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Physician and Patient Communication Training in Primary Care: Effects on Participation and Satisfaction

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Objective: To assess the effects of a communication skills training program for physicians and patients. ***Design:*** A randomized experiment to improve physician communication skills was assessed 1 and 6 months after a training intervention; patient training to be active participants was assessed after 1 month. Across three primary medical care settings, 156 physicians treating 2,196 patients were randomly assigned to control group or one of three conditions (physician, patient, or both trained). ***Main Outcome Measures:*** Patient satisfaction and perceptions of choice, decision-making, information, and lifestyle counseling; physicians' satisfaction and stress; and global ratings of the communication process. ***Results:*** The following significant ($p < .05$) effects emerged: physician training improved patients' satisfaction with information and overall care; increased willingness to recommend the physician; increased physicians' counseling (as reported by patients) about weight loss, exercise, and quitting smoking and alcohol; increased physician satisfaction with physical exam detail; increased independent ratings of physicians' sensitive, connected communication with their patients, and decreased physician satisfaction with interpersonal aspects of professional life. Patient training improved physicians' satisfaction with data collection; if only physician or patient was trained, physician stress increased and physician satisfaction decreased. ***Conclusion:*** Implications for improving physician-patient relationship outcomes through communication skills training are discussed.

Keywords: physician-patient communication, communication skills training, outcomes

Effective physician-patient communication has been associated with patient outcomes (Franks et al., 2006), including satisfaction with care, adherence to treatment, and improved health status (Hall & Dornan, 1988; Hall, Roter, Milburn, & Daltroy, 1996; Stewart, 1995). Research has identified many elements of effective technical and interpersonal exchange in the physician-patient relationship, including verbal and nonverbal communication, empathy and patient-centered care, patient counseling, efficient transmittal of information, rapport, and informed collaborative choice and patient involvement (Frosch & Kaplan, 1999; Kaplan, Greenfield, Gandek, Rogers, & Ware, 1996). Effective communication is associated with better physical and functional health outcomes among patients with diabetes, for example, likely because of links to patient adherence and improved chronic disease self-management (Heisler, Bouknight, Hayward, Smith, & Kerr, 2002). Patient involvement and participation in care, as well as question-asking, information exchange, and shared decision-making, are significantly correlated with some patient outcomes, particularly when these are encouraged by physicians (Haywood, Marshall, & Fitzpatrick, 2006; Heisler et al., 2002; Street, Gordon, Ward, Krupat, & Kravitz, 2005). Although patients vary considerably in the information they provide, and physicians vary in their responses to patients' communication, requests for information, and desire to be active participants in their care (Heisler et al., 2002; Levinson, Kao, Kuby, & Thisted, 2005), patients tend to be more satisfied and experience fewer symptoms and health problems when they are able to have their needs for information met (Kravitz et al., 2002).

Recently, health psychologists and medical educators have sought to determine how best to teach communication skills to physicians and medical students in order to improve the process and quality of

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patient care (Brown, Boles, Mullooly, & Levinson, 1999; McGlynn et al., 2003). Many training programs have been developed and evaluated, and the assessment of physicians' communication skills has recently been added to medical board certification (Duffy et al., 2004). Among medical students and oncology health care providers, communication and relationship skills are improved with structured feedback about performance, small group discussions, and rigorous, personalized communication skills training (Smith et al., 2007; Fellowes, Wilkinson, & Moore, 2004; Merckaert, Libert, & Razavi, 2005). There is mixed evidence from both psychological and medical training literatures, however, on the relevant outcomes and the pattern of gains associated with training, with some research showing a steady increase in communication skills after training (Smith et al., 1991), and other work suggesting improvement in skill but a decline in empathy (Fallowfield, Jenkins, Farewell, & Solis-Trapala, 2003). Research on consolidation of skills learned in training suggests that effects can be even stronger over time than immediately following training (see, e.g., Delvaux et al., 2005; Razavi et al., 2003).

Several important questions about communication training remain unanswered. Communication training for medical patients has received far less research attention, although teaching patients to participate effectively in the medical visit has been shown to improve their satisfaction, participation, question-asking, adherence, and health outcomes and reduce health care disparities (Cegala, McClure, Marinelli, & Post, 2000; Greenfield, Kaplan, & Ware, 1985; Post, Cegala, & Miser, 2002). There is no empirical evidence about whether trained physicians and patients would complement each other or instead show problematic interactions and create "conflict" in the system. Further, outcomes of physician and patient training that go beyond patient satisfaction, such as patients' perceptions of control and choice, physicians' satisfaction with the medical visit, and physicians' professional satisfaction and stress, are essential to examine. Related research indicates that greater patient involvement, for example, can positively affect physician satisfaction (Thompson, Nanni, & Schwankovsky, 1990).

In the current study it is hypothesized that: (1) compared with the control group, physician training and patient training will each improve information exchange, health behavior counseling, and patient and physician satisfaction with the visit; (2) the effects of physician training may not be immediate (at 1 month), but instead delayed until 6-month follow-up because supervised sessions facilitated consolidation of training with practice; (3) patient training will show positive effects on physician satisfaction and attitudes, although these effects will be weaker than those of physician training (because patients were not followed over time, and their training was relatively brief); and (4) physician and patient training will show a significant interaction effect; outcomes will be worse from training only one member of the dyad compared with training both (and neither, that is, if no training at all occurs).

