and research purpose. In terms of appropriateness, Fisher (1977) says that "The researcher should strive to select those communicational properties which are consistent with the communication system being observed and the research question being asked" (p. 12). For instance, the Bale's Interaction Process Analysis System could be deemed inappropriate for the physician-patient communication context because Bale's system was developed for use in analyzing group development and is not "sensitive to the procedural content, and emotional needs and expectations of both doctors and patients" (Arnston et al., 1976, p.2). Secondly, the system should be based on some theoretical notions. Any system to analyze communication has certain theoretical assumptions and a failure to be aware of these assumptions can lead to some erronous conclusions on the part of the researcher. Finally, an

interaction analysis should be used only as a means for accomplishing a specific research purpose. Fisher points out that interaction analysis should be used only as a tool to investigate certain types of research questions which require the use of such a tool.

The interaction analysis system proposed below is meant to meet Fisher's criteria. Three dimensions are suggested by this system -- speaker, content, and style. The following will summarize and explain this system:

I. Speakers

A. Doctor
B. Patient
C. Others

II. Content Categories

A. Cognitive - links an object to an attribute; it can be verified by others; external to self; usually deals with the past; objective in nature
B. Affective - dealing with feelings; subjective in nature; dealing with the past or present
1. Psychological - dealing with emotions
2. Physiological - dealing with physical sensations
C. Conative - present and futuristic in nature; links individual with a specific behavior

III. Style of Speech

A. Reporting - an account, relating something about some topic; declaritive; usually dealing with statements about or known by self
1. Initial - first declarative statements about the topic
2. Extended - further elaboration of the initial comments

B. Questions - any statement that inquires; interrogating statements that invite or call for a reply
C. Directive - any statement that attempts to manage or direct the activities of others; commands, imperatives

Further explanation of how comments are classified in the content and style dimensions is presented in Illustration 1. Each statement uttered in the dialogue is coded as being made by either the physician or patient. The

ILLUSTRATION 1

Sample Content/Style Comments

	Initial Reporting	Extended Reporting	Question	Directive
Cognitive	I cut my arm	and I began to bleed a lot	Did you vomit?	Tell me what you thought caused the illness
Affective Psycho-logical	I feel sad	and I felt bad for the last week	Do you feel sad?	Don't feel sad
Affective Physio-logical	I hurt near my stomach	and the pain keeps getting worse	Does it hurt there?	Tell me where it hurts
Conative	I'm not going to give you a shot	but I'm going to give you a pill	Are you going to stick me with that needle?	Take this pill

statement is then coded in one of the four content categories as well as in one of the four style categories. Codings within each dimension is mutually exclusive and exhaustive.

The rationale for the development of Dimension 1 -- who is speaking -- is that scholars have indicated that this is an important variable in attempting to understand the communication event (Korsch & Negrete, 1972; Davis, 1968). Dimension 2 -- the content dimension -- was developed from a theoretical perspective of physician-patient communication generated by the author (Clampitt, 1978). This theoretical perspective synthesized the physician-patient communication literature around Fishbein and Ajzen's theory of belief, attitude, intention, and behavior (Fishbein & Ajzen, 1975). Essentially, this theoretical orientation attempted to relate physician-patient communicative behavior to patient compliance by looking at the various intervening variables such as cognitive factors, attitude factors, and intention factors. Thus, the cognitive category of this analysis system corresponds to the theoretical notions about cognitive factors. The affective category was derived from the theoretical notions about the patient's attitude, responses, and satisfaction. The affective category was subdivided into psychological and physiological factors because the expression of emotions such as satisfaction about the interview would appear to be different than reaction to internal pain. In addition, Bousingen and Timmons (1972) suggest that the patient's ability to translate bodily experience into language is a crucial problem in the doctor-patient relationship. The conative dimension was developed from the information pertaining to intention to comply with the physician's prescriptions which was also presented in the theoretical model (Clampitt, 1978).

Dimension three -- the style dimension --was developed because other scholars have suggested that similar style characteristics are critical variables in the communication event involving physicians and patients (Hawes & Foley, 1973; Hawes, 1972; Arnston et al., 1976). Finally, from a broader perspective, this interaction analysis system distinguishes between the speaker, content, and style dimensions in order to clarify the relative importance of each dimension in the physician-patient interview.

