

The Effectiveness of Intensive Training for Residents in Interviewing

A Randomized, Controlled Study

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Background: Interviewing and the physician-patient relationship are crucial elements of medical care, but residencies provide little formal instruction in these areas.

Objective: To determine the effects of a training program in interviewing on 1) residents' attitudes toward and skills in interviewing and 2) patients' physical and psychosocial well-being and satisfaction with care.

Design: Randomized, controlled study.

Setting: Two university-based primary care residencies.

Participants: 63 primary care residents in postgraduate year 1.

Intervention: A 1-month, full-time rotation in interviewing and related psychosocial topics.

Measurements: Residents and their patients were assessed before and after the 1-month rotation. Questionnaires were used to assess residents' commitment to interviewing and psychosocial medicine, estimate of the importance of such care, and confidence in their ability to provide such care. Knowledge of interviewing and psychosocial medicine was assessed with a multiple-choice test. Audiotaped interviews with real patients and videotaped interviews with simulated patients were rated for specific interviewing behaviors. Patients' anxiety, depression, and social dysfunction; role limitations; somatic symptom status; and levels of satisfaction with medical visits were assessed by questionnaires and telephone interviews.

Results: Trained residents were superior to untrained residents in knowledge (difference in adjusted post-test mean scores, 15.7% [95% CI, 11% to 20%]); attitudes, such as confidence in psychological sensitivity (difference, 0.61 points on a 7-point scale [CI, 0.32 to 0.91 points]); somatization management (difference, 0.99 points [CI, 0.64 to 1.35 points]); interviewing of real patients (difference, 1.39 points on an 11-point scale [CI, 0.32 to 2.45 points]); and interviewing (data gathering) of simulated patients (difference, 2.67 points [CI, 1.77 to 3.56 points]). Mean differences between the study groups were consistently in the appropriate direction for patient satisfaction and patient well-being, but effect sizes were too small to be considered meaningful.

Conclusion: An intensive 1-month training rotation in interviewing improved residents' knowledge about, attitudes toward, and skills in interviewing.

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Medical interviewing justifiably reigns as the premier skill in medicine (1-4) and is the vehicle for physician-patient interaction and exchange of information in almost all circumstances (3, 4). The interview alone produces the data required for diagnosis more than three fourths of the time, and it establishes more diagnoses than physical examination and laboratory data combined (5-8). Interviewing generates most of the data required for treatment and prevention and is the primary means for transmitting information from physician to patient (4, 9). It also defines the physician-patient relationship, and the quality of the physician-patient relationship influences the quality of the data exchanged (4, 10, 11). Against this background, and with the knowledge that most physicians perform more than 200 000 interviews during their careers (3), it is a matter of national concern in the United States that the interview often gets short shrift (3).

Most medical schools teach at least some interviewing skills (12), but instruction in interviewing receives scant attention in residencies (9, 13-16), despite strong research-based recommendations in favor of such training (13, 17-20). Surveys of internal medicine program directors (14, 21) showed that formal training in interviewing averaged only 5 to 13 hours per year during residencies. This is far less than the 1 month of full-time training that is often recommended (13, 17-20, 22, 23), but educators have few empirical data to guide them with respect to what and how to teach residents in intensive interviewing training programs. A recent literature

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review produced only 12 studies of intensive training programs, and 6 of the 12 had nonexperimental designs (13). Of the 6 with quasi-experimental designs, 4 (17-20) specifically addressed interviewing, interpersonal skills, or the physician-patient relationship and showed positive results, thus supporting a "patient-centered" approach. The other 2 studies (24, 25) did not inform the question (13).

We developed an intensive training program for primary care residents in interviewing and related psychosocial topics in medicine. Using a randomized, controlled study design, we tested two hypotheses: 1) that trained residents, compared with controls, could gain more knowledge, confidence, and skill in gathering data, building relationships with patients, managing somatizing patients, and educating patients and 2) that the patients of trained residents would have greater satisfaction, fewer somatic symptoms, less social dysfunction, less depression and anxiety, and reduced functional disability.

