

Assessment of Nonverbal Communication in the Patient-Physician Interview

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The interview portion of 34 patient-physician visits at a family medical center was videotaped. Videotapes were screened by two judges in two major nonverbal categories, immediacy and relaxation. Physician and patient were scored separately at 40-second intervals for 11 component parameters of the two major categories. These scores were correlated with patient satisfaction and understanding, ascertained by post-interview questionnaire. For analytical purposes, patients were assigned to low or high satisfaction groups and low or high understanding groups.

Statistically significant ($P \leq 0.05$) differences between low and high satisfaction groups were demonstrated with respect to overall physician immediacy; five individual physician nonverbal parameters; and two individual patient nonverbal parameters. Similar statistical results were obtained for understanding groups.

This preliminary investigation suggests that nonverbal behavior of the physician in the patient-physician interview is important in determining patient satisfaction and understanding.

The patient-physician interview is a critical determinant of quality health care. Numerous studies have demonstrated that the expressive and communication aspects of the interview directly influence such patient outcome parameters as satisfaction, understanding and retention of information received, and compliance.¹⁻⁴ Daly and Hulka⁵ recently proposed a conceptual framework for the physician-patient interaction. According to this model, communication success, patient satisfac-

tion, and compliance are all seen as separate dimensions of the physician-patient relationship; but at the same time, they are conceived within a mutually dependent, dynamic process in which each of the dimensions can affect the others. Personal, social, and environmental characteristics appropriately contribute to each level of the interaction process.

To date, investigators have focused on the verbal component of the medical interview and have largely neglected study of the nonverbal communication which occurs between patient and physician. Nonverbal communication is generally more limited than its verbal counterpart. It is used to communicate feelings, likings, attitudes, and preferences, and tends to reinforce or contradict feelings that are conveyed verbally.⁶ Therefore, it may be significant with respect to the outcome param-

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Table 1. Mehrabian's Three Major Areas of Nonverbal Communication**I. Immediacy**

- A. Touching
Bodily contact between communicator and addressee
- B. Distance
Physical distance between communicator and addressee
- C. Forward Lean
Number of degrees that a plane from the communicator's shoulders to his/her hips is away from the vertical
- D. Observation
Occurs when one individual looks directly at the face of another
- E. Body Orientation
Measure of torso rotation

II. Relaxation

- A. Arm Position Asymmetry
Degree of asymmetry in arm position
- B. Sideways Lean
Degree of lean away from the vertical
- C. Leg Position Asymmetry
Degree of asymmetry in leg position
- D. Hand Relaxation
Ranges from very tense to relaxed
- E. Neck Relaxation
Measures degree of head support and level of gaze
- F. Reclining Angle (or backward lean)
The negative of forward lean

III. Responsiveness

- A. Facial activity
- B. Vocal activity
- C. Speech rate
- D. Speech volume

ters listed above. This study was initiated to examine the relationship between patient and physician nonverbal activity in the interview situation and two patient outcome parameters: satisfaction and understanding.

Nonverbal communication, by its nature, is a complex variable to assess. Several methods of evaluation have been developed.⁷⁻⁹ According to Mehrabian's classification,^{10,11} nonverbal communication/behavior encompasses three major areas: (1) immediacy—degree of "closeness" between two persons engaged in an interaction; (2) relaxation—degree of postural relaxation-tension exhibited by a communicator; and (3) responsiveness—extent of awareness of and reaction to another person. The major nonverbal areas can be further divided into several component categories

(Table 1). Through extensive testing, Mehrabian has developed a method whereby the nonverbal behavior of an interview participant can be "scored" or evaluated numerically with respect to each category.^{7,8} For example, using a Mehrabian-type scheme, body orientation is scored +4, +2, +1, 0, -1, -2, or -4, depending on torso orientation. If a communicator directly faces the other person, he is scored a +4 (greater immediacy); if he is oriented 180 degrees away from the other person, the score is -4 (lesser immediacy). The other scores represent various angles within that range. Mehrabian's techniques are designed for instantaneous assessment of nonverbal behavior but are readily adaptable for evaluation of activity as it occurs over a short time interval.

