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Physician Training in Self-Efficacy Enhancing Interviewing Techniques (SEE IT): Effects on Patient Psychological Health Behavior Change Mediators

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Abstract

Objective—To explore how **physician** training in self-efficacy enhancing interviewing techniques (SEE IT) affects patient psychological health behavior change mediators (HBCMs).

Methods—We analyzed data from 131 patients visiting primary care **physicians** ≥4 months after the **physicians** participated in a randomized controlled trial. Experimental arm **physicians** (N=27) received SEE IT training during three ≤20 minute standardized patient instructor (SPI) visits. Control **physicians** (N=23) viewed a diabetes medications video during one SPI visit. **Physicians** were blinded to patient participation. Outcomes were self-care self-efficacy, readiness, and health locus of control (Internal, Chance, Powerful Others), examined as a summary HBCM score (average of standardized means) and individually. Analyses adjusted for pre-visit values of the dependent variables.

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Results—Patients visiting SEE IT-trained **physicians** had higher summary HBCM scores (+0.42, 95% CI 0.07-0.77; p=0.021). They also had greater self-care readiness (AOR 3.04, 95% CI 1.02-9.03, p=0.046) and less Chance health locus of control (-0.27 points, 95% CI -0.50--0.04, p=0.023), with no significant differences in other HBCMs versus controls.

Conclusion—Improvement in psychological HBCMs occurred among patients visiting SEE IT-trained **physicians**,

Practice implications—If further research shows the observed HBCM effects improve health behaviors and outcomes, SEE IT training might be offered widely to **physicians**.

Keywords

continuing professional development; health behavior; interviews as topic; locus of control; motivation; patient engagement; primary care; self-efficacy; stages of change

1. Introduction

Patients struggle with motivation to adopt recommended behavior changes such as following a more prudent diet, increasing physical activity, and improving adherence to prescribed medications [1]. In research studies, patients who visited primary care providers trained in motivational interviewing experienced improvements in selected psychological health behavior change mediators (HBCMs) (e.g., self-efficacy, stage of readiness to change), in turn increasing success with behavior change [2-7]. Developed in the early 1980s for use by clinical psychologists in hour long substance abuse counseling visits [8], and later applied in primary care to address a wider range of behaviors [9-11], motivational interviewing is broad in focus, complex, demanding to learn, and lengthy to use [12-21]. For these reasons, the greatest uptake and success of motivational interviewing in a primary care context has been within the United States (U.S.) Veterans Administration (VA) health system, via a model in which integrated clinical psychologists conduct much of the interviewing and train other providers [22, 23]. Unfortunately, most other health systems face financial and other resource constraints that preclude the use of integrated psychologists [24]. As a result, motivational interviewing has not been adopted more broadly in primary care [25], where visits are brief and the providers rarely have the chance to focus solely on behavior change motivation. Primary care providers and their patients would benefit from the development of more focused, time- and resource-efficient yet effective approaches to behavioral motivation.

We previously described a focused, time-efficient motivational approach called self-efficacy enhancing interviewing techniques (SEE IT), designed specifically for primary care providers to use with patients in brief office visits [26]. The intervention is grounded in self-efficacy theory and overlapping behavioral theories [27-29], and informed by prior interventions shown to bolster putative psychological HBCMs and improve health behaviors and outcomes [30-39]. Standardized patient instructors (SPIs) delivered the training in outpatient visits, scheduled during usual office hours, juxtaposed with real patient visits, an approach that had previously been shown to improve other (non-motivational) provider interviewing behaviors [40, 41]. SPI delivery maximizes the salience and impact of training by allowing providers to immediately practice and assimilate new skills in their regular work

environment, and entails no provider time commitment beyond usual work hours. In two separate randomized controlled trials (RCTs), first resident and then practicing primary care **physicians** who received the intervention increased their use of SEE IT, and had favorable responses to training [26, 42].

Whether patient exposure to SEE IT-trained primary care **physicians** enhances patient self-efficacy and other psychological HBCMs remains unclear. We began to address this question in the current exploratory study. Specifically, we determined the effects of patient exposure to SEE IT-trained practicing primary care **physicians** on five interrelated patient psychological HBCMs: general self-efficacy for self-care, stage of readiness for self-care, and three health locus of control dimensions. We hypothesized that the post-visit HBCM statuses would be more favorable among patients visiting SEE IT-trained **physicians** than among those visiting **physicians** who received an attention control intervention.