Method

This experimental study assessed the effects on multiple outcomes of training physicians and patients in communication and partnership skills. These outcomes involved patients' perceptions of information-giving, health behavior counseling, choice, decision-making, and overall satisfaction; and physicians' practice stress, life satisfaction, and satisfaction with the medical visit; as well as global ratings of the physician-patient interaction.

Participants

Physicians. This study involved 156 physicians from three primary care specialties (obstetrics/gynecology, family medicine, internal medicine) practicing at a west coast university medical center (93 physicians), a Department of Veterans Affairs (VA) clinic (5 physicians), and a staff model HMO (58 physicians); 37% were women, and 44% were residents. Study data were collected from 1996–1998. Their ages ranged from 25 to 78 (M = 37.3 years, SD = 10.1 years) and they held the MD for between 3 and 56 years (M = 11.6 years, SD = 10.0 years). Each physician saw an average of 14 study patients (range = 5–19 patients), up to eight at each of three time periods. The medical facilities and practices in the study experienced varying degrees of restructuring and downsizing during the time of the study.

Patients. This research involved 2,196 patients in interaction with the 156 recruited physicians: 1,382 (63% of total; 47.5% were men) at the university medical center, 72 (3% of total; 87.2% were men) at the VA clinic, and 742 (34% of total, 39% were men) in a primary care clinic in a staff model HMO. The patient sample included 2,196 individuals 18 years and older who had seen an enrolled physician at least once in the past. The patients had known their physicians for varying periods of time (46% for less than 6 months, 20% for 6–12 months, 17% for 1–3 years, and 17% for more than 3 years); 85% were being treated for follow-up of an existing problem and 38% were being seen for a new problem (either alone or in addition to a follow-up).

Participant recruitment. Enrollment and informed consent to participate took place in the waiting or examining rooms as patients waited for their primary care medical appointments. Patients scheduled to see a study physician during a specific clinic session were approached by research staff. Patients were literate and able to communicate in English or Spanish; all study materials were available in both languages and Spanish-speaking patients were included if their physicians were fluent in Spanish and both the interaction and patient questionnaire were completed in Spanish. Patients in the training condition were offered a token $5 for their participation. The acceptance rate was over 95%, and patients who refused to participate cited concerns about confidentiality, discomfort with audio-taping, and disinterest in a research study. Participating patients signed an informed consent form and were assured that they could withdraw at any time. Each visit was audio-tape recorded with participants' consent, and patients filled out a postvisit questionnaire at the clinic or mailed it back in a postage-paid envelope. Immediately after the visit, physicians filled out a postvisit satisfaction questionnaire assessing their interaction with the patient. Physicians also filled out an attitude questionnaire at three points in time: baseline (Time 1), 1 month after completing 3 months of training (Time 2), and 6 months after completion of training (Time 3). Physicians were not compensated for their participation, but received communication training at no cost. Physicians assigned to the control condition were also provided with communication training after the study was completed. The study received approval from the Institutional Review Boards at the three health care organizations and a west coast university, which was the site of data analyses.

Randomization and design. Physicians who volunteered for the study were randomized into one of four experimental treatment groups in a fully crossed 2 × 2 between-subjects analysis of variance (ANOVA) design with 39 physicians and their patients

not trained (control group), 41 physicians (but not their patients) trained, 38 physicians whose patients (but not the physicians) were trained, and 38 physicians who, along with their patients, were trained (see Figure 1). Up to eight (different, randomly selected) patients per physician participated at each of three points in time, forming the third (repeated measures) factor and yielding a $2 \times 2 \times 3$ mixed design (Rosenthal & Rosnow, 1991). No physicians who volunteered were excluded, and successive groups of 24 physicians were randomized to one of four conditions (physician trained, patient trained, physician and patient trained, neither physician nor patient trained) using a computer-generated random order. Physician training was delivered in small groups and office data collection depended upon the scheduling of research assistants. On the evening before, or the day of, data collection, a research assistant contacted patients on the assigned physician's schedule to explain the study: consent was obtained and data were collected at the time of appointment. The patients were unique at each time point and the patient training intervention occurred only at Time 2. Thus, patient training and interaction effects are analyzed with a $2 \times 2 \times 2$ design, with a two-level (before and after training) repeated measures factor.

Table 1 presents a description of the physician and patient training programs At baseline, all physicians completed the physician's stress and life satisfaction questionnaire (PSLSQ). The office visits of up to eight patients per physician were tape-recorded, and both patients and physicians completed postvisit satisfaction questionnaires. At Time 2, after completion of 3 months of physician workshops and coaching, physicians completed a second assessment with the PSLSQ, and recordings and questionnaires were collected for another set of up to eight patients. At approximately 6 months after the completion of training (Time 3), a third assessment with the PSLSQ took place, and recordings and questionnaires were collected for a third set of up to eight patients. Physicians had been randomized to the two conditions that included patient training, and thus were aware that their patients would receive training; physicians assigned to the patient training condition had patient training booklets placed in their exam rooms.