Methods

Participants

We trained 65 medical and family practice residents in postgraduate year 1 and asked them to participate in a study to evaluate the interviewing training program. Thirty-six men and 27 women accepted; 2 residents who were trained refused to participate in the evaluation. Each participant was paid \$100 to participate in the evaluation.

Training Program

As described elsewhere (26, 27), training was experiential and skills oriented and was guided by competency-based (28) objectives that were both learner- and teacher-centered (29, 30). To enhance learning of complex new material, we used the four interviewing models described below. Each model described the step-by-step behaviors needed to efficiently conduct a complex interaction with a patient, placed these behaviors in sequence, and prioritized them.

Basic Patient-Centered Interviewing and Physician-Patient Relationship Model

One of the authors formulated a basic model of the entire interview to serve as an infrastructure that learners could use as a guide (4). The model incorporated a rich body of literature, reviewed elsewhere (4) (a textbook from the American Academy on Physician and Patient is a particularly useful guide for teachers [31]). We restricted our focus to the often unfamiliar patient-centered interviewing process, which places the patient's needs and the

physician-patient relationship first (4), because residents were already relatively skilled with the physician-centered interviewing process aimed at diagnosing disease. The patient-centered process, which was usually used at the start of the interview, was easily learned and was structured so that, with experience, it usually took no more than 3 to 10 minutes.

Other Patient-Centered Interviewing Models

Other interviewing models used the basic patient-centered model and integrated it with additional patient-centered skill areas: 1) interacting with patients who had chronic somatization by using cognitive-behavioral principles developed by one of the authors (32, 33), 2) informing the patient and motivating the patient to take a new course of action (such as losing weight) by using a model developed by one of the authors (34) and others (4, 35-39; Vispoel WP, Chen P. Measuring self-efficacy: the state of the art [Presented paper]. Annual Meeting of the American Educational Research Association; 1990; Boston.), and 3) giving patients bad news by using published approaches (4, 40).

Noninterviewing Training Objectives

This learning experience encompassed several important objectives apart from interviewing skills. It was intended to help residents develop self-awareness of potentially harmful personal reactions (41-43); be able to make accurate neuropsychiatric diagnoses for conditions common in primary care settings (44-48); be skilled with practical psychopharmacology in a medical setting (44); and be skilled in treating anxiety, depression, and chronic somatization in primary care settings (32, 33, 44, 45, 47, 49).

Training took place during a required, full-time, 4-week block rotation, in which three or four residents matriculated at a time. The rotation had a core seminar component and a core supervisory component. Core seminar sessions of 3 hours each took place three times weekly in a private conference room. A brief discussion of the interviewing model (or other objective) was followed by demonstration of and repeated practice with the model through role playing (50). The training allowed residents to achieve significant mastery of new, complex, and often counterintuitive interviewing skills before they tried them with actual patients, and it was designed to foster confidence (30, 51, 52; Tressolini CP, Stritter FT. Medical students' development of self-efficacy in conducting patient education for health promotion: an analysis of learning experiences [Presented paper]. Annual Meeting of the American Educational Research Association; 1992; San Francisco.). Supervisory sessions lasting 3 hours each took place daily and involved inpatient and

outpatient interviews that were observed directly or from prerecorded audiotapes. The focus of the seminar and supervisory teaching sessions was efficient data gathering, emotion handling, patient education, and management of psychosocial and psychiatric problems common in primary care settings. Integrated throughout was a strong emphasis on the development of residents' self-awareness, as detailed elsewhere (4, 41-43). We gave residents a syllabus of required readings and other materials (copies of these documents are available from the authors).

Experimental Procedure

Residents were randomly assigned to receive training either during the first 6 months of postgraduate year 1 (training group) or later in postgraduate year 1, after they served as controls (control group). An effort to assign equal numbers of men and women to the training and control groups was limited by scheduling constraints. Fifteen women and 16 men (16 graduates of international schools and 15 graduates of U.S. schools) served as trainees, and 12 women and 20 men (15 international graduates and 17 U.S. graduates) served as controls. No international graduates were U.S. citizens.