The justification presented above demonstrates how this interaction analysis system satisfies Fisher's three criteria for the development of an interaction analysis system. The system was developed for specific use in the physician-patient relationship and reflects the critical concerns of scholars investigating this particular type of communication (Korsch & Negrete, 1972; Ben-Sira, 1976). Secondly, the system is theoretically based. The content dimension categories (Dimension 2) are a direct product of a theoretical perspective developed by the authors (Clampitt, 1976), and Dimensions 1 and 3 have emerged out of theoretical concerns expressed by other scholars (Korsch et al., 1968; Hawes, 1972). Finally, the system is legitimately employed for a research purpose which seeks to discover certain types of communication patterns rather than employ a methodology for its own sake.

Procedures

Before the actual execution of the study, a pilot study was conducted in order to refine the measurement instruments, to familiarize the researcher with the procedures involved, and to identify any potential problem. The subjects used in the actual study were selected from the infirmary of a medium-sized southern university. One of the staff physicians and twenty

of the student-patients agreed to participate in the study. Prior to each patient's interaction with the physician, the investigator asked if the patient would agree to participate in the study. If they agreed, the patients signed a release statement. Then the researcher went into the physician's examining room and turned on the cassette tape recorder. After the recorder was turned on, the doctor asked the patient to come in and the physician proceeded to conduct his medical interview. Upon the completion of the interview the patient was asked to sit in a waiting room where he filled out a brief questionnaire. The questionnaire was designed to assess the patient's satisfaction with the diagnosis, prescribed treatment, and information about the interview in general (see Appendix A). After completing the questionnaire, the patient left the infirmary.

The patient's satisfaction level was determined by quantifying the patient's responses to questions 2, 4, and 8 on the questionnaire (see Appendix A). Each response was coded with a number between "1" and "6". High satisfaction was scored "6" and low satisfaction was scored "1". The numerically translated answers for the three questions were then averaged to determine the patient's overall satisfaction level producing a score between "6" and "1".

Of the twenty recorded interviews, only ten were selected for analysis. Four were unacceptable due to technical problems in recording, and six were unacceptable because the patient had seen the physician about the same illness before. This study investigated only initial physician-patient interviews. These ten tapes, ranging from five to fifteen minutes each, were then transcribed. The dialogue in each interview was then divided into thought units which usually consisted of several words. After these initial

divisions were made, the investigator coded each of the thought units along the three dimensions of the physician-patient interaction analysis system. That is, each thought unit was coded on the basis of who was speaking, the content dimension, and the style dimension. After the ten interviews were coded, another trained coder was used to check for reliability.

The data underwent two separate analyses. First to be analyzed was the speaker dimension and content dimension, followed by a second analysis based on the speaker dimension and style dimension. Three statistical procedures were employed for each of these separate analysis--static analysis, interaction analysis, and Markov chain analysis. The static analysis was conducted for all ten combined interviews by determining the total number of thought units in each category of the system. This simply was the number of times a certain category occurred. The static analysis gave the researcher knowledge about the frequency of categories.

The interaction analysis indicated the probability that any given interact occurred. An interact is comprised of a pair of interlocking thought units (Hawes & Foley, 1973), and the interact analysis gave the researcher some knowledge about the process of the communication event. Markov chain analysis was also conducted which yielded even more specific information about the communication process. A Markov analysis states the probability that one category will lead to another category (Hawes & Foley, 1973; Hawes, 1972). This analysis traced the interaction of the physician-patient interviews by examining the system's transition probabilities (Cline and Cline, 1978). The transition probabilities indicate the probability that a given unit will occur when the preceeding unit is known (Ellis & Fisher, 1975), and the resulting transition probability matrix helped the

researcher determine the types of statements that will follow one another in the physician-patient interview.

To summarize, ten interviews were selected and coded according to the physician-patient interaction analysis system. Three statistical analyses were conducted -- static analysis, interact analysis, and Markov analysis -- for the speaker/content dimensions and speaker/style dimensions. In the next section, the results of these analyses are reported.

Results

Before proceeding with the various analyses, a reliability check of the coding procedures was made to assure consistency of evaluation across categories. Another judge was selected and trained to use the physician-patient interaction analysis system. A random sample of the interviews was coded by this judge; thus, approximately 20% of the entire sample was coded. Reliability was determined by comparing the number of coding agreements between judges with the total number of coding decisions made by both judges (Holsti, 1969, p. 140). Reliability scores were broken down into five categories. Overall reliability across all three dimensions was 92%. There was 100% agreement on the speaker dimension. Speaker/content reliability was 96%. Speaker/style reliability was 97%. Finally, a 97% reliability factor was found on the bracketing of the transcripts into thought units. Because of these reliability findings, this category system was judged reliable.

