

## Assessing Students' Communication and Interpersonal Skills Across Evaluation Settings

Alexander W. Chessman, MD; Amy V. Blue, PhD; Gregory E. Gilbert, MSPH;  
Maura Carey, MA; Arch G. Mainous III, PhD

**Background and Objectives:** *Medical students' interpersonal and communication skills are a fundamental dimension of their clinical competence and will be measured on the anticipated US Medical Licensure Examination (USMLE) standardized patient (SP) exam. We compared students' performance on measures of SP satisfaction on a third-year family medicine Objective Structured Clinical Examination (OSCE) with measures of SP satisfaction on a fourth-year Clinical Practice Examination (CPX).* **Methods:** *A total of 127 students completed both the clerkship OSCE and a CPX. The CPX was a pilot of the National Board of Medical Examiners Standardized Patient Exam. To assess students' interpersonal skills, both exams used modified versions of the American Board of Internal Medicine Patient Satisfaction Questionnaire. Students' scores were standardized, and correlations were calculated. A logistic regression model examined the ability of the OSCE to predict poor performance on the CPX.* **Results:** *The correlation between the OSCE and CPX patient satisfaction scores was .08. There was no significant predictive ability of the OSCE for poor performance on the CPX.* **Conclusions:** *Our study calls into question the ability of a routine end-of-clerkship OSCE to identify students' interpersonal skills abilities on fourth-year clinical performance exams and potentially that component of the anticipated USMLE SP exam.*

(Fam Med 2003;35(9):643-8.)

Medical students' interpersonal and communication skills are a fundamental dimension of their clinical competence. These skills refer to the ability to communicate and interact with patients in a clinical setting.<sup>1</sup> Such skills are often evaluated during the clerkship Objective Structured Clinical Examination (OSCE) or other clinical performance-based examinations that simulate a patient encounter. In these examinations, students interact with a standardized patient (SP) to demonstrate their abilities in history taking, conducting a physical examination, and applying interpersonal and communication skills for providing tasks such as counseling, breaking bad news, etc. Faculty observers, using standardized checklists, may rate the students' performance during these encounters, including the interpersonal and communication skill aspects of their performance.<sup>2-5</sup>

Often, SPs also evaluate and provide feedback to students about their communication and interpersonal skills during the encounter.<sup>1,5-9</sup>

In addition to assessing students' clinical competence during clerkship OSCEs, many US medical schools are now administering fourth-year clinical performance examinations to assess students' clinical skills prior to graduation.<sup>10</sup> These exams also provide an opportunity for the assessment of students' communication and interpersonal skills.

Given the anticipated US Medical Licensure Examination (USMLE) Standardized Patient Examination for all US medical school graduates,<sup>11</sup> assessment of students' clinical competence through clerkship OSCEs and fourth-year clinical performance examinations provides both medical schools and students important evaluation feedback. If students' communication and interpersonal skills improve or decline during the third year, such change could have important implications for students' performance on a fourth-year, high-stakes clinical examination. If third-year performance examinations can predict performance on a fourth-year, high-

---

From the Department of Family Medicine (Drs Chessman and Mainous), Dean's Office and Department of Family Medicine (Dr Blue), and Dean's Office (Mr Gilbert and Ms Carey), Medical University of South Carolina.

stakes exam, then students at risk of failing the USMLE Standardized Patient Examination could be identified and helped prior to the exam.

There are conflicting reports regarding the deterioration of students' communication skills during their training. Helfer et al<sup>12</sup> found that senior students, in contrast to first-year students, acquired less information from mothers of children with serious illnesses about the interpersonal effects of a child's illness on the family and asked more leading questions. Similarly, Scott et al<sup>13</sup> reported that senior students were more directive, used fewer open-ended questions, and were less reassuring, empathic, and supportive than were second-year students. However, Davis and Nicholaou<sup>14</sup> reported that senior medical students were superior to junior medical students on several communication and interpersonal skills performance dimensions, including those associated with empathic and facilitative responses and also in eliciting more relevant information during patient interviews. Davis and Nicholaou suggest that their findings may be related to improved curriculum experiences in communication and interpersonal skills training.