Residents' interviewing skills were assessed through evaluations of audiotaped recordings of outpatient clinic visits (for all residents during all 4 years of the study) and videotaped recordings of simulated patient visits (for the final 49 residents evaluated during the last 3 years of the study). Outpatient interviews were used to assess residents' skills in information gathering only. Adult patients were approached before clinic visits and were asked to participate in the study after being informed that the visit would be recorded and being told about other data-gathering aspects of the study; 11% of patients refused to participate. Interviews and measurements, described below, were obtained between approximately 4 weeks before and 4 weeks after a resident's training rotation (or a similar period for controls). Different patients were interviewed by a resident before and after the training period or control period.

Six women and 10 men, ranging in age from the early 20s to the early 70s, served as paid trained simulated patients. Twenty-eight simulated patient scenarios were constructed to assess the three major interviewing models addressed in the training program: gathering data and establishing a relationship, managing somatization, and informing and motivating patients. Each scenario described the patient's presenting story, social and occupational background, personality, and medical history. Somatization scenarios described patients with physical symptoms for which no organic basis could be found

despite thorough and repeated clinical investigations. Informing and motivating scenarios described patients who needed help in reducing a personal health risk, such as smoking.

Residents were instructed to interview a simulated patient as they would an actual patient; before interviewing simulated patients, they were given the patient's name, age, chief problem, and pertinent history and (in the case of somatizing patients) the results of previous clinical evaluations. They received specific instructions about their interviewing task, depending on the type of patient involved. Residents were to gather information as needed with all patients and to explain symptoms and initiate realistic management plans when a patient presented as a somatizer. For a patient who needed to change a harmful health habit, residents were instructed to help the patient make behavioral changes.

Measurements

Attitudes

We developed a 38-item questionnaire to assess residents' attitudes toward psychosocial skills used in medical care (26). Each questionnaire item was written in three forms to assess confidence in using the skill (self-efficacy), perceived importance of the skill to the success of patient care (outcome expectation), and personal commitment to using the skill (commitment). Five scales were developed for each of the three forms by using factor analysis of the self-efficacy questionnaire; the five scales addressed emotional sensitivity to patients, psychological sensitivity to patients, directive facilitation of the interview, nondirective facilitation of the interview, and recognition and management of somatizing patients. The reliability of measurement scales was estimated by computing Cronbach α coefficients of internal consistency. Coefficient values of 0.70 or more are generally considered satisfactory (53); the values obtained ranged from 0.71 to 0.91.

Knowledge

We developed a 35-item multiple choice test to assess basic knowledge of core topics in psychosocial medicine (26).

Interviewing Skills

The first 15 minutes of 238 interviews with actual patients were evaluated because we were interested in the data-gathering skills that should have been used during that time. For simulated patient interviews ($n = 349$), which were limited to 15 minutes, the total interview was evaluated. Fifteen 11-point rating scales were developed to assess key interviewing behaviors specifically addressed in the training program. Ten items represented behaviors that were

considered characteristic of effective interviewers, regardless of type of interview: encouraging patient responses; allowing the patient to talk; responding to emotions; not completely pursuing biomedical data initially; including psychosocial data initially; not dominating the interview; building rapport; tracking the patient by pursuing topics that the patient has initiated, whether psychosocial or disease-oriented; effectively managing the interview; and being patient-centered. These 10 items were applied to all interviews, actual and simulated. During interviews with simulated patients, four additional rating scales were used to assess each resident's ability to provide information, motivate behavioral change, support patients in the achievement of health-related goals, and manage somatizing patients (when applicable). The fifteenth scale was a rating of the overall quality of the interview. Rating scales were anchored at the upper and lower ends with examples of critical behaviors. For example, the upper end of "encouraging patient responses" had examples such as "uses exploratory questions," "uses echoing," or "uses paraphrasing." Criteria for the lower end of this scale included such examples as "uses directive questions" and "dismisses patient's responses."