In this study, patient and physician were scored

Table 2. Immediacy and Relaxation Scoring Codes Used in This Study

Immediacy	Relaxation
1. Touching Touch = 5 No touch = 0	6. Arm Asymmetry Extreme asymmetry of hands, draped over desk = 3 Moderate asymmetry of hands = 2 Both arms in lap, slight asymmetry = 1 Arms symmetrical, held at midsection = 0
2. Distance Up to 2 feet = 4 2-3 feet = 3 3-6 feet = 2 6-10 feet = 1 Greater than 10 feet = 0	7. Sideways Lean 61 to 90 degrees lean = 4 31 to 60 degrees lean = 2 1 to 30 degrees lean = 1 No sideways lean (vertical) = 0
3. Forward Lean 61 to 90 degrees towards the addressee = +4 31 to 60 degrees towards the addressee = +2 1 to 30 degrees towards the addressee = +1 Vertical = 0 1 to 30 degrees away from addressee = -1 31 to 60 degrees away from addressee = -2 61 to 90 degrees away from addressee = -4	8. Leg Position Legs crossed = 3 Both feet on floor, one foot forward = 2 Both feet on floor, insteps touching = 0
4. Observation Present = 2 Not present = 0	9. Hand Relaxation Hands very relaxed = 2 Hands moderately relaxed, loose = 1 Hands tense = 0
5. Body Orientation Directly facing addressee = +4 0 to 45 degrees away from addressee = +2 45 to 89 degrees away from addressee = +1 90 degrees away from addressee = 0 91 to 135 degrees away from addressee = -1 136 to 179 degrees away from addressee = -2 180 degrees away from addressee = -4	10. Neck Relaxation Chin supported in hands = 2 Chin not supported by hands, gaze straight ahead = 1 Chin not supported by hands, gaze elevated = 0
	11. Reclining Angle (backward lean) Score is simply negative of that recorded for forward lean

in each category of immediacy and relaxation for sequential equal time intervals.

Minor modifications in Mehrabian's techniques were made for ease in scoring (Table 2). Patient satisfaction and understanding were evaluated by a post-interview questionnaire taken from the literature on the physician-patient relationship.¹²

Methods

Subjects

This investigation was conducted at the University of Washington Family Medical Center (FMC). The interview portion of 34 patient-physician visits, both prior to and after physical examination, were videotaped to provide data for the analysis of nonverbal communication. Fifteen

physicians (ten males and five females) voluntarily participated in this study. Three interviews were conducted by faculty, and the remainder by first, second, and third year residents. The 34 patients who participated were selected on the basis of either being new to the family medical center or new to a particular physician (however, a return patient to the center).

The patient population included 25 females and 9 males, or by racial breakdown, 25 Caucasians, 6 Blacks, and 3 Asians. The average patient age was 36.2 years (range: 21 to 74 years). Reasons for the patient visits to the clinic were varied: 5.9 percent, health maintenance only; 14.7 percent, acute-temporary problem (patient does not plan to return to the family medical center); 76.4 percent, acute and/or chronic problems (patient desires ongoing status at the center); and 2.9 percent, obstetrics only. Seventy-three percent of the patients were "new" to the family medical center.

Table 3. Questionnaire Used in Assessment of Patient Satisfaction and Understanding

Understanding

1. What did the Doctor say was the problem?
2. What did the Doctor say caused the problem?
3. What did the Doctor tell you to do about it?
4. What did the Doctor say about what to expect?
5. What instructions did the Doctor give you?
6. What suggestions did the Doctor have for you?

Scoring of Responses

1. Not remembered or not correct
2. At least 25% correct and remembered
3. At least 50% correct and remembered
4. At least 75% correct and remembered
5. 100% correct and remembered

Satisfaction

1. What did you think of your experience here today?
2. How satisfied were you with the visit?
3. Did the Doctor explain so that you understood?
4. Did the Doctor seem concerned about you as a person?
5. Did the Doctor spend as much time as you would have liked?
6. Did you feel the Doctor listened to you?

