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Detecting the Effects of Physician Training in Self-Care Interviewing Skills: Coding of Standardized Patient (SP) Visit Recordings versus SP Post-Visit Ratings

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Abstract

Objective—To compare how coder ratings of standardized patient (SP) visit recordings and SP ratings of the visits detect primary care **physician** (PCP) training in self-efficacy enhancing interviewing techniques (SEE IT).

Methods—Analyses of data from 50 PCPs who participated in a randomized controlled trial of SEE IT training, which led to increased SEE IT use during three SP visits 1-3 months post-intervention. Untrained SPs rated SEE IT use post-visit. Subsequently, three trained coders generated a consensus SEE IT rating from visit audio recordings. SPs and coders were blinded to provider study arm, and coders to SP ratings.

Results—SP and coder ratings were correlated ($r=0.62$). In detecting the intervention effect, the areas under the receiver operating characteristic curve were 0.80 (95% CI 0.74-0.87) and 0.76

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Conflict of Interest

The authors declare no conflicts of interest.

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(95% CI 0.69-0.84) for consensus coder and SP ratings, respectively (difference 0.04, 95% CI -0.04-0.11; $z=1.04$, $p=0.30$).

Conclusion—SP ratings were not significantly different from coder ratings of SP visit recordings in detecting PCP SEE IT training.

Practice implications—If similar findings are observed in larger studies, it would suggest a greater role for SP ratings in detecting provider interviewing skills training, given the relative simplicity, low cost, and non-intrusiveness of the approach.

Keywords

area under curve; audio recording; interviews as topic; motivation; predictive validity; primary care; self-efficacy; standardized patients

1. Introduction

Standardized patient (SP) visits are widely utilized to assess health care providers' interviewing behaviors [1]. Absent a gold standard method of measuring interviewing behaviors in SP visits, coding of visit recordings is often regarded as the most optimal approach [2]. Yet few studies have compared coding of visit recordings with other approaches such as post-visit ratings by SPs, and all focused simply on concurrent validity [3-5]. We are unaware of published studies comparing visit coding with other measurement approaches in distinguishing provider training in targeted interviewing skills.

The lack of information regarding the predictive validity of coding SP visit recordings is an important research gap given the practical drawbacks to the method. These include the time and costs of making recordings, and of training coders and having them analyze the recordings or transcripts. Obtaining provider permission to record adds burden to the consent process, and may contribute to selection bias [6]. Also, provider knowledge of visit recording might change some interviewing behaviors [7, 8]. These observations underscore the need for studies comparing coding of SP visit recordings with less intrusive approaches to detecting provider training in targeted interviewing skills.

We employed data from a randomized controlled trial (RCT) to compare how coder ratings of recorded SP visits and SP ratings of the visits distinguished primary care physicians (PCPs) who had been trained in self-efficacy enhancing interviewing techniques (SEE IT).

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 Summary of RCT

We previously reported the details of our RCT of SEE IT training for PCPs [9, 10]. Briefly, we randomized family physicians and general internists ($N=50$) from 12 primary care offices in the Sacramento, California area, drawn from the UCD and Sutter health systems.

Experimental arm physicians (N=27) received training in the use of nine SEE IT “steps,” drawn from self-efficacy theory [11], other overlapping behavioral theories [12, 13], observation of primary care visits [14], and research on self-efficacy enhancement and behavior change [15-24]. Standardized patient instructors (SPIs) delivered the training during PCPs’ regular patient care office hours, over three 20-minute audio-recorded visits. SPIs initially portrayed patients struggling with self-care behaviors, then came out of patient role to deliver the training, using standard scripts with opportunities for providers to practice the techniques. 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 diabetes medications after the SPI came out of patient role [25, 26].

The primary trial outcome was PCP use of SEE IT, assessed during three SP visits 1-3 months post-intervention, each featuring a different “patient” struggling with self-care behaviors. SPs stayed in patient role throughout. Nine individuals were trained to make SP visits, representing both genders and a range of ages, races, and ethnicities. All had prior acting experience, many as SPs. The SPs audio-recorded their visits using pocket digital recorders.

2.2 Measures

The main method of ascertaining physician use of SEE IT (the primary trial outcome) was through coding of audio recordings of the three post-intervention SP visits. Three coders were trained to apply the Doctors’ Observable Use of Self-Efficacy Enhancing Interviewing Techniques (DO U SEE IT) measure, a count of 10 behaviors [9, 27]. Six of the DO U SEE IT items corresponded to SEE IT Steps 1-4, 8 and 9, respectively; three items corresponded to the three sub-behaviors of SEE IT Step 6; and one item assessed both Steps 5 and 7, given their overlap (Appendix). The coders were not informed of the study focus, aims, or PCP group. During their training, the coders first reviewed the DO U SEE IT coding guidebook with the lead author, and then practiced applying the codes to audio recordings of primary care visits made for a prior (unrelated) study. Next, the coders met as a group to review their performance with the lead author, who provided corrective feedback as indicated. This cycle was repeated until each coder demonstrated proficiency.