2. Methods

We conducted trial activities from January 2013-April 2015. We obtained ethics approval from the University of California Davis (UCD) and Sutter Health Institutional Review Boards.

2.1 Physician training RCT

Details of our RCT of SEE IT training for practicing **physicians** were reported previously [42]. Briefly, we randomized family **physicians** and general internist **physicians** (N=50) from 12 primary care offices in the Sacramento, California area, drawn from the UCD Primary Care Network and Sutter Medical Group. Experimental arm **physicians** (N=27) received training in the use of nine self-efficacy enhancing interviewing techniques (SEE IT) (Figure 1). The techniques were drawn from self-efficacy theory [27], other relevant and overlapping behavioral theories [28, 29], observation of primary care visits [43], and research on self-efficacy enhancement and behavior change [30-39]. Standardized patient instructors (SPI) delivered the training during the **physicians'** regular patient care office hours, over three 20-minute audio-recorded visits. SPIs portrayed patients struggling with self-care behaviors in the first 7 minutes, then came out of patient role to deliver the training, using standard scripts with opportunities for **physicians** to practice using the techniques. Videos simulating the three SEE IT training visits are available at: http://bit.ly/1HuSNgN (visit 1); http://bit.ly/1K7EX7K (visit 2); and http://bit.ly/1M613ai (visit 3). Control arm **physicians** (N=23) received their training in a single SPI visit, analogous to experimental arm SPI visits except that they watched an eight minute video on new medications for Type 2 diabetes (summarizing a peer-reviewed article) after the SPI came out of patient role [44, 45].

2.2 Patient recruitment and enrollment

We enrolled patients for the current study from the same 12 primary care offices that participated in the **physician** training RCT [42]. From office visit schedule reports provided to us by the participating offices, research assistants telephoned patients who were: 1) aged ≥18 years; 2) had an assigned primary care **physician** who had participated in the trial; and

3) had an office visit scheduled in ≤4 weeks with a trial **physician** who had fully completed their participation ≥4 months previously. For patients reached by telephone who confirmed meeting initial eligibility criteria and expressed interest in participating, a research assistant conducted scripted screening of the following additional eligibility criteria: self-reported ability to read and speak English and to see and use hands well enough to complete a self-administered questionnaire on a touch screen notebook. Initially, two additional inclusion criteria were employed: a medical record diagnosis of diabetes (any type) and the presence of significant depression symptoms, defined by a Patient Health Questionnaire (PHQ-9) score of 10 or greater [46]. However, when it proved difficult to identify patients with concurrent diabetes and significant depression symptoms, these two criteria were removed.

Patients who met all eligibility criteria and tentatively agreed to participate were asked to arrive 30 minutes before their scheduled visit. This allowed the patients enough time to complete informed consent as well as a pre-visit questionnaire on a touchscreen notebook before seeing the **physician**. The **physicians** were blinded to patient participation, and neither the questionnaire nor in-office study personnel sought to influence visit content or process. Immediately after completing their **physician** visit and before leaving the office, patients completed a post-visit questionnaire on a touchscreen notebook.

2.3 Measures

2.3.1 Psychological health behavior change mediators (HBCMs)—The study psychological HBCM measures were administered both pre- and post-visit. We used the validated eight-item Perceived Medical Condition Self-Management Scale to measure general self-care self-efficacy [47], with some wording modifications intended to reduce ambiguity and facilitate understanding among lower literacy respondents. The measure employed a 5-point response scale (1=strongly disagree to 5=strongly agree), with *lower* scores indicating *higher* self-efficacy. Example items included “I do not believe my plans for managing my health conditions will work out well” and “I am sure I can handle myself well with respect to my health conditions” (reverse coded prior to scale scoring). Cronbach's alpha in this sample was 0.94.

We measured stage of readiness for self-care of health conditions in general using a modification of a previously validated single-item measure [48]. Given our focus on mediators of *future* health behavior change, patients were asked to select one of three response options, reflecting pre-contemplation, contemplation, and preparation stages, respectively (no action or maintenance response options).

