Predicting Patient Satisfaction from Physicians' Nonverbal Communication Skills

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The relationship between physicians' nonverbal communication skills (their ability to communicate and to understand facial expression, body movement and voice tone cues to emotion) and their patients' satisfaction with medical care was examined in 2 studies. The research involved 71 residents in internal medicine and 462 of their ambulatory and hospitalized patients. Standardized, reliable and valid measures of nonverbal communication skills were administered to the physicians. Their scores on these tests were correlated with ratings they received from a sample of their patients on measures of satisfaction with the technical aspects and the socioemotional aspects (or art) of the medical care they received. While the nonverbal communication skills of the physicians bore little relationship to patients' ratings of the technical quality of care, measures of these skills did predict patient satisfaction with the art of medical care received. Across both samples, physicians who were more sensitive to body movement and posture cues to emotion (the channel suggested by nonverbal researchers as the one in which true affect can be perceived) received higher ratings from their patients on the art of care than did less sensitive physicians. In addition, physicians who were successful at expressing emotion through their nonverbal communications tended to receive higher ratings from patients on the art of care than did physicians who were less effective communicators. The implications of successfully identifying characteristics of physicians with whom patients are satisfied are discussed.

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PATIENTS' satisfaction is an important component of the quality of medical care, and is currently receiving a significant amount of recognition in health services research. Numerous instruments have been developed for the purpose of assessing patient satisfaction and various dimensions of patients' reactions to their care have been identified.[1] Patients' overall satisfaction with medical care tends to be best predicted by their satisfaction with the dimension of physician conduct.[2] Two aspects of physician conduct, the technical quality and the art of care, have been found to be highly related to each other in patients' perception in some studies,[3,4] though some studies do show an attenuated relationship.[5] Technical competence (also termed the "instrumental" aspect of patient care)[6] includes the communication of that which is important in order to inspire patient confidence in the physician and thus reduce patient anxiety. The art of care (or socioemotional, affective aspect of patient care)[6] involves the communication of caring, concern, sincerity, compassion and respect.[7]

Patient satisfaction with medical care, particularly with the affective side of care, has been shown to influence health-related behavior[8] such as adherence to medical regimens.[9-13] Dissatisfaction with the art of care tends, on the other hand, to be a significant determinant of cancer patients' rejection of the medical establishment in search of emotional support[14] and the instigation of malpractice suits.[15-17] Finally, many patients change physicians ("doctor shop") because they are dissatisfied with the impersonal treatment they receive and with their physicians' seeming lack of interest in them.[18,19] Such change is often wasteful, as it entails needless duplication of examinations and procedures.

There is also evidence that the quality of the interpersonal care that patients receive can influence significantly the outcome of even such highly technical treatments as surgery. In a study of surgical patients, it was found that anesthesiologist-patient communication and rapport before surgery both reduced surgical patients' need for pain medication and shortened their hospital stay (by 2.7 days on the average).[20] This finding has been explained in terms of the beneficial effects of the reduction of patients' anxiety before surgery.[21,22]

Thus, a number of avenues of research demonstrate that there exists a strong relationship between patient satisfaction with physician conduct and subsequent patient behaviors in the health care system. These behaviors in turn influence the cost and effectiveness of medical care. There is, however, a scarcity of knowledge about the specific physician behaviors and characteristics that contribute to patient satisfaction with the art and the technical quality of care.[1] Only with this knowledge can patient satisfaction be enhanced by means of both the selection and training of physicians.

Early attempts to examine personality characteristics of physicians as correlates of their clinical success have resulted in weak and equivocal findings.[23-25] It has become clear that alternate measures of physicians' interpersonal capabilities are needed. Since many aspects of medical care involve a sensitivity to patients' feelings and a facility in expressive communication with patients, a consideration of the importance of the general nonverbal communication skills of physicians to success in the interpersonal aspects of health care may be beneficial.