Satisfaction was measured by calculating the average of the patients' responses to three questions on the patient questionnaire, thus producing a score ranging from "1" for highly dissatisfied patients to "6" for highly satisfied patients. The average satisfaction score across the ten interviews

was 5.5 with a range from 5.33 to 6.0; therefore, the results revealed that all patients were highly satisfied.

Speaker/Content Results for Highly Satisfied Patients

This section reports the results related to the speaker/content dimension for highly satisfied patients. Three basic statistical analyses are reported--static analysis, interact analysis, and Markov chain analysis. The following codes represent the various categories of the physician-patient interaction analysis system in terms of the speaker/content dimension and are used in reporting the results of the various analyses:

IA - Doctor, Cognitive statement
IB - Doctor, Affective - psychological statement
IC - Doctor, Affective - physiological statement
ID - Doctor, Conative statement
IIA - Patient, Cognitive statement
IIB - Patient, Affective - psychological statement
IIC - Patient, Affective - physiological statement
IID - Patient, Conative statement

A total of 1105 thought units were coded in the ten physician-patient interviews. The doctor uttered 75% of the thought units, while the patient spoke 25% of the units. Table 1 presents the percentage of occurrence of the categories and their respective rankings. Table 2 shows a similar ranking by speakers. Table 1 indicates that the most frequently occurring categories were doctor cognitive (30.8%) and doctor conative statements (28.7%). The results indicate a relatively equal balance of doctor cognitive and doctor conative comments which appears to be related to patient satisfaction. Table 2 indicates that the most frequently occurring patient/content category is the cognitive category (13.3%). Further analysis of Table 2 reveals a basic parallel between the most frequently occurring doctor and patient categories. The only exception is the conative category. Patients make

far fewer conative statements than doctors. Thus, the results indicate that satisfaction was related to patients talking about basically the same content areas as their physicians.

A total of 1095 interacts were observed in the ten physician-patient interviews. Table 3 reports the percentage of occurrence of the interacts. Table 4 presents the rankings of the most frequently occurring interacts. Only those interacts above the chance level (1.56%) are reported in Table 4. The interacts which are noted by asterisks (*) designate a speaker transition interact. A speaker transition interact means that the speaker has changed.

The interaction analysis, as reported in Table 4, indicates that the two most frequently occurring interacts were doctor conative statements followed by doctor conative statements (13.3%) and doctor cognitive statements followed by doctor cognative statements (12.5%). The third and fourth most frequently occurring interacts were doctor cognitive statements followed by doctor conative statements (7.9%) and doctor conative statements followed by doctor cognitive statements (7.1%). These interacts create an interesting pattern. As was suggested by the static analysis, the most frequently occurring categories were doctor cognitive and doctor conative comments, and this interact analysis shows the relationship between these categories. The physician usually precedes or follows his conative statements, which are usually medical advice or a medical directive, with some type of cognitive information or explanation. Thus, the physician supplemented his conative comments with cognitive information and this communication pattern was related to patient satisfaction.

Table 4 also indicates some interesting interacts in terms of speaker transitions. The two most frequently occurring speaker transition interacts were doctor cognitive comments followed by patient cognitive comments (5.5%) and patient cognitive comments followed by doctor cognitive comments (5.1%).

These results sugges . that patient satisfaction was related to the patient and physician responding to each other in similar content areas. An exception to this parallel pattern is present in the speaker transition interacts of doctor conative followed by patient cognitive (2.5%) and patient cognitive followed by doctor conative (2.4%). Yet, because of the nature of the coding system the patient and doctor could still be responding to each other in a similar content area. For instance, a physician's statement -- "Take this pill" -- is coded as a conative comment and if that comment is followed by an "o k" from the patient, then the patient's comment was coded as a cognitive comment. Thus, the patient's response is appropriate for the previous comment and the general conclusion can still be drawn that satisfaction is related to patients interacting with their physicians about similar content areas.

Table 5 presents the findings of the Markov analysis for the ten physician-patient interviews. Table 5 reports the interact probabilities of a specific category occurring when one category is known. These probabilities are known as transition probabilities. For example, using the results of Table 5, if the known category is IC, then there is a 23% chance that the subsequent unit will be IA, a 4% chance the subsequent unit will be IB, and an 18% chance the subsequent unit will be IC.

The Markov chain analysis indicates similar conclusions that have been drawn from the interact analysis. For example, the transition probabilities (see Table 5) indicate that the strongest probable result of a patient cognitive statement is a doctor cognitive statement (38%). The most probably patient response to a doctor affective-physiological comment is an affective-physiological comment (21%). With only two exceptions

the results of the transition probabilities show that when the speaker changes, the most probable resulting comment is in the content area of the previous speaker. Thus, as indicated by the interact analysis, highly satisfied patients are usually involved in a conversation with their physicians where both participants respond to each other in similar content areas.