The constancy of students' communication and interpersonal skills during medical school remains unclear. To determine if students' communication and interpersonal skills differ from one clinical performance examination (CPX) setting to another, and from one year to the next, this study compared students' performance on measures of SP satisfaction on a third-year family medicine OSCE with measures of SP satisfaction on a fourth-year CPX.

## Methods

Data for this study were gathered from an end-of-clerkship family medicine OSCE with third-year medical students during the 1999–2000 academic year and a required performance examination (CPX) administered at the beginning of the fourth year. Data were collected for the 130 students who participated in the end of clerkship OSCE and for the 140 students who took the CPX. Complete data on students participating on both clinical assessments were available on 127 (97.7%) of these students. The university's Institutional Review Board approved this study.

### *Family Medicine OSCE*

The family medicine OSCE consisted of six SP encounter stations, each 8 minutes in duration, and one station that did not use an SP. Two of the SP stations required students to conduct a physical examination, and four of the SP stations required students to conduct a medical interview. SPs are paid individuals trained for approximately 2 hours on how to interact uniformly and consistently with students during examination encounters. Additionally, the SP is trained how to complete the Standardized Patient Satisfaction

Questionnaire (SPSQ) that assesses students' communication and interpersonal skills during the encounter. Approximately 16 SPs have been trained for the OSCE.

Faculty observers evaluate students' performances in the SP stations by assessing their completion of tasks and behaviors included on a checklist. Immediately following students' completion of the station task, the faculty observers provided students 7 minutes of instructive feedback about their performance. Students' performance on the OSCE accounts for 25% of their clerkship grade; the faculty members' evaluations count for 15%, and the SPs' evaluation counts for 10% of the OSCE grade.

### *Clinical Practice Examination*

At our school, students must pass the CPX as a requirement for graduation, and thus it is a "high-stakes" exam. Students who do not pass the CPX work with a clinical faculty member for remediation and then are retested.

The CPX administered during the study period was a National Board of Medical Examiners (NBME) pilot examination for its field trial of the Step-2a clinical skills exam. The CPX consisted of six SP encounters, each 15 minutes in duration, and six associated inter-station written exercises. Four of the SP stations required students to conduct a medical interview and physical examination, and two stations focused on students' use of communication skills. The SPs are paid individuals, trained to the NBME specifications. The SPs document students' performance immediately following the examination using predetermined checklists. Three SPs are trained for each case scenario, and training emphasizes fidelity of case portrayal and accurate completion of performing and observing checklists. The training, which lasts between 12–15 hours, includes a mock exam conducted with physicians in the role as students.

During the CPX, one SP performs the encounter and another SP monitors the encounter in real time through a viewing room. The third SP serves as a backup for the exam on a given day. If an individual SP's skills at case portrayal or checklist accuracy degenerate during training or the exam, that particular SP no longer participates, and a new one is trained. Seventy SPs were trained for the CPX used in this study. Six of the 70 CPX SPs were also used in the family medicine OSCE. The same individual coordinated and supervised SP training for the family medicine OSCE and CPX.

### *Independent Variable: Family Medicine OSCE Standardized Patient Satisfaction Measure*

Following the family medicine OSCE encounter with the student, the SPs for each medical interviewing station completed a 10-item scale, the Standardized Patient Satisfaction Questionnaire (SPSQ).<sup>5</sup> The SPSQ assesses the SP's satisfaction with the student's communication and interpersonal skills during the encounter.

It is composed of nine of the ten American Board of Internal Medicine (ABIM) Patient Satisfaction Questionnaire (PSQ)<sup>15</sup> items and one additional item designed to evaluate the patient’s perspective of the physician’s interpersonal and communication skills. Following the PSQ format, each item of the SPSQ is evaluated on a 5-point Likert-type scale (1=poor to 5=excellent). The SP is instructed to complete the SPSQ prior to the faculty member’s feedback to the student so that it is an independent evaluation of the student’s communication and interpersonal skills performance. The Cronbach’s alpha of the SPSQ in our exam is .90.<sup>5</sup> Table 1 shows the SPSQ.