Assessment Measures and Ratings of Communication

Study measures, assessing a range of patient and physician outcomes, are described in detail in Table 2. Cronbach's alpha scale reliabilities are reported for the composite scale variables (computed as means of their component variables) at each of the three time points. Origins and references for the patient and physician satisfaction measures, and for the physician attitude items, are provided in Table 2. Ratings of the audiotaped interactions

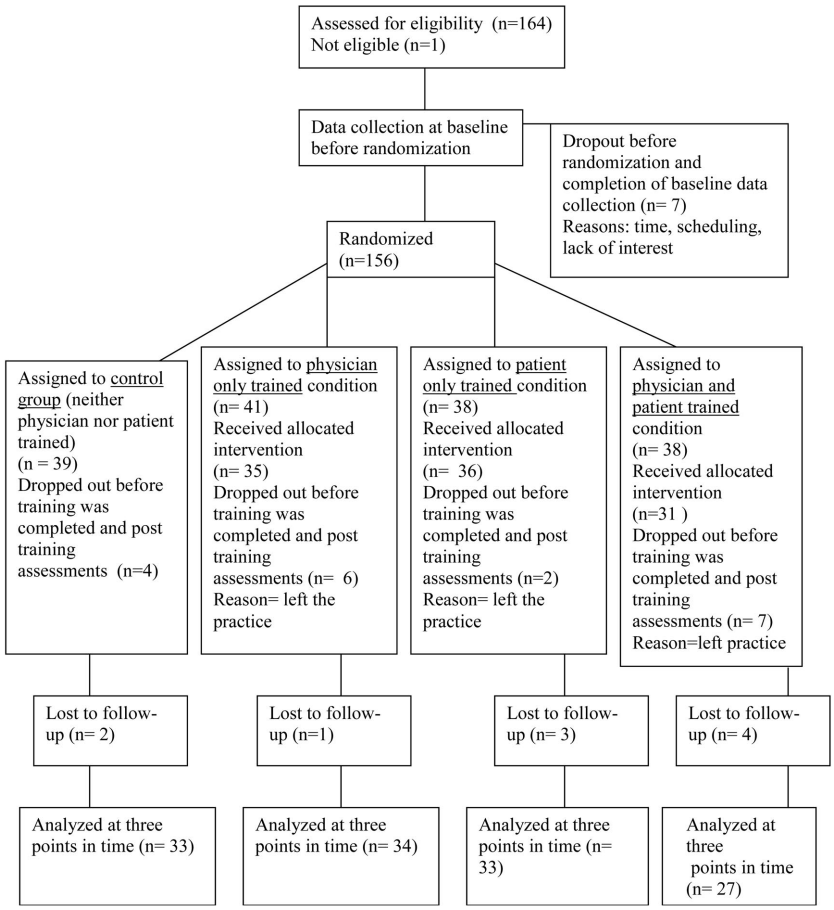

Figure 1. Flow chart of physician participants in the study.

Table 1
Description of Physician and Patient Training Programs

Timing of training	Part 1 description of training	Part 2 description of training
	Physician training[a]	
First month after Time 1 (baseline) assessment	6-hr interactive workshop focusing on the following core communication skills in healthcare: engaging; empathizing; educating patients of diagnosis, prognosis, and treatment; and enlisting patients in mutually agreed upon treatment plans (Keller & Carroll, 1994)	30–45-min coaching session that involved the following: 1) review of a "routine" audiotaped patient visit, and 2) additional tapes on the following topics: communicating with terminally ill patients, informed consent, health beliefs, improving adherence, and working with patients with alcohol and nicotine dependence
Second month after Time 1 assessment	6-hr interactive workshop focusing on the following concepts: patient adherence, enhancing patients' health lifestyles, reducing health risk behaviors, and building confidence and conviction in patients to make health behavior changes (Keller & White, 1997)	30–45-min coaching session that involved review of an audiotaped patient visit involving the issue of patient behavior change and receiving a copy of *Motivational Interviewing* (Miller & Rollnick, 1991)
Third month after Time 1 assessment	6-hr interactive workshop focusing on the following concepts: sources and nature of interpersonal difficulties between clinicians and patients, recognizing and assessing tension in relationships, acknowledging problems, discovering meaning, showing compassion, setting boundaries, and helping patients find additional support (Kemp-White & Keller, 1998)	30–45-min coaching session that involved review of a "difficult" interaction audiotaped patient visit and receiving a copy of *Conversation Repair* (Platt, 1995)
	Patient Training[b]	
Preceding Time 2 assessment	20-min waiting room previsit intervention involved listening to audio CD with accompanying patient guide book focusing on planning and organizing concerns and questions for physician and encouragement to discuss treatment choices, negotiate best plan, repeat their understanding of the plan, follow-up of care with their physician, asking questions about medications, tests, procedures, and referrals	NA