Speaker/Style Results for Highly Satisfied Patients

This section reports the results of the speaker/style dimension for highly satisfied patients. Three basic statistical analyses are reported--static analysis, interact analysis, and Markov chain analysis. The following codes represent the various categories of the physician-patient interaction analysis system and are used in reporting the results of the various analyses:

I1 - Doctor, Initial reporting
I2 - Doctor, Secondary reporting
I3 - Doctor, Question
I4 - Doctor, Directive
II1 - Patient, Initial reporting
II2 - Patient, Secondary reporting
II3 - Patient, Question
II4 - Patient, Directive

Table 6 presents the percentage of occurrence of the categories and their respective rankings. Table 7 shows a similar ranking by speakers. The static analysis of the speaker/style dimension suggests that the three most frequently occurring categories are doctor initial statement (35.4%), doctor directive (19.3%), and patient initial statement (17.8%) (see Table 6). Table 7 shows that the two most frequently occurring doctor categories were initial statements (35.4%) and directives (19.3%), while the most frequent patient categories were initial reporting (17.8%) and secondary reporting (4.0%). Another interesting finding is that out of 1105 thought units a patient never gave a directive.

Table 8 indicates the percentage of occurrence of the interacts and

Table 9 displays the rankings of the most frequently occurring interacts above the chance level (1.56%). The two most frequently occurring interacts were a physician's initial statement followed by a physician's initial statement (13.2%) and a physician's directive followed by a physician's directive (8.1%). The three most frequent speaker transitions were a patients' initial statement followed by a doctor's initial statement (6.7%), a doctor's initial statement followed by an initial statement from the patient (5.0%), and a doctor's question followed by the patient's initial statement (4.7%).

This interact analysis presents many findings which seem normal for the relationship, such as the physician making a series of directives. This is indicated in Table 9 by the second most frequently occurring interact (i.e., doctor directive followed by another doctor directive, 8.1%). However, the most interesting result was the fifth and sixth most frequently occurring interacts (see Table 9). These interacts are doctor directive followed by doctor initial statement (6.1%) and doctor initial statement followed by doctor directive (5.7%). These results indicate that immediately before or after the doctor gave a series of directives, he made an explanatory statement. Thus, patient satisfaction appears to be related to the physician explaining his directives.

Table 10 reports the interact probabilities of a specific category occurring, given that one category is known; thus, Table 10 indicates the findings of the Markov analysis in the form of transition probabilities. The transition probabilities shown in Table 10 indicate that the most probable doctor response to a doctor's initial statement is another initial statement (38%), and the most probable patient response is an initial statement (14%). Table 10 also shows that the most probable response to a patient's initial statement is a physician's initial statement (37%).

The Markov chain analysis adds further power to the propositions suggested by the static and interact analysis. For instance, the most likely response to a physician's question is a patient's initial statement (64%) and the most likely response to a patient's question is a physician's initial statement (70%). These results reveal that the physician and patient responded to one another in the appropriate manner which apparently leads to patient satisfaction. If the physician and patient did not respond to one another appropriately, such as not answering each others questions, then the result may have been dissatisfied patients. The transition probabilities also indicate that 31% of the time the doctor's directives were followed by a doctor's initial statement and that 16% of the time a doctor's initial statement was followed by a doctor's directive (see Table 10). This finding adds further credibility to the argument that doctors of highly satisfied patients explain their directives.

Conclusions

There were many results presented in the preceeding section concerning the relationship between communication patterns and patient satisfaction. Basically, however, these results may be reduced to seven key findings which typify communication behavior leading to patient satisfaction:

1. Physicians talked more than patients.

2. When the physician asked a question, the patient answered with a response statement, and when the patient asked a question, the physician answered with a response statement.

3. Physicians had more control of topics discussed and topic changes.

4. Physicians gave many directives, but the patient gave none.

5. The physician's directives were usually followed by another directive or statement of explanation.
   To a lesser degree, initial statements of an explanatory nature were followed by directives.

6. There was a relatively equal amount of physician advice and information.

7. Physician and patient responses were relatively parallel across content areas.

Each of these conclusions will be elaborated on and discussed in terms of the existing physician-patient communication literature.