Six graduate students in communications or psychology who were experienced in research were trained to serve as raters. Rater-training materials (available from the authors) consisted of a glossary of key terms, a training manual giving examples of behaviors at four different levels of each scale, and a set of 25 scored training tapes of interviews. Two members of the research faculty rated the 25 training tapes independently. Discrepant scores were discussed until an agreement was reached, and gold standard scores were established.

The six graduate student raters were trained in a sequence of steps: recognition of key interview behaviors, assignment of ratings to interview behaviors, review of rating assignments, correction of errors, and re-rating of interviews until agreement with gold standard ratings was reached. Training tapes were used to establish the accuracy and reliability of each rater.

After training, graduate student raters were assigned taped interviews stratified according to study group (training or control), data collection point (before or after the intervention), and interview type (actual or simulated). The purpose of stratification was to remove systematic rater biases from the study results. Raters were blinded to group assignments and data collection points.

Two graduate students independently rated each interview tape. Rater accuracy and inter-rater agreement were assessed periodically by assigning additional training tapes and comparing a rater's scores with the gold standard scores. In some instances, two

raters' scores for the same tape were compared. Large deviations from comparison scores (>2 points) were discussed, and rating criteria were clarified until consensus was reached in order to bring ratings within a 2-point range.

Patient Satisfaction and Well-Being

A patient satisfaction questionnaire developed locally (27), the General Health Questionnaire (GHQ) (54), and the Functional Health Survey (FHS) (55) were administered to patient participants before and after a resident's rotation. Information on patient satisfaction was collected over all 4 years of the study, whereas GHQ and FHS measures were collected over the last 3 years of study; this resulted in 394 patients who contributed information on satisfaction and 203 who contributed information on health status. At each data collection point, patients completed the GHQ and FHS immediately before a medical visit and (in a telephone interview) 3 months after the visit. They completed the satisfaction questionnaire immediately after a visit. The instruments were administered to one set of patients before a resident's rotation and to a different set of patients after the rotation.

The patient satisfaction measure (27) was a 29-item questionnaire with four clearly interpretable independent factors of satisfaction with medical interviews, as indicated by factor analysis: 1) opportunity to disclose concerns, 2) physician's empathy, 3) confidence in physician's abilities, and 4) the visit overall. Cronbach α coefficient reliability estimates for factor scale scores ranged from 0.71 to 0.89.

The GHQ (54) provided estimates of the patient's anxiety, insomnia, social dysfunction, depression, and somatic symptoms. The FHS (55) provided estimates of role limitations and physical limitations. Cronbach α coefficient reliability estimates ranged from 0.86 to 0.94 for the GHQ scales and were 0.77 and 0.79 for the two FHS scales.

Statistical Analysis

Residents had one to four interviews tape recorded at each data collection point for each type of interview (one actual patient and three types of simulated patients). The number of patient satisfaction questionnaires completed for each resident varied from one to six (average, three). The number of patients completing sets of GHQ and FHS questionnaires for each resident varied from one to five (average, two) at each data collection point. Changes in the patient's health status were estimated by subtracting baseline scores from later scores. Measures obtained from patients to assess a resident were averaged at each data collection point for that resident. The scores obtained by the two raters who