We measured three dimensions of health locus of control, each with a different six-item scale from the general Multidimensional Health Locus of Control (MHLC) measure. The three dimensions were Internal (the sense that health is determined largely by one's own actions), Chance (the sense that random external factors and events largely determine health), and Powerful Others (the sense that health is largely determined by others, particularly health professionals) [49]. Items in all of the scales employed a 6-point response scale (1=strongly disagree to 6=strongly agree), with higher scores indicating higher standing on the health locus of control dimension being measured. Example items include, “If I get sick, it is my own behavior which determines how soon I get well again” (Internal

subscale); “Luck plays a big part in determining how soon I will recover from an illness” (Chance subscale); and “Regarding my health, I can only do what my doctor tells me to do” (Powerful Others subscale). There are two “Forms” of the general MHLC measure (MHLC-A and MHLC-B), which differ slightly in item wording but not in item focus. As recommended by the measure developers [49], to minimize potential untoward effects of repeat administration within a short time period, we used the MHLC-A pre-visit and the MHLC-B post-visit. Cronbach's alpha for the MHLC as a whole in this sample was 0.68.

2.3.2 Other Measures—Other pre-study visit measures were included to describe the baseline characteristics of the patient sample. Socio-demographic characteristics measured included age in years; sex; ethnicity (Hispanic or not); race (White, Black, Asian, or Other), highest level of education (some high school [did not graduate], high school graduate, some college [did not graduate], college graduate, or any graduate level education); annual household income in United States dollars (<$20,000, $20,000 to <$35,000, $35,000 to < $75,000, $75,000 to <$125,000, or ≥$125,000); and health insurance type(s) (private, Medicare, and/or Medi-Cal [California's Medicaid program]). Several health indicator variables were also measured. Patients were asked to indicate (yes/no) whether they had any chronic health conditions, from a list of 23 conditions: hyperlipidemia, hypertension, coronary artery disease, other heart disease, kidney disease, stroke, arthritis, connective tissue disorder, fibromyalgia, vision problem, hearing problem, neurological disorder, human immunodeficiency virus infection/acquired immune deficiency syndrome, urine incontinence, chronic sequela of birth defect, alcohol or drug problem, asthma, other lung disease, liver disease, other gastrointestinal disease, thyroid problem, chronic pain, and cancer. Body mass index (kg/m^2) was determined from the most recent height and weight recorded in the patient's electronic medical record. Depression symptoms were assessed with the PHQ-9 measure (score range 0-27, higher scores=more depression symptoms) [45]. We also recorded the patient's health system (UC Davis or Sutter) and the specialty of the study visit primary care **physician** (family medicine or general internal medicine).

2.4 Analyses

Data analyses were conducted using Stata (version 14.1, StataCorp, College Station, TX). The analyses included all patients who had completed pre- and post-visit data for the five study HBCMs (self-efficacy, stage of readiness, and Internal, Chance, and Powerful Others locus of control). To facilitate reader interpretation we present the effects of patient exposure to SEE IT-trained **physicians** on a summary HBCM score, as well as on each of the five component HBCM scales. Behavioral theory did not offer clear guidance for developing the composite outcome, since the study HBCMs and their underlying constructs derive from distinct (albeit somewhat overlapping) psychological traditions [27-29]. Thus, we standardized the scores on each of the five component scales, weighted each equally, and derived the summary HBCM score by averaging the means. Finally, the summary score was standardized to a mean of 0, standard deviation of 1. Thus, parameter estimates for effects on the summary score approximate Cohen's d effect sizes [50]. A generalized estimating equation approach was used in all analyses, to adjust for nesting of patients among **physicians**. We employed linear regression to model the effects on all of the HBCMs except stage of readiness, for which we employed ordinal logistic regression. All analyses were

adjusted for the baseline (pre-visit) value of the dependent variable by including it as a covariate.