*Dependent Variable: Fourth-year CPX Patient Perception Questionnaire*

Following the CPX encounter with the student, the SPs for each station completed a seven-item scale, the Patient Perception Questionnaire (PPQ). During their training for documentation of students’ behavior dur-

ing the interaction, the SPs received instruction about how to complete the PPQ. The PPQ items are similar to the ABIM PSQ; the PPQ does not include all of the ABIM PSQ items. PPQ items are evaluated on a 5-point Likert-type scale (1=poor to 5=excellent). The NBME did not provide the study institution with information regarding inter-rater reliability of its pilot exam due to the small sample of students encountering a given SP.

*Analysis*

To have parallel instruments, the following items were dropped from the SPSQ: (1) telling you everything; being truthful, up front, and frank; not keeping things from you that you should know, (2) discussing options with you, asking your opinion, offering choices and letting you help decide what you think before telling what to do, and (3) explaining what you need to know about your problems—how and why they occurred and what to expect next. By dropping these items,

Table 1

SPSQ Completed by Standardized Patients During Third-year Family Medicine OSCE

Rating scale:	1	2	3	4	5
	Poor	Fair	Good	Very Good	Excellent
Telling you everything; being truthful, up front, and frank; not keeping things from you that you should know.	1	2	3	4	5
Greeting you warmly, calling you by the name you prefer, being friendly, never crabby or rude	1	2	3	4	5
Treating you like you’re on the same level, never talking down to you or treating you like a child	1	2	3	4	5
Letting you tell your story; listening carefully, asking thoughtful questions, not interrupting you while you’re talking	1	2	3	4	5
Showing interest in you as a person, not acting bored or ignoring what you have to say	1	2	3	4	5
Discussing options with you, asking your opinion, offering choices and letting you help decide what you think before telling what to do	1	2	3	4	5
Encouraging you to ask questions, answering them clearly, never avoiding your questions or lecturing you	1	2	3	4	5
Explaining what you need to know about your problems—how and why they occurred and what to expect next	1	2	3	4	5
Using words you can understand when explaining your problems and treatment, explaining any technical medical terms in plain language	1	2	3	4	5
Understanding my feelings about my problems, appreciating the meaning of my problems to me*	1	2	3	4	5

\* Not original American Board of Internal Medicine Patient Satisfaction Questionnaire item. Modified for use with medical students. Not original Patient Perception Questionnaire item.

SPSQ—Standardized Patient Satisfaction Questionnaire

OSCE—Objective Structured Clinical Examination

the SPSQ and the PPQ assessed six items that were exactly the same and one item that was conceptually similar (assessing an aspect of empathy on both instruments). Because the NBME provided our students' performance data to us in the form of station scores, and not performance on individual checklist items, we were not able to delete the one PPQ item that differed from the SPSQ item. However, creating nearly parallel instruments allowed us to have comparable measures for evaluating students' performance in the different examination settings.

The four family medicine SPSQ scores were summed to create a single SPSQ score for each student. Similarly, the six CPX PPQ scores were summed to create a single PPQ score for each student. Since the independent and the dependent variables were measured on different scales, they were standardized (independently of each other) to have a mean of 100 and a standard deviation (SD) of 10.

A Pearson product-moment correlation was calculated for the students' SPSQ score and PPQ score. Plots of the SPSQ score versus the clerkship rotation order were created to visually assess whether there was any sort of trend in scoring. Plots were repeated for the PPQ to graphically assess whether students in one clerkship rotation appeared to perform substantially better or worse on the PPQ. A one-way analysis of variance (ANOVA) examined the effect of clerkship rotation order on the difference of SPSQ and PPQ scores. To detect specific rotation differences, post-hoc test procedures were used. An overall alpha level of .05 was used.