This study found that 75% of the units coded were made by the physician and 25% by the patient. Obviously, the physician talked significantly more than the patients. Freemon, Negrete, Davis, & Korsch (1971) also found that the doctor talked more than the patient. Their research revealed that the physician spoke 59.3% of the time and the patient spoke 40.7% of the time; however, the research team did not find a significant relationship between the amount of time spent in communication by the physician and the patient's satisfaction level. The findings of the present study and Freemon's et al. (1971) investigation are not necessarily contradictory. In both studies, the physician spoke more than patient, which would be expected since the patient comes to the doctor seeking information and advice (Adler, 1976). If this expectation is violated, then the result might well be dissatisfaction. In the Freemon et al. (1971) study, the physicians of dissatisfied patients probably violated other more specific expectations. The present study only suggests that one of the patient's expectations is for the physician to do most of the talking.

Another finding of the present study was that when the physician asked a question the patient answered with a response statement, and when the patient asked a question the physician answered with a response statement. For instance, the doctor asked, "Have you been coughing a lot," and the patient responded, "No." The Markov analysis (see Table 10) for the speaker/style dimension indicates that 64% of the time a doctor's question was followed by an initial statement from the patient, and 70% of the time a patient's

question was followed by an initial statement from the doctor. These results may not seem very revealing; however, they indicate that the patient and doctor respond to each other in the appropriate manner. Physicians and patients expect answers to their questions. Yet, some scholars have found that some physicians do not answer their patient's questions and some patients are not even allowed to answer the doctor's questions (Gozzi, Morris, & Korsch, 1969; McIntosh, 1974). The result of this inappropriate and offensive communication is usually patient dissatisfaction (Gozzi et al., 1969). Thus, finding that patient satisfaction was related to the physician and patient responding to questions appropriately is consistent with the findings of other scholars.

The data from the interviews indicate the physician had more control of topics discussed and topic changes. Table 10 reveals that 38% of the physician's initial statements were followed by another physician initial statement, which shows that the doctor controlled topic changes. Further evidence of the physician's control is shown by the fact that 37% of the time a patient's initial statement was followed by a physician's initial statement, thus demonstrating that the physician had changed topics (see Table 10). On the other hand, the patient exhibited little control over topic and topic changes. Table 10 shows that initial statements by patients were followed by patient initial statements only 18% of the time, which indicates that the patient introduced new topics less frequently.

The data clearly demonstrate that the physician controlled the conversation. Understandably, the nature of the physician-patient relationship suggests that the physician would control the conversation. Few patients would object to the physician controlling the conversation; in fact, if the physician did not control the conversation, the result might be low patient satisfaction. This hypothesis has not been tested; yet, the descriptive

data from this study indicate that patients expect the physician to control the interview.

Conclusion four is related to the discussion about control presented above. The study indicates that 19.3% of the conversation was used by the physician to give directives, while the patients never gave a directive (see Table 6). This finding shows how the physician dominated the relationship. The patient apparently expects the physician to give directives. Directive type communication is part of the physician's role. Perhaps, if this role or this expectation is violated, patient dissatisfaction may be the result.

Previous scholars have not focused on the physician's use of directives. How a physician gives a directive or advice reveals in part the nature of the physician-patient relationship because advice giving is inherently a situation in which one party projects control over the other party. The manner in which this control is exercised by the physician appears to be a critical aspect of the relationship.

Conclusion five allows even greater insight into how physicians give directives. For satisfied patients, the physician's directives were often followed by another directive or statement of explanation. To a lesser degree, initial statements of an explanatory nature were followed by directives. The Markov analysis for the speaker/style dimensions indicated that if a physician made a directive type of comment, 42% of the time another directive followed; however, the analysis also indicated that 31% of the time a physician made an initial statement after a directive (see Table 10). The following comments by the physician that participated in the present study illustrate this type of communication pattern:

> Okay, I'll give you these little capsules. I want you to take one in the morning and one in the evening about 12 hours apart, and that will tend to dry out the drip and make you feel better . . .

Notice, that the initial comments are used to direct the patient, while the final comment explained the directive. In addition, many times the physician preceded a directive with some type of explanation. In fact, the sixth most frequently occurring speaker/style interact was a doctor's initial statement followed by a doctor's directive (see Table 9). For instance, the physician in this study said:

> Well, there may be a little nicotic infection. So, I want you to use this (an ointment) every time it's in water, several times a day . . .

Here the physician explained the reason for the treatment prior to actually giving the directive. In general, the various analyses and the representative excerpts from the physician-patient interviews indicate that the physician explained his directives. Thus, patient satisfaction appears to be related to a physician explaining his directives.