Nonverbal communication in health care interactions involves primarily the communication of cues of emotion through the channels of facial expressions (e.g., smiles, grimaces), body postures and movements (e.g., finger tapping, hand wringing), and the tone and inflections of voice (e.g., high-pitched voice). In fact, the importance of the physicians' skill in communication (encoding) of these emo-

tional messages in nonverbal channels as well as their ability to understand (decode) patients' nonverbal cues, has been recognized by physicians as early as Hippocrates and Osler, and as recently as Engel.[7,26,27] However, while verbal communication and patient satisfaction have been empirically examined,[28] little research has been directed toward the clear understanding of the role of physicians' *nonverbal encoding and decoding skills* in patient care. Such research is important because patients are usually reluctant to express their feelings verbally to their physician, and so the physician's accurate perception of nonverbal cues may be the only way for him or her to identify patient dissatisfaction or distress. Also, since the verbal expression of caring and concern is probably uncomfortable or inefficient for the physician in his or her role, the ability to express emotion through nonverbal cues would be an important aspect of effective rapport with patients.[29] The research reported here was conducted to examine nonverbal skill as an aspect of physician–patient rapport; in so doing, it also addresses the question of the construct validity of patients' assessments of the performance of their physicians.

Procedures

Traditionally, studies of physician conduct and patient satisfaction have explored physician behaviors during the medical visit.[12] The present research looks instead at consistent modes of functioning of the physicians and examines their *nonverbal communication skills* in relation to their patients' satisfaction with the technical and socioemotional aspects of the medical care received. In 2 studies, physicians' nonverbal communication skills were assessed using objective measures of their decoding and encoding of nonverbal cues, specifically tone of voice, facial expressions and body movements. Patient satisfaction was assessed through ratings made by patients immediately after a visit with their physi-

cians. While previous researchers have used ratings by supervisors and peers and self-ratings as measures of success in relation to patients, the present research involved asking the patients themselves.

The setting of the research was a 478-bed New York City community teaching hospital. Subjects were the physicians in the residency program in internal medicine based at the hospital and their patients in the ambulatory clinic and on the inpatient floors. All 40 members of the 1975 medical house staff (28 males and 12 females; average age 32.2 years) participated in Study I. The 31 new members who joined the house staff in July 1976 (24 males and 7 females; average age 29.8 years) participated in Study II. The patient sample consisted of more than 400 ambulatory and inpatients cared for by these residents. The physician–patient relationship was, for the most part, an ongoing one, since the residency program emphasized continuity of care.

Predictor Variables

Decoding. In both studies, the nonverbal decoding skills of each resident were measured with the Profile of Nonverbal Sensitivity (the PONS test).[30] This test is a 45-minute, 16 mm film test of an individual's ability to decode the emotion communicated by another through facial expressions, body movements and voice tone. High scores on the PONS test reflect the respondent's sensitivity to the nonverbally communicated feelings of another. The PONS test is a reliable measuring instrument, with a total test-retest reliability coefficient (averaged from multiple studies) of .69. Internal consistency reliability coefficients computed from large normative samples average .86 for the total test score. Validity studies of the PONS yield impressive correlations of PONS scores with other measures of sensitivity (such as ratings of the test taker by other people who know him or her, for example). An extensive series of successful conver-

gent and discriminant validity studies are reported by Rosenthal et al.[30]

The PONS test yields 4 orthogonal scores which were determined by factor-analytic studies. They are as follows (with their reported internal consistency and test-retest reliabilities,[30] respectively, reported in parentheses): (a) and (b), scores on ability to understand the emotion conveyed in 2 forms of voice tone, the preparation of which effectively filters out verbal communication leaving only the tone in which something was said—the *Randomized-Spliced Voice Tone* (.06, .18) and *Content-Filtered Voice Tone* (.57, .27); (c), a score that reflects ability to understand another's body posture and movement cues to emotion—the *Body Channel* (.88, .54); and (d), a score which reflects ability to detect another's emotion when any facial expression cues are available— the *Face-Present Channel* (.92, .50). It was hypothesized that the physicians who scored high on any measures in the PONS test—those who were able to understand the nonverbal expressions of another— would receive higher ratings of satisfaction from their patients, particularly on the art of care. A more precise hypothesis—that this relationship between physician nonverbal sensitivity and patient satisfaction would be especially strong when considering nonverbal cues in the Body Channel—took into account recent findings in nonverbal communication research that *unintended* cues to emotion are present primarily in body posture and movement.[31,32] It was hypothesized, then, that a physician's capacity to recognize and understand his or her patient's subtle, unintended emotional reactions may be a significant component in influencing patient satisfaction.

The PONS test was administered to all 40 physicians in Study I and to all 31 physicians in Study II. In both physician samples the measures of central tendency and variability of PONS scores were very close to those obtained by the large PONS normative group.