Table 1. Analysis of Attitude Questionnaires Completed by Residents

Variable	Post-Test Means*		Difference (95% CI)	P Value
	Untrained Residents (n = 26)	Trained Residents (n = 31)		
Self-efficacy				
Psychological sensitivity	4.9	5.5	0.61 (0.32 to 0.91)	<0.001
Emotional sensitivity	5.3	5.9	0.61 (0.28 to 0.94)	<0.001
Directive facilitation	5.1	5.7	0.67 (0.33 to 1.00)	<0.001
Nondirective facilitation	5.1	5.6	0.55 (0.20 to 0.91)	0.003
Somatization management	4.6	5.6	0.99 (0.64 to 1.35)	<0.001
Outcome expectation				
Psychological sensitivity	6.0	6.1	0.14 (-0.13 to 0.41)	>0.2
Emotional sensitivity	5.5	5.9	0.34 (-0.04 to 0.72)	0.075
Directive facilitation	5.7	5.8	0.18 (-0.19 to 0.54)	>0.2
Nondirective facilitation	5.3	5.7	0.42 (-0.01 to 0.84)	0.055
Somatization management	5.8	6.2	0.40 (0.06 to 0.75)	0.024
Commitment				
Psychological sensitivity	5.9	6.1	0.22 (-0.12 to 0.57)	0.195
Emotional sensitivity	5.5	5.9	0.44 (0.07 to 0.81)	0.022
Directive facilitation	5.7	5.9	0.18 (-0.17 to 0.53)	>0.2
Nondirective facilitation	5.5	5.9	0.46 (0.01 to 0.91)	0.045
Somatization management	5.6	6.2	0.57 (0.16 to 0.99)	0.008

* On a 7-point scale adjusted for pretest scores. Because of missing data, means for outcome expectation and commitment are based on a sample size of 56.

assessed each patient interview were also averaged. When a measure was incomplete for a resident, that measure for that resident was omitted and the data were analyzed with fewer participants.

The influence of the training program was assessed by analyses of covariance; a pretraining measure served as a covariate. Preliminary tests of models that included sex and medical education (a U.S. or an international medical school) as factors showed that the effects of these influences on training were too small to be of interest. All analyses were performed with SAS software, version 6.12 (56).

Results

Knowledge and Attitudes

Knowledge of interviewing and psychosocial medicine was greater among trained residents than among untrained residents at the end of the training period (difference in adjusted post-test mean scores, 15.7% [95% CI, 11% to 20%]).

Adjusted post-test means and differences for attitude measures are shown in **Table 1**. At the end of the training period, trained residents expressed more favorable attitudes toward interviewing and psychosocial medicine than did untrained residents. The training group effect was especially clear for feelings of self-confidence (self-efficacy) with respect to the performance of interviewing skills. Trained residents expressed greater confidence in their abilities to be sensitive to patients' psychological (difference, 0.61 points on a 7-point scale [CI, 0.32 to 0.91 points]) and emotional concerns (difference, 0.61 points [CI, 0.28 to 0.94 points]), to directly (difference, 0.67 points [CI, 0.33 to 1.0 points]) and

nondirectively (difference, 0.55 points [CI, 0.20 to 0.91 points]) facilitate communication, and to manage somatization problems (difference, 0.99 points [CI, 0.64 to 1.35 points]).

Interviewing Patients

Interview rater accuracy was evaluated by comparing ratings of training tapes with gold standard ratings, and interview rater consistency was evaluated by comparing ratings of training tapes to ratings of other raters. The mean accuracy value (absolute deviation from standard) ranged from 0.87 points to 1.37 points on an 11-point scale, depending on the interview behavior. The mean inter-rater consistency value (absolute deviation between paired raters' ratings), computed in the same way, ranged from 0.70 to 0.98 points when inter-rater discrepancies were corrected and from 0.73 to 1.83 points when inter-rater discrepancies were not corrected. The results indicate acceptable levels of rater accuracy and consistency.

Means and 95% CIs for interview behaviors are shown in **Tables 2 and 3**. At the end of the training period, trained residents interviewed simulated patients and actual patients more skillfully than untrained residents did. For example, trained residents more often responded effectively to patients' expressions of emotions with actual patients (difference, 2.33 points on an 11-point scale [CI, 1.01 to 3.64 points]), simulated patients who enacted data-gathering scenarios (difference, 3.35 points [CI, 2.31 to 4.38 points]), and simulated patients who enacted somatization management scenarios (difference, 2.42 points [CI, 1.53 to 3.31 points]). In addition, with both actual and simulated patients, trained residents pursued psychosocial information more often and were