Conclusion six is a further extension of the findings about directives, but the conclusion is a product of the speaker/content analysis. Table 2 shows a relatively equal balance of doctor cognitive statements (30.8%) and doctor conative statements (28.7%). A statement was coded as cognitive if the comment dealt with verifiable information. For instance, when the physician commented that "You've gotten a little infection in the tearduct," this was coded as a cognitive comment. Clearly, in this instance, the physician was giving the patient information and most of the cases where a statement was coded "doctor cognitive" (IA) the physician was giving the patient factual information. Conative statements usually meant the physician either gave a directive or advice about what should be done in the future.

Directives were more authoritarian in nature, such as "Don't drink milk," while a statement like, "It's probably not a good idea for you to drink any milk," was advice expressing less authority. This balance between doctor conitive and doctor conative statements can be construed to mean a relative balance between physician advice and information.

A few scholars have produced findings that address the issue of the relationship between cognitive and conative information. Skipper (1965) found that dissatisfaction was often related to patient's receiving an inadequate amount of information. Freemon et al. (1971) discovered that offering information freely to patients was related to high levels of patient satisfaction. While researchers have not found that a relative balance of physician advice and information is related specifically to patient satisfaction, the conclusion seems important for future investigation.

Finally, conclusion seven indicates that patient satisfaction was related to physician and patient responses that were relatively parallel across content areas. Table 4 shows, with only two exceptions, when the speaker changes the most probable resulting comment is in the content area of the previous speaker. For instance, if the physician made a cognitive statement, the most probable patient response would be another cognitive statement. An excerpt from the transcripts further illustrates this parallel concept:

Patient: Yes, it hurts.
Doctor : Does it hurt? Where does it hurt?

Notice that the patient deals with the affective-physiological content area and the physician responds with an affective-physiological comment. This suggests a high degree of reciprocity between the physician and patient

in terms of the topics discussed and this communication behavior was ultimately correlated with patient satisfaction.

Gozzi et al. (1969) found that patient satisfaction was related to the number of blocking comments (i.e. comments that were not in accord with previous statements) or disconfirming statements made by the physician. Patient satisfaction was high when the physician made few blocking comments, while patient satisfaction was low when the physician made a high number of blocking comments. Since the data in the present study is coded differently from that of Gozzi's et al. (1969), exact comparisons cannot be made; however, some legitimate conjecture appears to be in order. Since the present study indicates that the physician and patients responded to one another in basically the same content areas (see Tables 4 and 5) the findings appear to suggest that a low number of blocking comments were made by the physician. All the patients in the present study were satisfied; therefore, the results of this study and the findings of Gozzi et al. (1969) appear to support each other.

Future Research

The procedures used in this study and the resulting findings are significant for several reasons. First, this research adds credibility to the argument that physician-patient communicative activity can be related to satisfaction. Second, the findings produced in this investigation suggest certain communication expectations the patient may have about the physician. The seven conclusions presented in this study can be viewed as patient expectations, and since previous research has demonstrated that meeting the patient's expectations is a critical factor in developing satisfaction, future research should find these conclusions to be of considerable

value. Finally, this study has employed a new method of analysis which can be used in future investigations looking at physician-patient communication. This analysis system allows insight into some areas of the medical interview which have not been investigated by other researchers (e.g. the physician's use of directives). These insights could prove beneficial in a long range research effort designed to look at physician-patient communication in more detail.

A variety of questions and research possibilities are stimulated as a result of the findings of this study. Future research should consider the following questions and issues:

1. The sample employed in this investigation included only college students as patients; thus, certain questions arise about the generalizability of the conclusions. Do physicians speak differently to college students? Do college students as patients respond differently to doctors? Does the interaction between doctor and patient differ at college infirmaries, hospitals, and physicians' private offices?

2. Interesting questions emerge from an analysis of the demographic data. For instance, do patients respond to female doctors differently than male doctors? Does the sex of the patient cause any differences in the nature of the interaction between the doctor and patient? How does the age or socio-economic status of the patient affect physician-patient interaction?

3. Research should seek to clarify the relationship between physician-patient communication and patient recall. Can the physician-patient interaction analysis system explain high and low recall levels of patients? What is the relationship between patterns that increase patient recall and satisfaction? Are the patterns similar or opposite to each other? Answers to these questions will eventually begin to help physicians communicate effectively to patients so as to encourage patient compliance.

4. Questions pertaining to the relationship between patient recall and satisfaction leading to compliance need to be considered. Can key factors which lead to patient compliance be rank ordered? How can the patient's satisfaction and recall scores

be mathematically equated to the patient's compliance level?