[a]Workshops were developed by the Institute for Healthcare Communication (IHC) (previously the Bayer Institute for Health Care Communication), a non-profit foundation dedicated to enhancing the quality of health care through improved clinician-patient communication. The initial program, *Clinician Patient Communication to Enhance Outcome* (*CPC*), is the original "core" clinician-patient communication program developed by the IHC. Developed in 1986 after an extensive literature review and needs assessment, it was built around a new model of clinician-patient communication, the "4E Model" (Engage, Empathize, Educate, and Enlist) (Keller and Carroll, 1994), which includes key clinician-patient communication competencies detailed in the Kalamazoo Consensus Statement (Makoul, 2001). The other two workshops were designed to build on and deepen the core competencies developed in the first workshop and all were designed to be interactive and involve reflective exercises, role-play, and video case examples. [b]The patient training program was designed to complement the physicians' training in skills and techniques related to key health care communication variables by encouraging patients to be active partners in their health care. Findings of past researchers have indicated that brief patient waiting room interventions do not have the level of effect on outcomes such as adherence to treatment or participation as longer patient training programs with work booklets received several days prior to the visit (Cegala, Marinelli, & Post, 2000; Cegala, McClure, Marinelli, & Post, 2000). However, these data were collected prior to publication of these influential papers and the most effective methods of training were still in the process of development.

were made with the Physician-Patient Global Rating Scale, developed using methods discussed in Rosenthal (2005) and the nine dimensions of global affect rating used in the Roter Interaction Analysis System and widely used in the literature (e.g., Cooper et al., 2003). Global rating (in contrast with behavioral coding) was chosen in this study because past research on experimenter effects has found that global/molar judgments and ratings (e.g., of experimenter affect) show higher validity than do coded measurements (e.g., number of experimenter gazes at a participant) (Rosenthal, 1966, 2005). Ratings assess affective communication directly, and do not require judges to make inferential leaps from behavioral signals to their meaning.

Statistical Analysis

In order to assess physician training effects, each dependent variable was analyzed with a 2 × 3 ANOVA design as described above (physician trained × time). Because patients were trained and assessed only at Time 2 (and were different from patients at Time 3 who had no training), the effects of patient training and the physician training × patient training interaction were analyzed at only two points in time (baseline vs. Time 2) using a 2 × 2 × 2 (physician trained × patient trained × time) ANOVA design. For all analyses except the PSLSQ, mean scores across all patient visits for each physician (up to eight per time period) were computed; physicians' scores on PSLSQ were single measures at each period of time. Conducting analyses of each dependent variable at the "physician level," using mean scores, provided stable estimates of physician performance across all patient interactions within a time period and comprised a "random effects model" test of the hypotheses of this study. The random effects model allows generalization of the results to all physicians in the population

Table 2
Training Outcome Measures

Name of measure	Items[a]	Cronbach's alpha (baseline/time 1, time 2, and time 3)
Patient satisfaction (four individual items and three composite scales)		
Physician Information-Giving (six-item scale) (Heisler et al., 2002)	Physician told you everything, let you know test results, explained treatment alternatives, included you in treatment decisions, explained side effects of medications; told you what to expect	.95, .96, .69
Individual Items (three items)	Rating of overall care, recommend doctor to a friend (DiMatteo, Taranta, Friedman, & Prince, 1980), prefer doctor to other doctors	
Patient perceived decision-making (three-item scale) (Kaplan et al., 1996)	Physician asked you to: take responsibility for your treatment, help make decisions; physician gives some control over treatment decisions	.74, .85, .73
Patient choice (four-item scale) (Heisler et al, 2002)	Physician offered choices in your medical care, discussed the pros and cons, asked preferred choice, took preferences into account	.96, .98, .94
Patient report of physician counseling (five individual items)		
Individual items (five items)	Physician provided in the past four months: weight loss counseling, exercise counseling, counseling with life stress, counseling to quit smoking (if needed), counseling to quit drinking alcohol (if needed)	
Physician satisfaction questionnaire (seven individual items; four composite scales; 20-item total scale) (Suchman et al., 1993)		.89, .92, .92
Individual items (seven items)	Physician: visit very satisfying, felt adequately trained and confident, conducted a detailed physical examination, had enough time to care for the patient, understood what the patient wanted to say, wanted aspects of the physician-patient relationship to change; Patient: understood the physician's explanations	
Satisfaction with physician-patient relationship (four-item scale)	Patient: personable, trusted the physician, influenced by the physician; physician and patient established rapport	.75, .80, .83
Satisfaction with data collection process (three-item scale)	Physician felt he/she obtained enough detail regarding: the patient's problems and symptoms, history, and psychological condition	.71, .74, .71
Satisfaction with use of time in the visit (three-item scale)	Physician was satisfied that: the visit was necessary, challenging and not boring, and time was well spent	.67, .79, .80
Satisfaction with Patient (three-item scale)	Physician was satisfied that: the patient did not demand attention, did not complain; wanted to spend more time with the patient	.73, .81, .82
Physician stress and life satisfaction (six individual items and three composite scales)		
Individual items (six items)	Satisfaction with the interpersonal aspects of professional life; the degree to which: personal or professional stress is a problem, practice makes the physician feel good about himself/herself, the physician thinks about leaving clinical practice; rated morale; the quality of the physician's family life	
Satisfaction with the management and functioning of their office practice (eight-item scale)	Work situation; support staff; scheduling, clinical guidelines; provision of urgent care; primary care management after referral; time to spend with each patient; degree of personal autonomy	.85, .88, .71
Rating of overall quality of life (five-item scale)	Work, family, daily routine, leisure time, general life enjoyment	.89, .88, .87
Stress (three-item scale)	I feel: stressed out in current job, more stressed than others; stress level interferes with ability to deliver quality care	.75, .64, .60
Physician-patient global rating scale subscales (14 items)[b]		
Physician connected-sensitive communication (three-item composite)	Physician: connected with the patient as a person; is sensitive to potential communication problems, acknowledges them and facilitates repair; overall rating of communication	.90, .90, .91
Physician informative and participatory (five- item composite)	Physician was informative, shared control and power with patient, invited patient to share their understanding, and to participate in decision making, and was empathic with the patient	.94, .93, .92
Patient active (four-item composite)	The patient took initiative and introduced the agenda, asked the doctor questions, was an active participant in discussion, understood what to do or was able to get clarification	.91, .85, .87
Physician-patient interaction (two-item composite)	This was a collaborative relationship with a two-way conversation, and involved discussions of prevention and health promotion	56, .58, .66