Scoring of Responses

Patients indicated their responses on a one-to-five scale (five most positive). Total scores were tallied.

Interviews

At the outset, physicians gave "blanket" written consents to be videotaped at any time without immediate prior knowledge. They were later notified that they had been videotaped and were given the opportunity to have both the verbal and nonverbal elements of their interview critiqued. Patients were approached to participate in the study following an introduction by the clinic receptionist. If a written consent was obtained, a preliminary interview was conducted to determine the nature of the visit. The patient was then assigned to one of three examination rooms equipped with a videotape camera and microphone. Interviews were monitored from a separate room.

Only interview or "talking" portions of the visits were videotaped. An interview situation is defined as follows: both patient and physician are seated on stools or chairs (not examination table) and engaged in conversation not interrupted by any type of examination. All videotaped interviews not satisfying these requirements were discarded. Following the visit, the patient was asked to complete a questionnaire designed to evaluate patient satisfaction and understanding (Table 3). Satisfaction questions were rated by the patient on

a one to five scale, five being most positive (30 points maximum). The six understanding questions required a short answer response. The responses were later compared with information from the patient's chart. No patient refused to answer any question. For analytical purposes, all cases were divided into high or low satisfaction groups and high or low understanding groups, based on post-interview questionnaire responses (scores).

Coding System for Nonverbal Communication

Each videotape was screened according to a nonverbal coding scheme developed by Mehrabian.⁸ Modifications used in this particular study are noted in Table 2. These modifications are not substantive but were made for scoring ease. For example, in scoring reclining angle (backward lean), Mehrabian suggests that it be scored in number of degrees of angle⁸ while this study uses a system which assigns numbers to different angle ranges of lean.

All tapes were scored in the 11 nonverbal categories at 40-second intervals. Patient and

physician were scored separately in each category. The general coding scheme is as follows: a number value is assigned for a particular scoring interval if the nonverbal activity persists for 30 of the 40 seconds. To be scored, the activity need not necessarily be continuous. If the nonverbal activity does not persist for 30 of the 40 seconds, a "no score" (later scored automatically as zero) code is recorded. The above applies to all categories except to the "touching" category of immediacy which is a frequency construct and simply scored whether it occurs during the unit interview.

Tapes were individually time-scored. Each tape was played on a 40-second interval basis, stopped, and then appropriately coded. Scores for the 11 nonverbal categories for both patient and physician were marked on tally sheets. Tapes were frequently replayed to confirm coding. Only complete intervals were scored, and any non-examination interruptions were noted and not scored. The audio portion of each tape was not turned on during scoring and verbal content was not recorded.

No interview, regardless of length, was coded for greater than 20 minutes. Thus, for an interview of 20 minutes, patient and physician were each scored 30 times in 11 different categories for a total of 660 discrete observations; for an interview of 10 minutes, 330 total observations are required.

Two judges (both medical students) scored all the tapes using stopwatches. For the first tape and each seventh tape thereafter, both scorers individually coded the first ten minutes using the method described above. Scoring reliability between the two judges was greater than 0.90. One judge would then finish scoring that tape. For all remaining tapes, one person scored the first ten minutes of the interview, then the other scored the rest.

Nonverbal scores were tallied in each of the 11 categories, as well as in the two major areas, for the entire interview for patient and physician, respectively. Scores were then adjusted for length of interview. The coding system was designed so that the higher tally indicates greater immediacy or greater relaxation.

Results

General Case Statistics

The average length of all interviews was 14.6 minutes (range: 5.3 to 29 minutes). No interview

was coded or analyzed for more than 20 minutes, although ten of the interviews were greater than 20 minutes in duration. Twenty-nine of the 34 interviews had no interruptions; the other interviews were interrupted briefly once or twice for non-examination reasons.

The average patient satisfaction score was 28.8 (of 30 maximum) with a range of 24 to 30. To validate these scores, a satisfaction questionnaire was mailed to each patient several weeks later; responses were comparable to those obtained immediately post-interview. The average understanding score was 24.6 (of 30 maximum) with a range of 9 to 30. Cases were divided, based on a bimodal distribution, into high or low satisfaction groups (28 cases and 6 cases, respectively); and high or low understanding groups (22 cases and 12 cases, respectively). This was done to determine if the mean nonverbal scores, for any patient or physician nonverbal category, were significantly different for high and low groups.