Encoding. The basic procedure for measuring intentional encoding (communication) of emotion in nonverbal channels was similar in the 2 studies. In both studies, physicians were asked to communicate with each of 3 verbally neutral sentences to the experimenter (who was simulating a patient), expressing (encoding) 4 different emotions. These emotions were happiness, sadness, anger and surprise. Each physician encoded a total of 12 communications using this standard-content procedure. These communications (encoded in 1 of 12 different prearranged sequences by each physician) were recorded on audio tape by 21 of the physicians in Study I. In Study II, each communication was sound-film recorded. The camera was focused on the face of each of 28 physicians from Study II from about 10 feet away. The films were transferred to cassette videotape.

In both studies, the recorded communications were edited, with specific counterbalancing schemes for the position of the segments on the composite tape. Each segment on the composite tape was preceded by a number; a 6-second rating pause followed each segment. The judges or raters of the audio tape in Study I were 60 high school students. Two samples of judges were used in Study II. Thirty-four undergraduate college students judged the videotape containing audiovisual segments (the FACE plus VOICE condition), while 18 additional undergraduates judged only the audio track of the videotape (the VOICE ONLY condition). The audio-only condition of Study II was run so that a direct comparison with the results of Study I could be accomplished.

Judges in both studies listened to and/or looked at the composite tapes, and on an answer sheet circled HAPPINESS, SADNESS, ANGER or SURPRISE, according to which emotion they thought was being communicated by the physician in each segment. In both studies, the proportion of the total sample of judges that accurately identified the emotion intended by the

physician was used as the encoding accuracy score for that physician for that segment. The use of untrained raters in this manner, to decode intentionally encoded emotion from videotaped segments, is a standard procedure in the valid measurement of nonverbal encoding skill.[33] The sum of the accuracy scores for all 12 communications constituted the Total Encoding Score. (In Study II, there was a total FACE plus VOICE encoding score and a VOICE ONLY condition encoding score.) Another score computed for each physician in both studies consisted of the percentage of communications which were intended by the physician to be positive (happiness or surprise) but were perceived by the judges as negative (anger or sadness). (There exists empirical evidence supporting the positivity-negativity of these 4 emotions.[34]) The reliabilities (internal consistency) of the encoding measures were as follows: *Study 1*, Total (.88), POSNEG (.70); *Study 2*, Face and Voice Total (.88), POSNEG (.66), Voice Total (.73), Voice POSNEG (.61).

The Criterion Measure: Patient Satisfaction

In both studies, ratings of the house officer were obtained from a number of his or her patients by means of interviews. An average of 7 of each house officer's patients were interviewed immediately after a visit with the resident in the Ambulatory Care Clinic of the hospital or soon after a visit by the resident on the inpatient medical floors of the hospital. An effort was made to interview an equal number of clinic and inpatients of each physician in the study, although this was not always possible. Patients were chosen for interview using as random a process as possible given the constraints of the schedules of the residents and staff. Ambulatory patients were residents of the nearby urban area who relied on the clinic as their only source of health care. Since they had no private physician, they were treated by a resident

at the hospital—one to which they were randomly assigned depending upon the resident's day of clinic assignment and the patient's arrival. An effort was made, however, for the resident to continue to see the patient on subsequent visits so that continuity of care would be maintained. (The visit on which the ambulatory patients in Study II were interviewed was, on the average, the fifth.) Patients hospitalized in the acute care unit of the hospital were treated by a house officer if they had no private physician. These "house patients" tended, as did the patients in the clinic, to be of lower socioeconomic status than private patients.

The interviews were conducted by 1 of 6 trained interviewers who approached the patients after their visit with their physician. In order to avoid a bias, the interviewer did not ask the name of the patient's physician until the end of the interview. Interviewers were given no information about the nonverbal communication skill scores of the physicians.

In Study I, a total of 171 patients of 35 of the physicians were interviewed. These patients were, on the average, 48 years old. Fifty-seven per cent of them were males. Patients were asked to rate their physicians on the 3 questions contained in Table 1. One question measured the patient's perceptions of technical care, and 2 measured perceptions of the art of care. The table also presents the means and standard deviations as well as the reliabilities of the means of the patients' ratings. The means of the ratings given by the patients of a physician constituted his or her patient satisfaction scores.