more patient-centered (Tables 2 and 3). Differences between trained and untrained residents were clearer and more consistent in interviews with simulated patients than in interviews with actual patients. Ratings of overall interview quality were higher for trained residents with actual patients (difference, 1.39 points on an 11-point scale [CI, 0.32 to 2.45 points]), in data gathering with simulated patients (difference, 2.67 points [CI, 1.77 to 3.56 points]), in informing and motivating patients (difference, 1.73 points [CI, 0.63 to 2.83 points]), and in managing somatization (difference, 2.75 points [CI, 1.65 to 3.86 points]). Trained residents were not expected to pursue biomedical data more often than untrained residents, and no statistically significant difference was seen for this variable.

Patient Satisfaction and Well-Being

Patients seen by trained residents after the training period expressed slightly greater satisfaction with medical visits than did patients seen by untrained residents, and they had greater measured physical and psychological well-being. However, the differences were too small to be statistically or practically significant. For example, on the patient satisfaction scale, patients of trained residents were only slightly different from those of untrained residents with respect to confidence in the physician (difference, 0.13 points on a 5-point scale [CI, -0.05 to 0.30 points]) or general satisfaction (difference, 0.13 points [CI, -0.07 to 0.33 points]). Similarly, on the GHQ, the greatest difference seen between trained and untrained residents (possible range, +3 to -3) occurred with somatic symptoms and was miniscule (difference, 0.16 points on a 7-point scale [CI, -0.06 to 0.386 points]) ($P = 0.14$).

Discussion

Use of a randomized, controlled study design enabled us to distinguish the effects specific to train-

ing from the more general effects of residency training (57). Trained residents, whom we believe were representative of a primary care resident population, improved in knowledge about, positive attitude toward, self-confidence in, and skills in interviewing patients, dealing with physician-patient relationships, managing somatization, and educating patients. Data on our secondary hypotheses about the effects of residents' training on patient outcomes, although consistently in the predicted direction, were not statistically significant.

Four findings suggest that the data on gains in interviewing skills have considerable generalizability. First, gains occurred in both male and female residents. Second, gains were unrelated to whether the resident was a graduate of a U.S. or an international medical school. Third, gains were seen in interviews of both actual and simulated patients. Fourth, gains occurred in three different kinds of interviews with simulated patients: data gathering and establishing a relationship, informing and motivating patients, and managing somatization.

Not surprisingly, the mean scores with actual patients were lower than the mean scores with simulated patients. Not only was a performance factor (desire to do well in a situation specifically designed for testing) likely to be operating with the simulated patients, but more control was also possible. Simulated patients were specifically trained to present residents with an opportunity to perform all aspects of the interviewing models and to test the residents' maximal skill levels. Actual patient interviews provided a sense of what was used in addition to how well it was used. Because actual patients were usually residents' own patients, more variation was present in the amount of information already known by the resident and in the reasons for the medical visit. The fact that responding to emotions, eliciting psychosocial data, and being patient-centered were the strongest effects with actual patients suggests that importance was attached to these skills and

Table 2. Ratings of Residents' Data-Gathering Skills in Interviews with Actual Patients

Variable	Post-Test Means*		Difference (95% CI)	P Value
	Untrained Residents (n = 27)	Trained Residents (n = 28)		
Encourages responses	5.5	5.9	0.42 (-0.44 to 1.28)	>0.2
Allows talking	6.5	7.2	0.68 (-0.08 to 1.43)	0.078
Responds to emotions†	4.0	6.3	2.33 (1.01 to 3.64)	0.001
Pursues biomedical data	7.8	7.1	-0.73 (-1.58 to 0.11)	0.086
Pursues psychosocial data	2.6	4.6	1.94 (0.54 to 3.34)	0.008
Dominates interview	5.1	4.6	-0.44 (-0.94 to 0.05)	0.078
Builds rapport	6.2	6.7	0.51 (-0.08 to 1.10)	0.090
Tracks patient	5.2	6.8	0.61 (-0.10 to 1.31)	0.090
Manages interview	5.5	6.2	0.67 (-0.14 to 1.49)	0.104
Uses patient-centered approach	5.0	6.1	1.16 (0.30 to 2.03)	0.009
Overall rating	4.2	5.6	1.39 (0.32 to 2.45)	0.011

* On an 11-point scale adjusted for pretest scores.