Note. Cronbach's alpha reliabilities are reported only for scale variables.
[a]All items were rated on a 1–5 scale (e.g., 1 = strongly disagree, 5 = strongly agree; 1 = poor, 5 = excellent, or 1 = definitely no, 5 = definitely yes, and 5 = every visit, 1 = never for the physician counseling items). Approximately half of the items in each scale were worded in a negative direction in order to avoid acquiescence response set and, for those items, scoring was reversed. [b]Two groups of raters completed ratings of approximately 2,000 audio-taped interactions, from all three time points. An initial group of 10 raters assessed the entire corpus of interactions (each rater rating a subset of about 200 interactions). A second set of 28 raters rated the entire corpus of audiotapes (each rater assessing a subset). All ratings were *Z*-scored "within rater" to equate individual rater variability in use of the rating scale.

from which this sample of 156 physicians was drawn. (By contrast, analyses done at the interaction level would have over 2,000 degrees of freedom, but would be fixed-effects model analyses and allow generalization only to patients of these particular physicians.)

The effect of physician training was assessed by its interaction with Time (three level within-physician factor) using one-degree-of-freedom contrasts. Significant interaction effects would reflect differences in these contrast effects for the trained versus untrained physicians. Two such contrasts were tested, each representing a predicted effect: (1) Linear trend (linear contrast weights: −1, 0, +1), which assessed a progressive increase in the dependent variable over time, and (2) combined contrast (contrast weights: −1, −3, +4) constructed by combining a linear and quadratic according to recommended methods (Rosenthal, Rosnow, & Rubin, 2000) assessing a general trend upward in the dependent variable, but with an initial decrease followed by a substantial increase. An initial decrease in communication skills of physicians is predicted because it is expected that communication training can initially upset physicians' patterns of interaction with their patients, but after practicing and consolidating their communication skills, their outcomes improve substantially. These contrast weights, means, and resulting L-scores indicate both direction and size of predicted differential effects for trained versus untrained physicians across three points in time (Rosenthal, Rosnow, & Rubin, 2000). Example interpretations of contrasts and L-scores accompany the tables in which the results are presented. The effects of patient training were assessed by comparing only two points in time (baseline and Time 2) according to the training design in a 2 × 2 × 2 (physician training × patient training × baseline/Time 2) ANOVA. Interaction effects of physician and patient training with the variable time address the differential effects of training one versus both parties to the interaction. Since patients were trained at Time 2, interaction effects are relevant only at Time 2.

All effects that reach at least the $p < .05$ level of significance are reported and interpreted; however, "borderline significant" effects of $p < .10$ are included in an appendix (available upon request from the corresponding author). Any measures listed in Table 2 that are not included in the tables, text, or appendix did not reach borderline significance.

Results

Physician Training

Patient satisfaction. The following findings are shown in Table 3: Physician training resulted in a significant and notable linear increase in patients' perceptions of their physicians' explanations and information-giving. The contrast testing the combined linear and quadratic prediction (the "combined contrast") demonstrated an initial drop in ratings of physicians' information-giving after baseline and then a dramatic increase in patient perceptions of physician information-giving at Time 3 (see Table 3 for L scores). Physician training improved patient satisfaction with "overall care" (the linear time × physician training interaction). A linear improvement as a result of training also occurred in patients' willingness to "recommend their physician to a friend."

Patient reports of physician counseling. Training significantly improved physicians' health behavior counseling of their patients. Table 3 shows that although sample sizes were reduced because patients responded only about counseling that was relevant to them, physician training resulted in significant mean increases in four of five types of health behavior counseling. The combined contrasts (all significant) show that physician training influenced an initial drop in health behavior counseling at Time 2 (1 month after training), followed by a substantial increase at Time 3 (6 months after training).

Physician satisfaction with the visit. Physician training had an effect on some measures of the Physician Satisfaction Questionnaire (Suchman, Roter, Green, & Lipkin, 1993) (see Table 3). Of these five composites, none showed a significant effect. Of seven individual Physician Satisfaction Questionnaire items (not part of the subscales, but part of the total scale), one showed a significant linear effect such that physician training significantly increased physicians' reports of conducting sufficiently "detailed physical examinations" with their patients.