3. Results

Figure 2 depicts the flow of patients through the study. The mean PHQ-9 score in the study sample was 14.1. Fifty-nine patients (45%) reported some current treatment for depression, 35 (59%) of whom were taking antidepressant medication. Table 1 summarizes patient characteristics by trial arm. The two study arms were generally well-matched on measured patient characteristics, with the exception that mean age and percentage of those reporting chronic health conditions were both higher in the control arm. A total of 131 patients (66 experimental arm, 65 control arm) had complete pre- and post-visit HBCM data and were included in the analyses.

Table 2 shows the unadjusted pre- and post-visit values of the five study HBCMs and the composite HBCM score. The standardized composite HBCM score increased from pre- to post-visit in the experimental arm but decreased in the control arm. Regarding the component HBCM measures, in both groups there was a pre- to post-visit shift toward higher stages of readiness, more Internal health locus of control, and less Chance health locus of control, but with larger shifts in the experimental arm. By contrast, general self-care self-efficacy improved and Powerful Others locus of control increased to roughly similar degrees in both arms from pre- to post-visit, while Chance locus of control decreased only in the experimental arm.

In an adjusted regression analysis, as compared with patients who visited control **physicians**, patients who saw SEE IT-trained **physicians** had higher adjusted mean post-visit standardized composite HBCM scores (parameter estimate 0.42, 95% CI 0.07-0.77; p=0.021). In further regression models examining the five component HBCMs separately, as compared with controls, experimental arm patients were more likely to have a higher stage of readiness for self-care (adjusted odds ratio 3.04, 95% CI 1.02-9.03, p=0.046) and less Chance health locus of control (-0.27 points, 95% CI -0.50- -0.04, p=0.023) post-visit. Experimental arm patients did not differ significantly from controls in post-visit scores for self-care self-efficacy (+0.08 points, 95% CI -0.12-0.29; p=0.40), Internal health locus of control (+0.15 points, 95% CI -0.05-0.36; p=0.14), and Powerful Others health locus of control (-0.04 points, 95% CI -0.28-0.20; p=0.75).

4. Discussion and Conclusion

4.1. Discussion

In exploratory analyses from a RCT, we found that patients visiting primary care **physicians** who four or more months previously had received training in the use of brief, focused SEE IT had more favorable post-visit scores on a composite measure of five psychological HBCMs. Further, in analyses examining the five HBCMs individually, the improvement in the composite score appeared to be driven primarily by increased stage of readiness for self-care and reduced Chance health locus of control (the sense that random external factors and events largely determine health).

To our knowledge, no prior studies of primary care **physician** training in motivationally-oriented interviewing skills training examined effects on all of these HBCMs; our varying findings across the HBCMs underscore the value of this approach. The findings provide partial support for our *a priori* hypotheses, and expand upon our previous work showing that SPI-delivered SEE IT training is valued by both resident and practicing primary care **physicians** and increases their use of the techniques in brief office visits with standardized patients [26, 42]. Nonetheless, our patient findings are preliminary in nature, since the patient component of our study was explicitly exploratory, examining effects on psychological HBCMs but not actual behavior change or health outcomes. Of note, the parameter estimate of our composite measure, approximating a Cohen's d effect size, was 0.42, generally interpreted to be a moderate effect, and suggesting the potential for impact on behaviors [51]. The generalizability of the findings is also uncertain, given the relatively small patient **and physician** samples, derived from offices in one geographic region. There is now a need for a multi-center RCT of primary care **physician** SEE IT training, involving a much larger patient sample recruited from various regions of the U.S., to confirm its effects on HBCMs and examine its effects on self-care behavior change and health outcomes.

General self-care self-efficacy was enhanced in both study arms from pre- to post-visit, with no significant difference in adjusted post-visit scores between groups. It is unclear why patient exposure to SEE IT-trained **physicians** did not lead to greater self-efficacy enhancement versus control exposure, as we had hypothesized it would. However, one potential reason is that due to resource limitations, we could employ only a single self-efficacy measure, tapping general self-care self-efficacy (i.e., overall confidence in self-managing all health conditions) [47]. This is likely to be relevant because self-efficacy is frequently task-specific [27], and the SEE IT paradigm focuses on targeting a single self-care behavior per visit (Figure 1). An individual may at once have high self-efficacy for certain self-care tasks (e.g., following a prudent diet), low self-efficacy for others (e.g., taking medications as prescribed), and intermediate self-efficacy for others still (e.g., exercising). Exposure to a SEE IT-trained **physician** might enhance self-efficacy for a specific self-care behavior change discussed during the visit, while leaving self-efficacy for other tasks unaffected. Ideally, in a future multi-center RCT of SEE IT training, the actual self-care changes (tasks) discussed during study visits would be solicited from patients in the post-visit questionnaire, and task-specific self-efficacy measures explicitly linked with each change discussed would be presented automatically [51].