As can be seen in Table 1, the reliability coefficients of the means of the patient ratings were low to moderate in both studies. Since each physician was evaluated by different patients, the error variances used in computation of the reliability coefficients were most likely overestimated to a great degree. This caused the reliability coefficients to be underestimated. This is a usual problem with ratings of this kind. Still, de-

TABLE 1.   Patient Interview Questions, Coding, and Reliabilities of Means of
Patients' Ratings in Study I and Study II

Aspect of Satisfaction Measured	Patient Questions and Coding (indicated on scale)	Reliability of Mean of Rating	Mean (Standard Deviation)
Study I			
Technical care (dr. is helpful)	1. Please tell me which answer best tells how much this doctor can help you compared to other doctors you know or can imagine: 7, more than all other doctors; 6, more than most other doctors; 5, more than some other doctors; 4, about the same as other doctors; 3, less than some other doctors; 2, less than most other doctors; 1, less than all other doctors.	.25	4.91 (0.68) N = 35
Art of care (dr. cares)	2. Please tell me which answer best tells how much this doctor cares about you as a person; 7, more than all other doctors; 6, more than most other doctors; 5, more than some other doctors; 4, about the same as other doctors; 3, less than some other doctors; 2, less than most other doctors; 1, less than all other doctors.	.13	4.92 (0.68) N = 35
Art of care (dr. is sensitive)	3. Please tell me which answer best tells how well this doctor can tell if you are worried; 7, more than all other doctors; 6, more than most other doctors; 5, more than some other doctors; 4, about the same as other doctors; 3, less than some other doctors; 2, less than most other doctors; 1, less than all other doctors.	.05	4.58 (0.64) N = 35
	Sum of ART of CARE	.12	
Study II			
Technical care (dr. is smart)	1. Do you think this doctor is: (3) smarter than most doctors (2) average (1) not as smart as most doctors	.13	2.12 (0.22) N = 29
Technical care (dr. explains)	2. Does this doctor explain your medical condition to you: (3) so that you understand it perfectly (2) only a little (1) not at all—didn't explain anything	.41	2.85 (0.20) N = 29
	Sum of TECHNICAL	.42	
Art of care (dr. listens)	3. Does this doctor listen to what you have to say: (3) always (2) sometimes (1) never	.30	2.95 (0.11) N = 29
Art of care (I can call dr.)	4. Do you feel you can call this doctor if something goes wrong and you need him or her? (3) yes, definitely (2) maybe (1) no	.07	1.72 (0.23) N = 29
Art of care (dr. cares)	5. Do you think this doctor cares about you as a person: (3) a lot (2) only a little (1) doesn't care for me as a person—only as part of his or her job	.17	2.71 (0.26) N = 29
	Sum of ART of CARE	.61	

spite allowance for underestimation, these low reliabilities reflect somewhat of a divergence among patients in their assessments of the physicians.

In Study II, 291 patients of 29 of the physicians were interviewed. Patients were 55 years old on the average, and 53 per cent were males. Additional information collected from them revealed that of the patients in Study II, 66 per cent were foreign born, 70 per cent were white and 21 per cent were black. The majority were

TABLE 2. Intercorrelations* of 3
Mean Patient-Satisfaction
Measures in Study I (N = 35)

	Dr. is Helpful	Dr. Cares
Dr. cares	.74	
Dr. is sensitive	.52	.75

* Two-tailed Pearson product–moment correlations.

unemployed at the time of the interview (75 per cent) and of these, 58 per cent were retired. The average occupational status of those patients who held jobs was assessed using the National Opinion Research Corporation Scale of the status of 450 occupations,[35] and it was found that this average occupational status was approximately equal to that of semi-skilled worker. The average education of patients in Study II was 10.3 years. Fifteen per cent of the patients were medically indigent. Of those who had some kind of medical insurance, 70 per cent were receiving Medicare or Medicaid benefits.

In Study II, the last 5 questions in Table 1 were asked of patients. The first 2 questions were intended to assess patients' perceptions of the technical aspects of care. The last 3 were meant to assess the art of care.