Physician stress and life satisfaction. In Table 3, both linear and combined contrasts show that physician training brought about a *reduction* in physicians' "satisfaction with the interpersonal aspects of their professional lives," while satisfaction stayed constant for the untrained physicians. There were no effects of training on physicians' "rated morale" (which, for all conditions, was close to the midpoint of 4 on the 1–7 scale [$M = 4.28$, $SD = .12$]). There were no significant effects of training on physicians' overall work-related quality of life.

Global ratings. In Table 3, the linear contrast shows that when physicians were trained, their connected-sensitive communication improved slightly in contrast to that of the untrained physicians, for whom this measure was reduced considerably over the course of the study. The other three rated composites showed no significant effects.

Patient Training and Interaction of Physician Training and Patient Training

Patient training effects were analyzed with 2 × 2 × 2 ANOVAs; there were no significant main effects of patient training on patient satisfaction questionnaire items or on PSLSQ items. When patients were trained, their *physicians' satisfaction* with the data collection process increased, time × patient training: $F(1, 131) = 9.84$, $p = .002$, $r = .26$ [.09, .41]; means: trained Time 1 = 3.58, trained Time 2 = 3.68, not trained Time 1 = 3.75, not trained Time 2 = 3.67; *L* scores: trained: .10, not trained: −.08).

The effects of the interaction of physician and patient training are shown in Table 4. Of the five composite scores of the physician satisfaction questionnaire, one showed a significant interaction effect. When only one person (the physician or the patient) was trained, physician satisfaction was lower (than when both were trained, and lower than the control group with neither trained). When only one was trained, physicians were also less likely to want aspects of the physician-patient relationship to change, and had a relative increase in stress compared to the effect when both were trained and even when no training at all was offered (the control group) (see Table 4). Thus, our hypothesis was supported only for physician satisfaction and stress, not for global ratings and patient perceptions.

Table 3
Significant Effects of Contrasts Testing the Effects of Physician Training (i.e., Interaction of Physician Training by Time)

Name of measure	DT means (raw scores) T1	DT means (raw scores) T2	DT means (raw scores) T3	DNT means (raw scores) T1	DNT means (raw scores) T2	DNT means (raw scores) T3	*F* test of linear contrast *L* scores (−1, 0, +1) for physician trained versus not trained	*F* test of combined contrast *L* scores (−1, −3,+4) for physician trained versus not trained[a]
Physician information-giving scale[b, f]	4.24	4.25	4.50	4.29	4.29	4.34	$L_{DT} = .26$, $L_{DNT} = .05$ $F(1, 123) = 4.76$; $p = .032$, $r = .19$ [.01,.35]	$L_{DT} = 1.03$, $L_{DNT} = .20$ $F(1, 123) = 5.65$, $p = .019$, $r = .21$ [.03, .37]
Rating of overall care[b]	4.39	4.38	4.55	4.43	4.36	4.40	$L_{DT} = .16$, $L_{DNT} = -.03$ $F(1, 123) = 4.40$, $p = .038$, $r = .19$ [.01, .35]	NS
Recommend doctor to a friend[b]	4.49	4.46	4.66	4.53	4.39	4.52	$L_{DT} = .17$, $L_{DNT} = -.01$ $F(1, 123) = 4.23$, $p = .042$, $r = .18$ [.004, .34]	NS
Weight loss counseling[c]	2.34	2.43	2.82	2.46	2.91	2.45	NS	$L_{DT} = 1.65$, $L_{DNT} = -1.40$ $F(1, 82) = 5.62$, $p = .020$, $r = .25$ [.04, .44]
Exercise counseling [c]	2.45	2.46	2.96	2.44	2.83	2.57	NS	$L_{DT} = 2.01$, $L_{DNT} = -.67$ $F(1, 87) = 5.62$, $p = .020$, $r = .25$ [.04, .43]
Counseling To quit smoking[c]	2.42	1.99	3.36	2.77	2.96	2.44	$L_{DT} = 1.04$, $L_{DNT} = -.19$ $F(1, 48) = 4.47$, $p = .040$, $r = .29$ [.01, .52]	$L_{DT} = 5.04$, $L_{DNT} = -1.92$ $F(1, 50) = 14.53$, $p < .001$, $r = .47$ [.23, .66.]
Counseling to quit drinking alcohol[c]	1.58	1.25	2.89	2.36	2.58	2.32	NS	$L_{DT} = 6.2$, $L_{DNT} = -.82$ $F(1, 29) = 10.18$, $p = .003$, $r = .51$ [.19, .73]
Physician satisfaction: Conducted a detailed physical examination[d]	3.55	3.70	3.72	3.74	3.65	3.65	$L_{DT} = .17$, $L_{DNT} = -.09$ $F(1, 120) = 8.71$, $p = .004$, $r = .26$ [.09, .42]	NS
Satisfaction with the interpersonal aspects of professional life[e]	3.84	3.79	3.45	3.54	3.57	3.58	$L_{DT} = -.39$, $L_{DNT} = .04$ $F(1, 122) = 7.63$, $p = .007$, $r = .24$ [.07, .40]	$L_{DT} = -1.40$, $L_{DNT} = .08$ $F(1, 122) = 6.26$, $p = .014$, $r = .22$ [.05, .38]
Physician connected-sensitive-communication[g]	−.03	.05	.03	.03	−.05	−.12	$L_{DT} = .06$, $L_{DNT} = -.15$ $F(1, 123) = 4.03$, $p = .047$, $r = .18$ [.004, .34]	NS

Note. L_{DT} = L score for doctor training; L_{DNT} = L score for doctor not trained; T1 = time1/ baseline, T2 = 1 month post baseline and T3 = 6 months post baseline. Because each analysis was done to test a hypothesized effect, a Bonferroni correction to adjust for multiple comparisons was not necessary (Rosenthal, Rosnow, & Rubin, 2000).