Our findings of increased readiness for self-care and reduced Chance health locus of control among patients exposed to SEE IT-trained **primary care physicians** are broadly consistent with prior work indicating greater readiness for behavior change among those with less external control attributions [52-55]. We suspect that patient exposure to the structured, step-by-step approach to behavior change imparted by SEE IT-trained **physicians** (Figure 1) first reduced Chance health locus of control, which then contributed to increased sense of readiness for change. While the converse may also have occurred, this seems less likely, since none of the SEE IT steps is aimed directly at influencing readiness. These hypotheses remain speculative, and require testing in studies designed specifically to tease out the mechanisms of the effects of patient exposure to SEE IT-trained **physicians**. The lack of

effects on Internal and Powerful Others health loci of control in our study was unsurprising in retrospect, since none of the SEE IT aim to influence these HBCMs directly (Figure 1).

Strengths of our study include its conduct in one of the most socio-demographically varied areas in the U.S., facilitating recruitment of a relatively diverse sample of adult patients with a range of health conditions. Our study also had some limitations. Beyond those delineated previously, we did not measure actual use of SEE IT by the **physicians** during the study patients' visits. Doing so would have required audio recording of visits, infeasible due to resource limitations. Still, in the **physician**-focused portion of our study, we established greater use of SEE IT by experimental arm **physicians** in post-intervention standardized patient visits [42]. It seems unlikely that other differences existed between experimental and control arm study visits that could plausibly explain the study findings. Our study design and small patient sample also did not allow us to explore whether the psychological HBCM effects of patient exposure to SEE IT trained **physicians** differed across health conditions or combinations of conditions, or across self-care behavior change (task) categories. These issues could again be addressed in a large multi-center RCT. It is also unclear whether providing SEE IT training to non-physician primary care providers, such as nurse practitioners and physician assistants, would result in similar patient effects. This too will be important to explore in future studies, given work suggesting greater patient effects of motivational interviewing when applied by physicians or psychologists as compared with other personnel [56].

4.2. Conclusion

In conclusion, in an exploratory study, as compared with patients visiting primary care **physicians** who received an attention control intervention, those visiting **physicians** trained in self-efficacy enhancing interviewing techniques (SEE IT) experienced improved scores on a composite of five psychological health behavior change mediator (HBCM) measures and on two of the component measures (stage of readiness for self-care and Chance health locus of control). The findings suggest the potential utility of primary care **physician** training in SEE IT, and support the need for a multi-center RCT to confirm its effects on HBCMs and determine whether they lead to greater success in behavior change and improved health outcomes.

4.3 Practice Implications

If the observed effects on HBCMs are subsequently shown to translate into improved patient health behaviors and outcomes, SPI-delivered SEE IT training might be offered widely to primary care **physicians**. The worldwide dissemination of layperson-led chronic illness self-management programs offers a successful model to emulate, employing “train the trainer” workshops, standardized regional training of lay interventionists, and Internet resources and support [57]. A similar approach could be utilized to accomplish SPI training and other tasks to support wide dissemination of SEE IT.

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Highlights

- We explored patient effects of self-efficacy enhancing interviewing techniques
- Outcomes were self-care self-efficacy, readiness, and health locus of control
- We examined the outcomes as a standardized summary score and individually
- Patients visiting SEE IT-trained **physicians** had an improved summary score
- They also had improved readiness and reduced Chance health locus of control