In analysis of the relationship between physician nonverbal skills and patient satisfaction, composite patient satisfaction scores were computed in each study. In Study I, the 3 questions were analyzed

separately, and also the 2 variables of patient satisfaction with the art of care were summed to create a new, somewhat more reliable (stable) score. Likewise, in Study II, the 2 questions regarding the technical aspects of care (1 and 2) were summed, as were the 3 questions (3, 4 and 5) regarding patients' perceptions of the art of care. The relationships between these composite measures of patient satisfaction and the measures of physicians' nonverbal skill were assessed with Pearson product moment correlation coefficients. The comparable correlations from both studies were combined statistically using a method detailed by Rosenthal[36] so that an assessment of the stability and significance of each finding could be made.

Results

The intercorrelations of the patient satisfaction ratings in Study I and Study II are presented in Tables 2 and 3 respectively. In both studies, moderate correlations were found between measures of patients' perceptions of the art and the technical quality of care. These correlations were somewhat higher in Study I than in Study II.

In Table 4, the correlations between predictor and criterion variables in Study I are presented. Note that the Body Channel of the PONS test correlated significantly with the summed measure of patients' satisfaction with the art of care, as did the 2 measures of voice-tone encoding. None of

TABLE 3. Intercorrelations* of 6 Mean Patient-Satisfaction Measures in
Study II (N = 29)

	Dr. is Smart	Dr. Explains	Dr. Listens	I Can Call Dr.	Dr. Cares
Dr. explains	.36	—			
Dr. listens	.28	.51	—		
I can call Dr.	.36	.10	.14	—	
Dr. cares	.28	.56	.35	.35	—
I want Dr. again	.15	.40	.07	.58	.52

* Two-tailed Pearson product–moment correlations.

TABLE 4. Correlation Coefficient for the Relationship Between Physicians'
Nonverbal Communication Scores and Their
Patients' Satisfaction: Study I*

	Patient Satisfaction			
	Dr. is Helpful (Technical)	Dr. Cares (Art)	Dr. is Sensitive (Art)	Dr. Cares Plus Dr. is Sensitive (Art of Care)
PONS test scores (N = 35)				
Randomized spliced voice tone	.33	.19	.25	.23
Content-filtered voice	−.16	−.20	−.22	−.22
Body channel	.08	.32	.34†	.35†
Face-present channel	−.08	.03	.12	.08
Voice encoding (N = 21)				
Total voice encoding	.12	.50†	.37	.46†
Positive intent, Negative communication	−.32	−.50†	−.44†	−.50†

* Correlations are 2-tailed Pearson product–moment correlation coefficients.
† p < 0.05.

the nonverbal measures correlated significantly with patient satisfaction with technical care. Thus, Table 4 shows that higher ratings of satisfaction with the art of care were given to physicians who were skilled at decoding body movement and posture cues to emotion. The pattern of correlations supports the hypothesis that sensitivity to others' emotions communicated through body movements and postures is a physician skill that has consequence for patient satisfaction. In addition, the skill of accurate voice encoding of nonverbal messages of emotion also correlated with patient satisfaction. The correlations in the last line of Table 4 show that physicians whose *encoding errors* involved communicating negative emotion while intending to communicate positive emotion (those who scored high on the "positive intent-negative communication" measure) received significantly lower scores on the art of care than did physicians who made few communication errors of this kind (those who scored low on this measure of a specific kind of error).

Table 5 presents the correlations in Study II between patient satisfaction measures and physicians' nonverbal encoding and decoding skills. Note that none of the measures of decoding (PONS) and encoding (FACE PLUS VOICE and VOICE ONLY) are significantly correlated with any of the measures of satisfaction with the technical aspects of care. While the pattern is not as strong as in Study I, there are some moderate relationships between physician decoding and encoding skill and patient satisfaction with the art of care. Of the 4 PONS measures, physician sensitivity to the PONS Body Channel of nonverbal communication again correlated most highly with satisfaction with the art of care. In Study II as in Study I, physician skill at accurately perceiving body posture and movement cues to emotion was a significant predictor of patient satisfaction with the art of care. The correlations of the encoding variables with measures of the art of care were somewhat weaker in Study II than in Study I, but were in the same direction. Thus, again, physicians

TABLE 5. Correlation Coefficients for the Relationship Between Physicians' Nonverbal Communication Scores and Their Patients' Satisfaction: Study II*