In coding trial visit recordings, the coders employed a two-step process. In the first step, the coders listened individually to each recording and applied the DO U SEE IT measure, blinded to physician study group and SP ratings (see below). The mean chance-corrected agreement (Fleiss’ kappa) among the three coders per item was 0.60 (range 0.11–0.83, all $P < 0.01$). In the second step, one of the three coders, selected during training to be the master coder (based on performance and interpersonal abilities), facilitated group discussion and reconciliation of inter-coder discrepancies. In the few instances where group consensus on a discrepancy could not be reached, the master coder assigned the final code. The consensus DO U SEE IT scores were employed in the current analyses. Other teams have used similar two-step approaches to code different interviewing behaviors [28-30]. Cronbach’s alpha for the DO U SEE IT measure was 0.94.

As a secondary, exploratory method of assessing PCP use of SEE IT, the trial SPIs and SPs completed a 17-item measure immediately following their visits. Neither the SPIs nor the

SPs received training in how to complete the measure, and the SPs were blinded to the study focus, aims, and PCP group. The SP measure had more items than the coder measure because we considered that as untrained observers, the SPs would benefit from having the broader coder measure items “unpacked” into several items tapping discrete component behaviors, requiring less interpretation and judgment. Six of the SP measure items corresponded to SEE IT Steps 1-5 and 8, respectively; nine items assessed the three sub-behaviors of Step 6 (3 for each of the sub-behaviors); and two items assessed Step 9 (Appendix). Cronbach’s alpha for the measure was 0.89.

In both the coder and SP measures, all behaviors were rated yes/no (demonstrated vs. not), with 1 point assigned for each “yes” response (coder score range 0-10; SP questionnaire score range 0-17). For both methods, the patient role portion of the first experimental group SPI visit and of the sole SPI visit in the control group represented the baseline (pre-intervention) interaction. The three SP visits were the post-intervention interactions.

2.3 Analyses

Data analyses were conducted using Stata (version 14.1, StataCorp, College Station, TX). We first assessed the relationship between the two rating methods using Pearson’s correlation. We then assessed the ability of the two methods to distinguish PCPs exposed to the intervention condition using standard area under the receiver operating characteristic curve (ROC) measures, adjusting for nesting of SPI and SP observations within physicians, employing the user-added command -somersd [31, 32]. We compared the performance of the two measures using a z-test.

3. Results

Of the 52 PCPs participating in the RCT, 50 had complete coder and SP rating data and were included in the analyses. The Table shows the PCPs’ baseline and post-intervention use of SEE IT by study arm, time point, and measure. The correlation between mean consensus coder and SP scores post-intervention was 0.62. The areas under the ROCs detecting the intervention effect were 0.80 (95% confidence interval [CI] 0.74-0.87) for the consensus coder score, and 0.76 (95% CI 0.69-0.84) for the SP post-visit score (Figure). The area under the ROC did not differ significantly between approaches (difference 0.04, 95% CI -0.04-0.11; $z=1.04$, $p=0.30$).

4. Discussion and Conclusion

4.1. Discussion

We found that both SP post-visit ratings and coder ratings of SP visit recordings performed moderately well in detecting physicians who had received training in SEE IT [9, 10], with no significant difference in detection ability between methods. The findings question the need for coder ratings of SP visit recordings to assess physician interviewing behaviors.

Our study had limitations. Generalizability is uncertain, since the trial enrolled PCPs in one United States geographic region, and focused on a small cluster of motivationally-oriented interviewing behaviors. Inter-coder agreement was moderate ($\kappa = 0.60$), potentially

limiting the ability of our coding system to detect PCP training in SEE IT. The coding system employed dichotomous ratings, and so did not capture inter-provider differences in proficiency with targeted behaviors. The coders received training to apply the coding measure, whereas SPs received no training to complete the post-visit questionnaire. Training might enhance the ability of SPs to detect physician training in targeted interviewing behaviors, though it would also increase cost and effort. There is a need for research comparing the distinguishing ability and other psychometric properties of interviewing behavior ratings given by trained versus untrained SPs, involving a range of geographic locations, clinical contexts, provider types, and interviewing behaviors.

4.2. Conclusion

In analyses of data from a RCT, SP post-visit ratings performed as well as coder ratings of visit recordings in distinguishing physicians who had received targeted training in self-efficacy enhancing interviewing techniques.

4.3 Practice Implications

If our findings are replicated in larger samples, across settings, and for other interviewing behaviors, it would suggest a greater role for SP post-visit questionnaires in studies assessing interviewing skills training effects.