† This item was rated only when patients mentioned an emotion that should have elicited a response; 40 participants were rated on this item.

Table 3. Ratings of Three Types of Interviewing Skills with Simulated Patients

Variable	Data-Gathering Skills				Informing and Motivating Skills			
	Untrained Residents* (n = 19)	Trained Residents* (n = 22)	Difference (95% CI)	P Value	Untrained Residents* (n = 14)	Trained Residents* (n = 13)	Difference (95% CI)	P Value
Encourages responses	6.0	8.5	2.54 (1.92 to 3.17)	<0.001	5.7	6.7	1.00 (0.03 to 1.98)	0.045
Allows talking	6.6	8.3	1.72 (0.94 to 2.50)	<0.001	6.4	6.3	0.38 (-0.45 to 1.22)	>0.2
Responds to emotion†	4.5	7.9	3.35 (2.31 to 4.38)	<0.001	5.3	5.9	0.61 (-0.64 to 1.86)	>0.2
Pursues biomedical data	8.3	8.5	0.16 (-0.43 to 0.76)	>0.2	6.6	6.4	-0.20 (-2.31 to 1.89)	>0.2
Pursues psychosocial data	4.5	7.8	3.37 (1.97 to 4.76)	<0.001	4.5	3.9	-0.59 (-2.97 to 1.78)	>0.2
Dominates interview	5.3	4.5	-0.88 (-1.33 to -0.42)	<0.001	5.9	5.2	-0.68 (-0.04 to -1.32)	0.039
Builds rapport	6.2	7.4	1.17 (0.63 to 1.71)	<0.001	6.4	7.1	0.73 (0.06 to 1.39)	0.034
Tracks patient	6.3	8.2	1.93 (1.07 to 2.79)	<0.001	6.6	7.6	0.95 (0.12 to 1.78)	0.027
Manages interview	6.4	7.9	1.47 (0.71 to 2.22)	<0.001	6.1	7.3	1.24 (-0.09 to 2.57)	0.066
Uses patient-centered approach	5.6	8.2	2.60 (1.75 to 3.45)	<0.001	5.7	6.7	1.03 (-0.19 to 2.24)	0.094
Overall rating	5.2	7.8	2.67 (1.77 to 3.56)	<0.001	5.6	7.3	1.73 (0.63 to 2.83)	0.004
Informs patient‡	-	-	-	-	5.9	7.5	1.56 (0.30 to 2.82)	0.018
Motivates patient‡	-	-	-	-	5.0	7.7	2.65 (1.17 to 4.13)	0.001
Willing to help‡	-	-	-	-	5.1	7.4	2.35 (0.94 to 3.76)	0.002
Manages somatization	-	-	-	-	-	-	-	-

* Values given are post-test means on an 11-point scale adjusted for pretest scores.

† This item was rated only when patients mentioned an emotion; thus, 39 residents were rated for this item on data-gathering skills; 17 were rated for this item on informing and motivating skills; and 32 were rated for this item on managing somatization skills.

‡ Only 26 residents were rated for this item because of missing data.

that they were valued and used. This is especially gratifying because these skills are central to establishing relationships with patients.

Unfortunately, considerations of cost and imposition on residents' time precluded our obtaining quantitative follow-up data on skill use. However, an extensive qualitative evaluation of the long-range effect of our training, conducted by one of the authors, showed that the value of interviewing skills to residents and the use of these skills by residents increased during the 3 to 5 years after training (58).