	Technical Care			Art of Care			
	Dr. is Smart	Dr. Explains	Sum, Dr. is Smart and Dr. Explains	Dr. Listens	I Can Call Dr.	Dr. Cares	Sum of 3 Measures
PONS (N = 29)							
Randomized spliced voice	.07	−.03	.03	.07	−.05	.18	.10
Content filtered voice	.02	.22	.14	−.04	.27	.07	.17
Body channel	.00	.12	.07	.15	.34	.27	.37†
Face-present channel	−.18	.26	.04	.13	−.12	.11	.04
Face plus voice encoding (N = 26)							
Total encoding score	.01	.13	.09	.37	.32	−.12	.18
Positive intent, negative communication	.10	−.27	−.09	−.39†	−.39	.01	−.29
Voice only encoding (N = 26)							
Total voice encoding score	−.04	.14	.06	.34	.17	−.05	.14
Positive intent, negative communication	.11	−.32	−.12	−.33	.01	−.04	−.10

* Correlations are 2-tailed Pearson product–moment correlation coefficients.

who were more sensitive to body movement cues to emotion, and who were better able to communicate emotion nonverbally tended to be somewhat more successful at satisfying patient's socioemotional needs than were physicians who lacked sensitivity and emotional expressiveness. Possibly because of greater information transmitted and greater reliability, the face plus voice encoding measures were slightly better predictors of patient satisfaction than were the voice-only encoding measures.

Table 6 presents the mean correlations over 2 studies of physicians' encoding and decoding skills with the summed measures of satisfaction with technical care and with the art of care. Using a procedure de-

veloped by Stouffer et al.,[37] and described in detail by Rosenthal,[36] the probabilities associated with the correlations in the 2 studies were able to be combined so that a composite probability level for the 2 studies could be determined. The combined z values of the comparable correlations obtained in both samples are presented along with their corresponding probability values. The only significant combined probabilities that were found were associated with predictors of patient satisfaction with the art of care. Across both studies, the art of care was significantly predicted by the physicians' skill at understanding bodily nonverbal communication (the Body Channel of the PONS), by the measure of physicians' capacity to express

TABLE 6. Mean Correlations and Combined Probabilities of Correlations Between Nonverbal Skill Measures and Patient Satisfaction in 2 Studies

	Patient Satisfaction									
	Perceptions of Technical Care					Perceptions of the Art of Care				
	r, Study I*	r, Study II	Mean r	z Value†	1-tail Prob-ability‡	r, Study I	r, Study II	Mean r	z Value†	1-tail Prob-ability‡
PONS	N = 35	N = 29				N = 35	N = 29			
Randomized spliced voice	.33	.03	.18	1.48	NS	.23	.10	.16	1.30	NS
Content filtered voice	−.16	.14	−.01	−.14	NS	−.22	.17	.02	.28	NS
Body channel	.08	.07	.08	.57	NS	.35	.37	.36	2.86	p < 0.01
Face-present channel	−.08	.04	−.02	.18	NS	.08	.04	.06	.46	NS
Voice encoding	N = 21	N = 26				N = 21	N = 26			
Total voice encoding	.12	.06	.09	.57	NS	.46	.14	.30	2.50	p < 0.01
Positive intent, negative communication	−.32	−.12	−.22	1.41	NS	−.50	−.10	−.30	2.56	p < 0.01

NS: Not significant.
* Correlations are 2-tailed Pearson product–moment correlation coefficients.
† Using Stouffer method.
‡ Because of predicted direction of 2 effects.

emotion through voice tone (total voice encoding skill), and by their tendency to avoid a specific encoding error, that of communicating negative emotion when intending positive.

Discussion

In the 2 studies reported here, a modest but significant proportion of the variance in patients' satisfaction with medical care was accounted for by the nonverbal communication skills of their physicians. As predicted, patients expressed greater satisfaction with physicians who were sensitive enough to decode body posture and movement cues to emotion. This finding supports recent theory and research which points to the centrality of the body channel in the "leakage" or unintended revelation of cues to emotional state.[31,32] It is not sur-

prising, then, that physicians who were sensitive to this channel of communication may have been more adept at recognizing dissatisfactions and discomforts that patients were unwilling or unable to express verbally. Because of their sensitivity, these physicians were more adept at satisfying their patients' socioemotional needs.