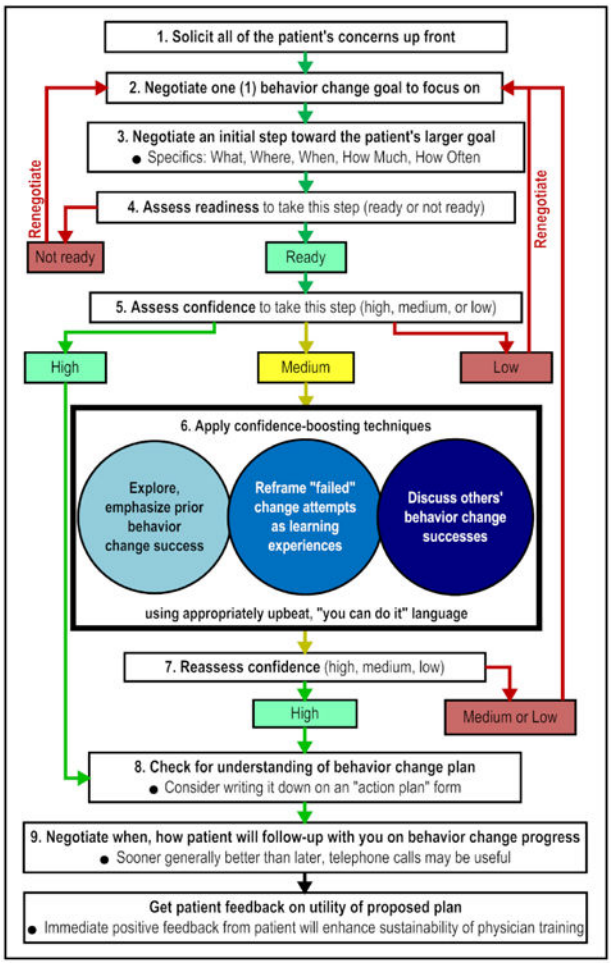

Figure 1.
Study self-efficacy-enhancing interviewing techniques and their presentation sequence

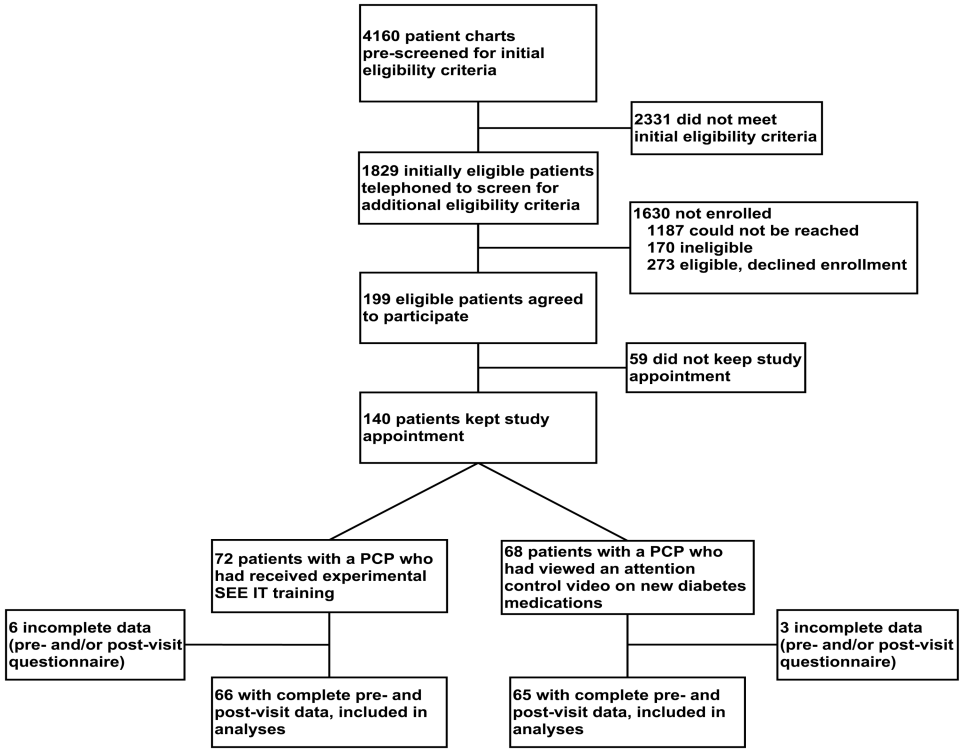

Figure 2.