One limitation of our study was its low power to detect the effects of residents' training on their patients. Scatterplots indicated that residents' patients were not very emotionally distressed or physically limited; this may have contributed to the failure to show much effect on patient outcomes. A second factor that weakened the evaluation of training effects on patients was the tendency of patients to rate their satisfaction with nearly all physicians as very high; this may have been due to self-selection. Another limitation was that our satisfaction measures concerned only physician-patient factors and therefore may have missed other determinants of satisfaction, such as the convenience of appointments, waiting times, and parking (a "halo effect"). The generalizability of the study is also limited because measures of residents' learning were obtained in situations in which the residents knew that they were being studied and that their patients were being assessed; this could have enhanced performance. In addition, data collection was incomplete for some measures for several reasons, none of which would be expected to bias the results. For some measures, data collection began some time after the start of study. In other instances, patients

could not be recruited at both data collection points for a particular resident, patients or residents failed to fill out questionnaires, scorable events did not appear in a particular resident's simulated patient interview, or it was impossible to schedule a simulated patient interview for a resident. Finally, some "contamination" of controls by trained residents undoubtedly occurred and could have reduced the observed effects of training.

Reports of others' experience with this model of interview training are needed. Evaluation of other forms of intensive training, such as training for an equal number of hours distributed over an entire year rather than concentrated in 1 month, also merits consideration. We believe that the interviewing models and other material can be easily adapted to longer periods. We also propose that the basic patient-centered (and physician-patient relationship-centered) interviewing model was the major factor producing our positive results. As the most important and most proximate skill, it received by far the most attention and was also integrated into the other models. For programs with less time available for teaching interviewing, the data support a focus restricted to the basic patient-centered interviewing model. Because, in many respects, the expertise expected of residents is similar to that of other learners in patient-centered interviewing, the study provides a basic data-based patient-centered interviewing model for students, faculty, and persons in continuing medical education. Study of each group, however, is needed to confirm this. In addition, we discourage an isolated focus on models other than the basic model unless learners have previous, demonstrated mastery of basic patient-centered interviewing.

McWhinney, Engel, Feinstein, and others (59-

Table 3 Continued

Managing Somatization Skills			
Untrained Residents* (n = 18)	Trained Residents* (n = 15)	Difference (95% CI)	P Value
6.2	7.5	1.29 (0.38 to 2.20)	0.007
6.3	7.4	1.13 (0.40 to 1.86)	0.004
5.2	7.6	2.42 (1.53 to 3.31)	<0.001
7.0	6.0	-0.97 (-2.21 to 0.27)	0.12
6.4	6.9	0.51 (-0.88 to 1.91)	>0.2
5.3	5.2	-0.08 (-0.72 to 0.56)	>0.2
6.3	7.5	1.22 (0.47 to 1.98)	0.002
6.2	7.9	1.65 (0.79 to 2.51)	0.001
6.0	7.5	1.59 (0.53 to 2.64)	0.005
6.1	7.8	1.69 (0.64 to 2.74)	0.003
5.0	7.7	2.75 (1.65 to 3.86)	<0.001
-	-	-	-
-	-	-	-
-	-	-	-
2.2	6.0	3.80 (1.80 to 5.81)	0.001

68) have argued that if medicine is to advance as a unique science, clinicians must take the lead and redefine the science of medicine around the personhood of the individual patient. To accomplish this, we are challenged to develop better methods and better models. Inui and Carter (57) make explicit that, to be successful, these methods and models must have a solid empirical base.

Our study, building on recent advances (59, 60, 69-74), shows that patient-centered methods of interviewing (described by the models) can be made behaviorally specific, systematic, user-friendly, and efficient. As we disseminate more refined and consistent patient-centered clinical methods, we can encourage the personhood of the individual patient to re-emerge in clinical medicine. We will thus increase the applicability and utility of working concepts, such as the biopsychosocial model (61, 75), that integrate determinants of health and disease extending from molecular to physiological to psychological to societal. We can better operationalize these concepts by addressing more explicitly the processes by which they are identified and through which they operate. In so doing, we face formidable challenges. This study, by providing data-based interviewing models, is one attempt to shift the paradigm of medicine in the desired direction (61, 75, 76).

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