Also related to patient satisfaction were the skills of physicians at encoding (i.e., communicating) nonverbal cues of emotion. Observers of the medical interaction have long noted that the physician must be skilled at communicating nonverbal messages of emotion if the patient is to believe that the physician has an affective reaction to him or her.[7] Therefore, the ability to communicate, at will, various nonverbal clues to emotion is theoretically important to the interpersonal success of physicians. The results of the present studies provide

empirical support for this previously untested observation. It should be noted that in the research reported here, physicians engaged in the "posed," intentional expression of nonverbal cues. There was no attempt to induce emotion in the physicians via the situation, and then observe spontaneously expressed emotional cues. However, in many situations there is little difference between the two; recent research points to a high correlation between encoding ability such as that measured here, and naturally observed, spontaneous expressiveness.[33, 38] The results show a covariance between physicians' nonverbal communication skills and patient satisfaction, but because of the correlational nature of the study, the direction of the causal relationship is not entirely clear. While it is possible that physicians who consistently encountered dissatisfied patients developed less acute sensitivities and became unexpressive, it is more likely that physicians' nonverbal skills influenced patient satisfaction. Methodologically, this is an appropriate conclusion, since the patients were originally randomly assigned to the residents who cared for them. However, the physicians also differed on other factors and we cannot be completely certain that it was their nonverbal skills that made the difference.

Nonverbal sensitivity and expressiveness comprise "socioemotional" aspects of the role of the physician, whereas measures of technical expertise comprise the "instrumental" aspects. It is important to note that independent objective assessments of physicians' nonverbal interpersonal skills predicted patient satisfaction with the former (the art of care), but not with the latter (the technical quality of care). This finding has significant implications in that it provides some solid evidence for the convergent and discriminant validity of patients' ratings of the 2 dimensions of satisfaction.

The identification of characteristics of physicians which contribute to patient satisfaction is beginning to be recognized as critically important in enhancing the responsiveness of health care providers to the needs of patients.[17] Although limited to a specific locale and to the specialty of internal medicine, the present findings suggest that these characteristics include the nonverbal sensitivity and expressiveness of physicians. Fortunately, evidence is presently accumulating that nonverbal communication skills can be taught.[30, 39] If this evidence continues to support the efficacy of training, then programs of instruction in these skills could be developed for medical students, interns, residents, practicing physicians and nurses. Another possible application involves the selection of medical personnel for direct, primary care of patients partially on the basis of their nonverbal communication abilities.

Improving the level of physicians' nonverbal encoding and decoding skills (either through instruction, selection or both) might be expected to improve the quality of medical care and perhaps even its cost effectiveness. The enhancement of the efficiency of interpersonal communication might serve, for example, to decrease the length and therefore the cost of a medical visit. Enhanced affective communication might contribute to a decline in patient retaliation with malpractice litigation and in doctor-shopping by having a positive effect on patient satisfaction. Finally, the increased accuracy of communication of affective information might result in the recognition of patients' discomfort with prescribed treatment. With effective clarification of the problem, the incidence of patient noncompliance with treatment regimens might be significantly reduced. Careful experimental examination of such possible effects is a critical goal of future research.

Acknowledgment

References

1. Ware JE Jr, Davies-Avery A, Stewart AL. The measurement and meaning of patient satisfaction. Health and Medical Care Services Review 1978;1:1.

2. Doyle BJ, Ware JE. Physician conduct and other factors that affect consumer satisfaction with medical care. J Med Educ 1977;52:793.

3. Ben-Sira Z. The function of the professional's affective behavior in client satisfaction: a revised approach to social interaction theory. J Health Soc Behav 1976;17:3.

4. Hulka BS, Zyzanski SJ, Cassel JC, Thompson SJ. Scale for the measurement of attitudes toward physicians and primary medical care. Med Care 1970;8:429.

5. DiMatteo MR, Prince LM, Taranta A. Patients' perceptions of physicians' behavior: determinants of patient commitment to the therapeutic relationship. J Community Health 1979;4:280.

6. Bloom SW. The doctor and his patient: a sociological interpretation. New York: Russel-Sage Foundation, 1963.

7. Hippocrates. On decorum and the physician. Vol 2. English translation by E.H.S. Jones. London: William Heinemann Ltd., 1923.

8. DiMatteo MR. A social-psychological analysis of physician–patient rapport: toward a science of the art of medicine. J Soc Issues 1979;35:12.