Patient Satisfaction

Patient satisfaction variables are outlined in Table 4. Scores are shown only for those patient or physician nonverbal areas or categories (column 1) where statistically significant differences were found between mean scores of the high and low groups. The second column indicates which group, higher satisfaction or lower satisfaction, had the higher mean score in that particular nonverbal category. The third column lists the level of significance (t test significance) of the finding. For all nonverbal categories not listed in Table 4, no statistically significant differences ($P \leq .05$) were shown between mean scores of the high and low satisfaction groups.

Patient Understanding

Patient understanding variables are outlined in Table 5. As with patient satisfaction, scores are shown only for those nonverbal areas or categories where statistically significant differences were demonstrated between mean scores of the high and low groups. The table also includes the level of significance for each category and indicates which groups, higher understanding or lower understanding, had the higher mean score in that particular category. Again, no statistically significant differences ($P \leq .05$) were demonstrated be-

Table 4. Nonverbal Categories or Areas Which Demonstrate Statistically Significant Differences in High and Low Satisfaction Groups

Area or Category	Satisfaction Group with Higher Mean Score	Significance
Physician		
Overall		
Immediacy	Higher group	<.01
Immediacy		
Touch	Lower group	<.05
Forward lean	Higher group	<.01
Body orientation	Higher group	=.05
Relaxation		
Backward lean	Lower group	<.01
Neck relaxation	Lower group	<.01
Patient		
Immediacy		
Observation	Lower group	<.01
Relaxation		
Hand relaxation	Lower group	<.01

Table 5. Nonverbal Categories or Areas Which Demonstrate Statistically Significant Differences in High and Low Understanding Groups

Area or Category	Satisfaction Group with Higher Mean Score	Significance
Physician		
Overall		
Immediacy	Higher group	<.01
Immediacy		
Forward lean	Higher group	<.01
Body orientation	Higher group	<.01
Relaxation		
Backward lean	Lower group	<.01
Patient		
Immediacy		
Touch	Lower group	<.01
Body orientation	Lower group	<.01
Relaxation		
Hand relaxation	Higher group	<.01

tween mean scores of the high and low understanding groups for nonverbal categories not listed.

Discussion

Statistically significant differences ($P \leq .05$) between average scores of high and low satisfaction groups were shown in six physician nonverbal categories and two patient nonverbal categories. First, for the physician, a higher nonverbal score in overall immediacy was shown to be associated with a higher patient satisfaction. Mehrabian⁸ has demonstrated that *immediacy* and its components are correlated with liking, and it is reasonable to expect in the physician-patient interaction that liking is translated into patient satisfaction. Higher satisfaction was demonstrated to be particularly associated with two components of physician immediacy, forward lean and body orientation. Possibly, the patient perceives the direct, face-on orientation of the physician as a reflection of physician concern for the patient's welfare and interest in the problem at hand. It is interesting to note that the physician touch category is associated with lower satisfaction. For a first time visit, touch may be viewed as an aggressive physician behavior; once rapport is established with a physician in an ongoing relationship, touch at the appropriate time may be well accepted or even welcomed. In the general area of physician relaxation, statistically significant differences ($P \leq .05$) between mean scores of the high and low satisfaction groups were shown for the individual categories of backward lean and neck relaxation. Physician backward lean was associated with lower satisfaction, and is simply opposite to the findings for forward lean explained above. High physician neck relaxation was associated with lower satisfaction. This suggests that the patient responds more favorably to the physician who relaxes his chin in his hands and gazes directly at the patient, rather than a physician who elevates his chin as if to imply a more superior status.