[a]The combination contrast combines and includes equal parts of the linear and quadratic contrast. [b]Patient satisfaction questionnaire item or scale. [c]Individual items relating to patient report of physician counseling. [d]Physician satisfaction questionnaire individual item. [e]Physician stress and life satisfaction individual item. [f]The L scores for the linear trend show us that over the course of three time points, when physicians were trained, their patients felt they were given more information and the prediction was supported (the L score for physician trained was larger than it was for physician not trained). The combined contrast shows a significantly larger L score for trained physicians than for untrained physicians, supporting the prediction of a time 2 drop below time 1 levels and a substantial increase at time 3. [g]Physician-patient global rating scale composite. This variable is a *z* score.

Table 4
Significant Interactions of Linear Contrast Testing the Effects of Physician and Patient Training by Time

Name of measure	None trained means (raw scores)		PT means (raw scores)		DT means (raw scores)		Both trained means (raw scores)		*F* test of linear contrast L scores (−1, 1, 0) for Physician and Patient Trained versus Not Trained
	T1	T2	T1	T2	T1	T2	T1	T2	
Physician satisfaction with patient[a]	3.56	3.78	3.67	3.66	3.62	3.57	3.61	3.60	$L_{NONE} = .22$, $L_{PT} = -.01$, $L_{DT} = -.05$, $L_{BOTH} = -.01$ $F(1, 131) = 4.09$, $p = .045$, $r = .17$ [.003, .33]
Physician wanted aspects of the physician-patient relationship to change[a]	3.45	3.50	3.51	3.44	3.56	3.41	3.43	3.59	$L_{NONE} = .05$, $L_{PT} = -.07$, $L_{DT} = -.15$, $L_{BOTH} = .16$ $F(1, 131) = 6.75$, $p = .010$, $r = .22$ [.06, .37]
Degree to which personal or professional stress is a problem[b]	2.94	2.73	3.06	3.03	2.63	2.83	2.68	2.48	$L_{NONE} = -.21$, $L_{PT} = -.03$, $L_{DT} = .20$, $L_{BOTH} = -.20$ $F(1, 131) = 4.33$, $p = .039$, $r = .18$ [.01, .34]

Note. PT = patient trained; DT = doctor trained; L_{NONE} = doctor not trained, patient not trained; L_{PT} = doctor not trained; patient trained; L_{DT} = doctor trained, patient not trained; L_{BOTH} = L scores when both doctor and patient were trained; T1 = baseline, T2 = one month post-baseline. Bonferroni comparisons to adjust for multiple comparisons were not done, although they would have been done had unexpected results that were very contrary to study hypotheses been obtained (Rosenthal, Rosnow, & Rubin, 2000).
[a]Physician satisfaction questionnaire composite scale or individual item. [b]Physician stress and life satisfaction item or scale.

Discussion

With a randomized experiment, this study assesses the outcomes of training physicians and patients to communicate effectively with each other in the primary care visit. This unique design has allowed the assessment of both main and interaction effects of both forms of training in short term follow-up, as well as the effects of physician training in the longer term (6 months after training). A large cohort of 156 physicians provided adequate power to test the statistical hypotheses with a robust and generalizable random effects model. Dependent variables included patients' reports of choice and control in decision-making, commitment to the therapeutic relationship, and ratings of their physicians' instrumental communication (information, explanations) and lifestyle/health behavior counseling. This study also assessed physicians' stress, quality of life, job satisfaction, and experiences of medical visits before and after training. Availability of both physician and patient evaluations was particularly important given evidence of differing perspectives on the medical visit (DiMatteo, Robinson, Heritage, Tabbarah, & Fox, 2003). Results in some cases are straightforward and clear, yet in others, complex interaction effects raise important questions about the results of communication training. Overall, physician training improved physicians' information-giving and lifestyle health-behavior counseling, and increased patients' quality of care ratings and their willingness to recommend the physician. Training also increased physicians' satisfaction with the physical exam in the medical visit. Effects on communication as measured in audiotaped ratings demonstrated that physicians' connected and sensitive communication improved as a result of training.

Training had complex and surprising effects on physicians' experiences of the medical visit, their practices, and quality of life. Physicians' satisfaction with the interpersonal aspects of their professional life *decreased* significantly more among trained versus untrained physicians, possibly as a result of increased demands (both actual and perceived) associated with training delivered at a time of significant organizational strain at each study site. Alternatively, training may have changed physicians' standards for their interpersonal interactions with patients, sensitizing them to the complexities of effective communication. Thus, while in the eyes of their patients training improved physicians' behavior, it may have done so at some cost to the physicians. Training patients to participate and to be better communicators had far fewer effects which were limited to just one aspect of *physician* satisfaction with the medical visit—patient training increased physicians' satisfaction with the data collection process. The limited findings may have been a function of the brevity of patient training.