Flow of participants through the trial. PCP, primary care **physician**; SEE IT, self-efficacy enhancing interviewing techniques

Table 1

Characteristics of Study Patients

Characteristic	Patients visiting physicians who received experimental SEE IT training N=66	Patients visiting physicians who received attention control video N=65	P value, difference between arms
Health system, no. (%)			0.43
UC Davis	38 (58)	33 (51)	
Sutter	28 (42)	32 (49)	
Physician specialty, no. (%)			0.088
Family medicine	59 (89)	51 (78)	
General internal medicine	7 (11)	14 (22)	
Age, mean (SD)	52.3 (16.2)	58.5 (16.6)	0.032
Female, no. (%)	52 (79)	45 (69)	0.21
Race/ethnicity category, no. (%)			0.24
Hispanic (any race)	11 (17)	6 (9)	
Non-Hispanic White	44 (67)	47 (72)	
Non-Hispanic Black	2 (3)	7 (11)	
Non-Hispanic Asian	7 (11)	4 (6)	
Non-Hispanic Other	2 (3)	1 (2)	
Highest education level, no. (%)			0.54
Some high school (did not graduate)	1 (2)	0 (0)	
High school graduate	8 (12)	9 (14)	
Some college (did not graduate)	27 (41)	34 (52)	
College graduate	18 (27)	13 (20)	
Any graduate level education	12 (18)	9 (14)	
Annual household income, U.S. dollars, no. (%)			0.72
<$20,000	6 (9)	7 (11)	
$20,000 to <$35,000	10 (15)	9 (14)	
$35,000 to <$75,000	19 (29)	22 (34)	
$75,000 to <$125,000	25 (38)	18 (28)	
>$125,000	6 (9)	9 (14)	
Health insurance type, no. (%)			
Private	52 (79)	50 (77)	0.80
Medicare	17 (26)	22 (34)	0.31
Medi-Cal (Medicaid)	4 (6)	4 (6)	0.98
Chronic health conditions, mean (SD)	2.4 (2.4)	3.9 (2.4)	<0.001
Any chronic health condition, no. (%)	62 (48)	68 (52)	0.011
Body mass index, mean (SD)	28.0 (7.5)	30.5 (6.7)	0.082
PHQ-9 (depression symptoms) score, mean (SD) (range 0-27)	13.9 (7.3)	14.3 (6.0)	0.74

Abbreviations: PHQ-9, Patient Health Questionnaire (depression); SD, standard deviation; U.S., United States

Table 2

Unadjusted Pre- and Post-Visit Values of the Study Psychological Health Behavior Change Mediators by Study Arm

Measure	Patients visiting physicians who received experimental SEE IT training N=66	Patients visiting physicians who received attention control video N=65
Self-efficacy, mean (SD)[a]		
Pre-visit	2.12 (0.91)	2.12 (0.85)
Post-visit	1.95 (0.93)	1.86 (0.81)
Stage of readiness, no. (%)		
Precontemplation		
Pre-visit	9 (14)	10 (15)
Post-visit	6(9)	8 (12)
Contemplation		
Pre-visit	10 (16)	12 (18)
Post-visit	5 (8)	9 (14)
Preparation		
Pre-visit	43 (68)	43 (66)
Post-visit	55 (83)	48 (74)
Health locus of control dimension, mean (SD)[b]		
Internal		
Pre-visit	4.24 (0.78)	4.23 (0.78)
Post-visit	4.50 (0.63)	4.35 (0.64)
Chance		
Pre-visit	2.69 (0.83)	2.82 (0.82)
Post-visit	2.49 (0.83)	2.84 (0.78)
Powerful Others		
Pre-visit	3.24 (0.76)	3.16 (1.04)
Post-visit	3.66 (0.66)	3.69 (0.83)
Composite psychological HBCM measure, standardized mean (SD)		
Pre-visit	-0.05 (0.95)	0.01 (1.05)
Post-visit	0.18 (0.96)	-0.19 (1.01)

[a] Score range 1-5; *lower* scores = *greater* self-efficacy

[b] Score ranges for all scales 1-6; *higher* scores = *higher* standing on the health locus of control dimension being measured

Abbreviations: HBCM, health behavior change mediator; SD, standard deviation; SEE IT, self-efficacy enhancing interviewing techniques