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Appendix: Coder and SP Measure Items and Their Correspondence with SEE IT Steps

DO U SEE IT (coder) measure items ^a	SEE IT steps	SP measure items ^a
1) Doctor solicited of all of the patient's concerns	Step 1. Solicit all of the patient's concerns up front	1) Near the start of the visit, the doctor asked me to list all of the things I wanted to discuss
2) Doctor negotiated with the patient to discuss just one behavior change during the encounter	Step 2. Negotiate one behavior change goal to focus on	2) The doctor helped me pick one goal: something I can try to change to improve health
3) Doctor negotiated with patient about making an initial incremental behavior change step to move the patient closer to their larger goal	Step 3. Negotiate an initial step toward the patient's larger goal (what, where, when, how much, how often)	3) We worked together to come up with a first step I can take to move me toward my goal
4) Doctor explored patient readiness for making behavior change	Step 4. Assess readiness to take this step (ready or not)	4) The doctor asked if I feel ready to make the first step we discussed
5) Doctor explored patient self-	Step 5. Assess confidence to	5) The doctor asked if I feel

DO U SEE IT (coder) measure items ^a	SEE IT steps	SP measure items ^a
efficacy or confidence in their ability to take steps toward behavior change	take this step (high, medium, or low) AND Step 7. Reassess confidence	confident I can take the first step we discussed
6) Doctor explored prior behavior change successes achieved by the patient	Step 6. Apply confidence boosting techniques Sub-behavior 1 - Explore, emphasize prior behavior change successes	6) We talked about goals I reached in past
		7) We talked about what I did to reach the goals
		8) We talked about how what I did to reach past goals might help me to reach my current goal
7) Doctor reframed prior “failed” behavior change attempts by patient as learning experiences	Step 6. Apply confidence boosting techniques Sub-behavior 2 - Reframe “failed” change attempts as learning experiences	9) We talked about goals I did not reach in past
		10) We talked about what I learned in trying to reach goals in the past
		11) We talked about how what I learned in trying to reach past goals might help me to reach my current goal
8) Doctor discussed other people’s successes with behavior change	Step 6. Apply confidence boosting techniques Sub-behavior 3 - Discuss others’ behavior change successes	12) We talked about goals other people (friends, family, other patients, etc) have reached
		13) We talked about what those other people did to reach their goals
		14) We talked about how what other people did to reach goals might help me reach my goal
9) Doctor checked for patient understanding of the action plan for behavior change	Step 8. Check for understanding of behavior change plan	15) The doctor checked to see if I understood the first step I am going to take toward my goal
10) Doctor negotiated when and how patient was to follow up with them regarding the progress of their health behavior change	Step 9. Negotiate when, how patient will follow-up with you on behavior change progress	16) We decided together when we would follow-up to see how I am doing with my goal
		17) We decided together about follow-up (office, phone, etc) to see how I am doing with my goal

^aAll items had yes (1 point) or no (0 points) response options. Abbreviations: DO U SEE IT, Doctors’ Observable Use of Self-Efficacy Enhancing Interviewing Techniques; SEE IT, self-efficacy enhancing interviewing techniques; SP, standardized patient

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Highlights

- We trained physicians in self-efficacy enhancing interviewing techniques (SEE IT)
- We compared how coder and SP ratings of SP visits detected SEE IT training
- Coder and SP ratings were strongly correlated
- Both types of ratings performed moderately well in detecting SEE IT training
- There was no significant difference in detection ability between the two approaches

Figure.

Receiver Operating Characteristic Curves for Standardized Patient (SP) and Consensus Coder SP Visit Ratings

ROC, receiver operating characteristic curve; SEE IT, self-efficacy enhancing interviewing techniques; SP, standardized patient

Table

Baseline and Post-Intervention Physician use of SEE IT by Study Arm, Time Point, and Measurement Approach

Measure and time point	Experimental SEE IT training arm N=27	Attention control arm N=23	P value
Consensus coder ratings, mean (SD) ^a			
Pre-intervention (baseline)	0.58 (0.64)	0.87 (0.55)	0.095
Post-intervention SP visit 1	2.81 (1.62)	1.22 (0.67)	<0.001
Post-intervention SP visit 2	2.44 (1.72)	0.91 (0.73)	<0.001
Post-intervention SP visit 3	2.89 (1.89)	1.00 (0.60)	<0.001
SP ratings, mean (SD) ^b			
Pre-intervention (baseline)	1.37 (1.98)	0.87 (1.46)	0.32
Post-intervention SP visit 1	6.81 (2.87)	3.09 (2.59)	<0.001
Post-intervention SP visit 2	7.11 (3.61)	2.83 (3.41)	<0.001
Post-intervention SP visit 3	6.37 (3.79)	3.87 (3.36)	0.018

Abbreviations: SEE IT, self-efficacy enhancing interviewing techniques; SD, standard deviation; SP, standardized patient

^aRatings were derived by consensus among 3 coders (see Methods for details); possible score range 0-10.

^bRatings were assigned by a single SP; possible score range 0-17