5. Future research should take the findings of descriptive empirical research and design experimental studies to clarify cause-effect relationships. What would happen to a patient's satisfaction level if the physician did not explain his directives? What would happen to a patient's satisfaction level if the physician responded to the patient's comments in completely different content areas? For instance, what would happen if the patient made an affective-psychological comment, but the physician consistently responded with a cognitive statement? How would a patient's satisfaction level be affected if the physician only gave advice and did not give information?

6. Some important questions about satisfaction as well as dissatisfaction need further investigation. What are the norms of communication behavior for dissatisfied patients? Are these norms opposite to those for satisfied patients? Can key factors which lead to patient satisfaction and dissatisfaction be rank ordered?

TABLE 1

Ranking of Speaker/Content Categories
from Static Analysis for Highly Satisfied Patients

Rank	Dimension	Percentage
1	IA	30.8%
2	ID	28.7%
3	IIA	13.3%
4	IC	10.1%
5	IIC	5.5%
6	IB	5.2%
7	IIB	3.6%
8	IID	2.6%
		100.0%

TABLE 2

Ranking of Content Categories Broken Down by Speakers
from Static Analysis for Highly Satisfied Patients

	Doctor	Patient
Rank	Dimension	Dimension
1	IA (30.8%)	IIA (13.3%)
2	ID (28.7%)	IIC (5.5%)
3	IC (10.1%)	IIB (3.6%)
4	IB (5.2%)	IID (2.6%)

TABLE 3

Percentage of Occurrence of Speaker/Content Interacts for Highly Satisfied Patients

antecedent units	subsequent units: IA	IB	IC	ID	IIA	IIB	IIC	IID
IA	12.5%	.7%	2.6%	7.9%	5.5%	.6%	.7%	.5%
IB	.9%	.5%	1.1%	1.1%	.4%	.5%	.1%	.2%
IC	2.4%	.4%	1.8%	2.2%	1.1%	.2%	2.2%	.0%
ID	7.1%	1.5%	2.2%	13.3%	2.5%	.9%	.2%	1.1%
IIA	5.1%	.3%	.8%	2.4%	3.0%	.3%	1.1%	.5%
IIB	.7%	1.1%	.0%	.5%	.1%	.9%	.0%	.2%
IIC	1.6%	.3%	1.3%	.5%	.5%	.1%	1.2%	.1%
IID	.5%	.2%	.2%	1.0%	.4%	.1%	.1%	.2%

TABLE 4

Rankings of Speaker/Content Categories
from Interact Analysis for Highly Satisfied Patients

Rank	Interact	Percentage	Frequency of Occurrence
1	ID → ID	13.3%	146
2	IA → IA	12.5%	137
3	IA → ID	7.9%	87
4	ID → IA	7.1%	78
5*	IA → IIA	5.5%	60
6*	IIA → IA	5.1%	56
7	IIA → IIA	3.0%	33
8	IA → IC	2.6%	28
9*	ID → IIA	2.5%	27
10	IC → IA	2.4%	26
11*	IIA → ID	2.4%	26
12*	IC → IIC	2.2%	24
13	IC → ID	2.2%	24
14	IC → IC	1.8%	20

* indicates speaker transition

TABLE 5

Transition Probabilities from Speaker/Content Categories for Highly Satisfied Patients

antecedent units	subsequent units: IA	IB	IC	ID	IIA	IIB	IIC	IID
IA	40%	2%	8%	26%	18%	2%	2%	2%
IB	19%	10%	23%	23%	8%	1%	2%	4%
IC	23%	4%	18%	21%	11%	2%	21%	0%
ID	25%	5%	8%	46%	8%	3%	1%	4%
IIA	38%	2%	6%	18%	23%	2%	8%	3%
IIB	21%	32%	0%	13%	3%	26%	0%	5%
IIC	29%	5%	23%	8%	10%	2%	21%	2%
IID	21%	7%	7%	38%	14%	3%	3%	7%

TABLE 6

Rankings of Speaker/Style Categories from Static Analysis for Highly Satisfied Patients

Rank	Dimension	Percentage
1	I1	35.4%
2	I4	19.3%
3	II1	17.8%
4	I2	12.8%
5	I3	7.3%
6	II2	4.0%
7	II3	3.3%
8	II4	0.0%
		100.0%

TABLE 7

Ranking of Style Categories Broken Down by Speakers from Static Analysis for Highly Satisfied Patients

Rank	Doctor Dimension	Patient Dimension
1	I1 (35.4%)	II1 (17.8%)
2	I4 (19.3%)	II2 (4.0%)
3	I2 (12.8%)	II3 (3.3%)
4	I3 (7.3%)	II4 (0.0%)