9. Alpert JJ. Broken appointments. Pediatrics 1964;34:127.

10. Becker MH, Drachman RH, Kirscht JP. A new approach to explaining sick-role behavior in low-income populations. Am J Public Health 1974;64:205.

11. Francis V, Korsch BM, Morris MJ. Gaps in doctor–patient communication: patients' response to medical advice. New Engl J Med 1969;280:535.

12. Korsch BM, Gozzi EK, Francis V. Gaps in doctor–patient communication. I: doctor–patient interaction and patient satisfaction. Pediatrics 1968;42:855.

13. Svarstad B. Physician–patient communication and patient conformity with medical advice. In: Mechanic D. The growth of bureaucratic medicine. New York: John Wiley and Sons, 1976.

14. Cobb B. Why do people detour to quacks? The Psychiatric Bulletin 1954;3:66.

15. Blum RH. The management of the doctor–patient relationship. New York: McGraw-Hill, 1960.

16. Mechanic D. Medical sociology: a selective view. New York: The Free Press, 1968.

17. Vaccarino JM. Malpractice: the problem in perspective. JAMA 1977;238:861.

18. Gray PG, Cartwright A. Choosing and changing doctors. Lancet 1953;Dec. 19:1308.

19. Kasteler J, Kane RL, Olsen DM, Thetford C. Issues underlying prevalence of "doctor-shopping" behavior. J Health Soc Behav 1976;17:328.

20. Egbert LD, Battit GE, Welch CE, Bartlett MK. Reduction of postoperative pain by encouragement and instruction of patients: a study of doctor–patient rapport. New Engl J Med 1964;270:825.

21. Janis IL. Psychological stress: psychoanalytic and behavioral studies of surgical patients. New York: Wiley, 1958.

22. Langer EJ, Janis IL, Wolfer JA. Reduction of psychological stress in surgical patients. J Exp Soc Psychol 1975;11:155.

23. Flom PK. Performance in the medical internship. (Abstract.) Dissertation Abstracts International 1971;32(2B):1188.

24. Gough HG, Hall WB, Harris RE. Evaluation of performance in medical training. J Med Educ 1964;39:679.

25. Howell MA. Personality factors in medical performance (Abstract.) Dissertation Abstracts International 1966;27(1B):303.

26. Engel GL. The care of the patient: art or science? Johns Hopkins Med J 1977;140:222.

27. Osler W. The master-word in medicine. In: Aequanimitas with other addresses to medical students, nurses, and practitioners of medicine. Philadelphia: Blakiston, 1904:369.

28. Stiles WB, Putnam SM, Wolf MH, James SA. Verbal response mode profiles of patients and physicians in medical screening interviews. J Med Educ 1980;in press.

29. Friedman HS. Nonverbal communication between patients and medical practitioners. J Soc Issues 1979;35:82.

30. Rosenthal R, Hall JA, DiMatteo MR, Rogers PL, Archer D. Sensitivity to nonverbal communication: the PONS Test. Baltimore: The Johns Hopkins University Press, 1979.

31. Ekman P, Friesen WV. Nonverbal leakage and clues to deception. Psychiatry 1969;32:88.

32. Ekman P, Friesen WV. Detecting deception from the body or face. J Pers Soc Psychol 1974;29:288.

33. Zuckerman M, Hall JA, DeFrank RS, Rosenthal R. Encoding and decoding of spontaneous and posed facial expressions. J Pers Soc Psychol 1976;34:966.

34. Russell JA, Mehrabian A. Evidence for a three-factor theory of emotions. Journal of Research in Personality 1977;11:273.

35. Duncan OD. Socioeconomic index for occupations in the detailed classification of the Bureau of the Census, 1950 (transformed to NORC Scale). In: Reiss AJ, Duncan OD, Hatt PK, North CC. Occupation and social status. Glencoe: The Free Press, 1961:Appendix B, 263.

36. Rosenthal R. Combining results of independent studies. Psychol Bull 1978;85:185.

37. Stouffer SA, Suchman EA, DeVinney LC, Star SA, Williams RM Jr. The American soldier: adjustment during army life. Vol 1. Princeton: Princeton University Press, 1949.

38. Cunningham MR. Personality and the structure of the nonverbal communication of emotion. J Pers 1977;45:564.

39. Haase RF, Tepper DT. Nonverbal components of empathic communication. J Counseling Psychol 1972;19:417.