Secondly, for the patient, statistically significant differences ($P \leq .05$) between mean satisfaction scores for high and low groups were demonstrated for only two categories, observation and hand relaxation. More observation (orientation of the patient's face toward that of the physician) was associated with lower satisfaction. This contradicts Mehrabian's findings⁷ that eye contact (im-

plied by observation) is minimal for disliked addressees, approaches a maximum value for addressees toward whom the attitude is neutral, and slightly diminishes for addressees who are liked.⁷ Perhaps, in a first-time interview, the patient who is apprehensive and regards the physician as a stranger may purposely avoid continual gaze or "staring." Hand relaxation was also associated with lower satisfaction. This contradicts Mehrabian's findings⁷; further studies are indicated.

The average satisfaction score for this study is relatively high. There are probably several factors which ultimately affect and determine a patient's questionnaire response. First, many patients need and want to believe they are receiving the best possible care, and may generally mark more favorable scores. Secondly, given a research situation in which the physician is young and new (majority of the physicians in this study), the patient may attempt to be more supportive. However, there is also a definite bias in interviews when the relationship between the patient and physician is long established and often more trusting. It has previously been shown that a camera does not have a significant effect on those taped.¹³ Thirdly, satisfaction, as a reproducible research measure, is a difficult parameter to assess. Individual patients may have different definitions of satisfaction,¹⁴ and different attitudes towards varying components of medical care.¹⁵ Several satisfaction scales have been devised, but they are frequently modified.¹⁵

Statistically significant differences ($P \leq .05$) between average scores of high and low understanding were shown in four physician nonverbal categories and three patient nonverbal categories. First, for the physician, a higher score in overall physician immediacy was shown to be associated with higher understanding. With greater immediacy or "closeness," the patient perhaps senses that the physician is "focused" on his particular problem. This then results in more attention for what is said, and hence reinforces patient understanding. The individual immediacy categories of forward lean and body orientation were especially correlated with higher understanding. This too seems to support the hypothesis that if the physician directly orients himself toward the patient, the patient senses greater interest, listens more intently, and retains more information (greater understanding). It is reasonable then that physician

backward lean, the negative of forward lean, would be associated with lower understanding.

Secondly, for the patient, statistically significant differences ($P \leq .05$) between mean scores of high and low understanding groups were shown in two categories of immediacy, touch and body orientation, and one category of relaxation, hand relaxation. More touching was associated with lower patient understanding. In the initial encounter with a new physician, the patient probably feels reluctant to show more aggressive behavior such as touching. Patient body orientation and hand relaxation were associated with lower understanding. Perhaps these are indications of concentration in this instance. The content rather than the relationship aspect of the interview appears paramount. Further investigation is required.

Conclusion

Communication, both verbal and nonverbal, is an important aspect of the physician-patient relationship. Numerous studies to date have suggested that good verbal communication directly or indirectly affects patient satisfaction, understanding, and compliance. This preliminary investigation suggests that certain nonverbal communication/behavior, especially that of the physician, may be associated with patient satisfaction and understanding.

Few physicians have probably ever considered the manner in which they communicate nonverbally to a patient, except perhaps for facial cues. Yet, nonverbal behavior is an important reinforcement or negation of what is said verbally. While it is difficult to analyze nonverbal behavior in the absence of verbal content, this study as well as previous investigations⁹ suggests that nonverbal activity may have communication value in its own right.

Verbal communication is a part of the medical school curriculum in this and other schools (patient profile, history), but nonverbal communication is rarely if ever mentioned. Quality communication must consider both. As Samora¹⁶ has said:

Perhaps if the goal of medicine is the diagnosis and treatment of disease, then the quality of communication between practitioner and patient makes little difference. . . . But if the goal is more broadly interpreted . . . the *quality* [italics added] of communication assumes instrumental importance and anything that interferes with it need be noted, and if possible, removed.

This study is a preliminary investigation of nonverbal behavior in the medical interview as it relates to two patient outcome measures, satisfaction and understanding. The authors believe that no comparable study of nonverbal communication has been done previously, and can only speculate as to the interpretation and significance of the results. Further investigation is required to determine why only certain nonverbal parameters are associated with higher satisfaction or higher understanding; and to explore the importance of these findings for the practicing physician. The authors are currently studying the relationship of a given physician or patient nonverbal behavior to sequential nonverbal acting.

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