Training both physicians and patients had complex effects on physicians' satisfaction and stress. Interaction effects reflected a relative increase in stress and decrease in physician satisfaction when only one, either physician or patient, was trained. This might suggest that unless both are trained, it is better to train neither than to train only one member of the dyad. It is possible that this result reflects uncontrolled factors related to reorganization at the practice sites; training may not have directly influenced stress but instead provided more or less protective effects from organizational stress. Physicians' expectations for their patients may have affected the experiment because physicians were aware of their patients' training. The study design allowed the measurement of interaction effects only at Time 2, just after the completion of 3 months of training, and thus did not assess the interaction after physicians had time to consolidate their communication skills.

Research on communication skills training has generally shown that physicians do become more confident in their communication

skills as a result of training (Fallowfield, Lipkin, & Hall, 1998; Gagnon, Lefort, & Demers, 1994). The present study is the first to examine both physicians' and patients' perspectives on the medical visit after physician and patient training, and to assess the personal effects on physicians' stress, and practice satisfaction. The findings here suggest that physician training does indeed improve physicians' communication in the medical visit, particularly from the perspective of patients, but that training may introduce some pressures on physicians. Although we do not have direct measures to assess this interpretation, trained physicians may have recognized more acutely than ever the limitations in their established interactional patterns with their patients, as well as the challenges inherent in changing one's communication style. The time demands of training (i.e., three 6-hr training sessions, 3 follow-up coaching sessions) and the emotional demands of personal change may have contributed directly to feelings of stress. Training did have some protective effects on physicians, but these were more complex to sort out than the obvious improvements in patients' satisfaction with and perceptions of the medical visit. This research does underscore the importance of measuring broad-based outcomes of psychosocial interventions in medical care delivery; although extremely important, patient satisfaction is only one of many important outcomes.

The current findings show that our understanding of the effects of physician training at both short-term and long-term follow-up is best facilitated by the planned combined (linear and curvilinear) contrast (−1, −3, +4) which reflects a skewed [√: New symbol 252 is added]-shaped upward trend. This contrast tested the hypothesis that there would be an initial *decrease* in communication performance among trained physicians, followed by a substantial improvement at the 6 month posttraining evaluation. Results indicated, for example, that enhanced counseling demonstrated only at longer term follow-up may have resulted from physicians' consolidation and application of their counseling skills learned in the training program and greater opportunity by later follow-up patients to have experienced counseling during the 6 months after physicians' received their training. Although research addressing such a trend is lacking in the physician training literature, a similar trend has been found with patients attempting emotional and behavioral change with the help of psychotherapy. In the clinical literature, for example, it is commonly noted that psychotherapy can require many sessions before a client can begin to address, and ultimately to resolve, therapeutic and interpersonal issues. Developing new insights and learning new skills may initially disturb equilibrium in the early stages of change, but may later be followed by more rapidly accelerating improvements (Aronson & Weintraub, 1968). The communication performance of physicians in the current sample actually decreased immediately following communication skills training, but when reassessed 6 months later, physicians exhibited considerable improvement in communication skills and health behavior counseling, perhaps as a result of a skill-consolidation effect. Given the challenges of resource allocation to, and physician acceptance of communication skills training, both short- and long-term follow-up should be included in studies of the effectiveness of training over time.

There are several limitations to this research. This study was conducted in the western United States, where patterns of care may differ from other areas, and the physician communication training used here was resource-intensive. The dependent variables were predominantly, although not exclusively, self-report. Further, although similar patient activation interventions have been found to be effective in previous studies (Greenfield et al., 1985; Kaplan, Gandek, Greenfield, Rogers, & Ware, 1995), the patient training intervention was limited to a single 20-min session, at one point in time, and patient training effects were not consistently detected. In addition, patients were volunteers recruited at the practice sites, and past research has suggested that volunteers for behavioral research studies may be more educated, have higher occupational standing, greater need for approval, and less rigidity than nonvolunteers (Rosenthal & Rosnow, 1991). Another limitation of note is the speculated effect of restructuring and downsizing within the study sites on outcomes measured in this study. Specifically, the HMO site involved in this study filed for bankruptcy before the study was completed. As a result, many physicians left the practice and others were forced to take on new patients from the departing physicians' panels. These events could have affected the continuity of physician-patient relationships, patient satisfaction, and the professional satisfaction and stress of physicians. Although the extent to which this situation affected outcomes measured in this study is unknown, it is important to exercise caution in interpreting the study's findings.

In an effort to go beyond self-reports, the present study included a set of simple global ratings of physician and patient behavior in the audio-tape recordings of the medical visit. Future work will include more detailed analyses of these recordings, examining in depth the effects of training on the process of communication, empathy, rapport, nonverbal synchrony, and extralinguistic vocal cues, and will utilize analyses of verbal communication and conversation (Roter & Hall, 1992). Future work will examine cultural factors and the differential effects of training due to physician gender, age, ethnicity, and practice experience, and patient gender, age, physical and mental health status, pain, and socioeconomic status in an effort to identify the role of communication training in reducing health care communication disparities and improving health care for all patients (Cooper-Patrick et al., 1999; Hall et al., 1996).

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