TABLE 8

Percentage of Occurrence of Speaker/Style Interacts for Highly Satisfied Patients

antecedent units	subsequent units: I1	I2	I3	I4	II1	II2	II3	II4
I1	13.2%	8.0%	1.8%	5.7%	5.0%	.0%	1.3%	.0%
I2	4.5%	2.7%	.4%	2.8%	1.9%	.0%	.5%	.0%
I3	.5%	.0%	1.5%	.3%	4.7%	.0%	.4%	.0%
I4	6.1%	1.9%	.5%	8.1%	2.2%	.0%	.6%	.0%
II1	6.7%	.2%	2.5%	1.6%	3.2%	3.2%	.5%	.0%
II2	1.9%	.0%	.3%	.1%	.8%	.9%	.0%	.0%
II3	2.4%	.0%	.1%	.7%	.1%	.0%	.1%	.0%
II4	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%

TABLE 9

Rankings of Speaker/Style Categories
from Interact Analysis for Highly Satisfied Patients

Rank	Interact	Percentage	Frequency of Occurrence
1	I1→I1	13.2%	145
2	I4→I4	8.1%	89
3	I1→I2	8.0%	88
4*	II1→I1	6.7%	73
5	I4→I1	6.1%	67
6	I1→I4	5.7%	62
7*	I1→II1	5.0%	55
8*	I3→II1	4.7%	52
9	I2→I1	4.5%	49
10	II1→II1	3.2%	35
11	II1→II2	3.2%	35
12	I2→I4	2.8%	31
13	I2→I2	2.7%	30
14*	II1→I3	2.5%	27
15*	II3→I1	2.4%	26
16*	I4→II1	2.2%	24
17	II2→I1	1.9%	21
18	I4→I2	1.9%	21
19	I2→II1	1.9%	21
20	I1→I3	1.8%	20
21	II1→I4	1.6%	18

*designates speaker transitions

TABLE 10

Transition Probabilities from Speaker/Style Categories for Highly Satisfied Patients

antecedent units	subsequent units: I1	I2	I3	I4	II1	II2	II3	II4
I1	38%	23%	5%	16%	14%	0%	4%	0%
I2	35%	21%	3%	22%	15%	0%	4%	0%
I3	7%	0%	20%	4%	64%	0%	5%	0%
I4	31%	10%	3%	42%	11%	0%	3%	0%
II1	37%	1%	14%	9%	18%	18%	3%	0%
II2	48%	0%	7%	2%	20%	23%	0%	0%
II3	70%	0%	3%	21%	3%	0%	3%	0%
II4	0%	0%	0%	0%	0%	0%	0%	0%

Appendix A

Patient Questionnaire

For each question check the appropriate blank:

1. How much information did you receive from the doctor about your illness?

   ____ Nothing at all
   ____ A slight amount
   ____ A moderate amount
   ____ A great deal

2. Regarding this information about my illness, I felt:

   ____ Highly satisfied
   ____ Moderately satisfied
   ____ Slightly satisfied
   ____ Slightly dissatisfied
   ____ Moderately dissatisfied
   ____ Highly dissatisfied

3. How much information did you receive from the doctor about how to get well?

   ____ Nothing at all
   ____ A slight amount
   ____ A moderate amount
   ____ A great deal

4. Regarding this information about how to get well, I felt:

   ____ Highly satisfied
   ____ Moderately satisfied
   ____ Slightly satisfied
   ____ Slightly dissatisfied
   ____ Moderately dissatisfied
   ____ Highly dissatisfied

5. As a person, I felt that this doctor was:

   ____ Very likeable
   ____ Likeable
   ____ Neutral
   ____ Unlikeable
   ____ Very unlikeable

6. In terms of his medical skill, I feel that this is:

____ Excellent
____ Above average
____ Average
____ Below average
____ Poor

7. How well do you think the doctor understood what you told him:

____ Completely understood
____ Moderately understood
____ Slightly understood
____ Slightly misunderstood
____ Moderately misunderstood
____ Completely misunderstood

8. Overall how satisfied were you with your visit to the clinic?

____ Highly satisfied
____ Moderately satisfied
____ Slightly satisfied
____ Slightly dissatisfied
____ Moderately dissatisfied
____ Highly dissatisfied

---

1. Sex Male ____ Female ____

2. Age 15-20 ____ 21-30 ____ 30-40 ____
40-50 ____ 50-60 ____ Over 60 ____

3. Education

____ Grade school
____ Junior high
____ High school
____ Completed high school
____ College
____ Completed college
____ Graduate school

4. Ethnic origin

____ Black
____ Mexican-American
____ Caucasian
____ Oriental
____ Other

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