To determine if SPSQ performance by quartile score was related to PPQ performance quartile, the quartile of a student's SPSQ score was established. Each quartile was then constructed as a separate variable. A binary response variable was defined for those students scoring in the lowest quartile on the PPQ. A logistic regression model was used with the SPSQ quartile variables as predictors of lowest PPQ quartile score.

## Results

Prior to standardization, the mean SPSQ score was 93.8 (SD=16.28, range: 51–124), and the mean PPQ score was 455.1 (SD=55.00, range: 163–571). Plots of the mean SPSQ score by clerkship rotation revealed an apparent learning effect over the first six rotations, with a marked increase in mean SPSQ score after the first clerkship rotation. After clerkship rotation six, mean SPSQ scores dropped off below clerkship rotation-one levels and remained there except for clerkship rotation 11.

The correlation between SPSQ and PPQ scores was .08. A one-way ANOVA revealed a significant difference between standardized SPSQ and PPQ scores, when analyzed by clerkship rotation ( $P<.0001$ ). Rotations two, three, four, five, and six were significantly different ( $P=.05$ ) from rotations seven, nine, 10, and 12.

Rotation-specific correlations between the standardized SPSQ and the standardized PPQ scores can be seen in Table 2. Correlations ranged from -.26 and -.24 (rotations nine and 11, respectively) to .54 (rotation six). Standardized SPSQ score and standardized PPQ scores were negatively correlated in rotations seven, nine, 11, and 12.

The performance quartile for the clerkship OSCE's SPSQ did not predict performance quartile for the CPX's PPQ (-2 log likelihood ratio test,  $P=.36$ ). No one quartile was a significant predictor of being in the bottom PPQ quartile.

## Discussion

Studies of physician-patient interaction demonstrate that physician communication skills influence the nature of the medical encounter<sup>4,16</sup> and physician communication styles and techniques are related to patient satisfaction.<sup>17,18</sup> Patient satisfaction with a physician's interpersonal and communication skills has been associated with patient adherence to medical treatment,<sup>9,19,20</sup> malpractice claims,<sup>21</sup> and "doctor-shopping."<sup>20</sup> Given the significance of effective communication and interpersonal skills in the clinical encounter, the assessment of students' communication and interpersonal skills is an important dimension in evaluating students' clinical competence. Further, assessment methods and instruments should be able to provide instructive feedback to students to improve their future performance and overall skill ability. While some studies have indicated deterioration of medical students'

Table 2

Pearson Product-Moment Correlations for Students Taking the Family Medicine SPSQ and a CPX Patient Satisfaction Questionnaire for Individual Clinical Rotations\*

Clerkship Rotation	SPSQ Correlation With PPQ
Period 1	.05
Period 2	.37
Period 3	.03
Period 4	.42
Period 5	.17
Period 6	.54
Period 7	-.07
Period 8	.32
Period 9	-.26
Period 10	.14
Period 11	-.24
Period 12	-.09

SPSQ—Standardized Patient Satisfaction Questionnaire  
 CPX—Clinical Practice Examination  
 PPQ—Patient Perception Questionnaire

\* Medical University of South Carolina, 1999–2000 (n=127)

communication skills throughout their training,<sup>12,13</sup> others have reported an improvement.<sup>14</sup> Our results did not indicate a consistent relationship in students' communication and interpersonal skills performance between the third-year family medicine OSCE and the fourth-year CPX.

The time at which students completed the family medicine OSCE had an inconsistent relationship with their CPX performances. There was a trend for students at the end of the third year to perform more poorly on the CPX, though our findings were not conclusive. The closer in time the two examinations are together did not necessarily improve the predictive value of students' performance on one exam to the other. The number of students in each clerkship rotation (generally 10 to 14) may not be sufficient to establish definitively how clerkship rotation order may affect students' performance on a CPX. How clerkship rotation order may affect students' performance on a high-stakes CPX-type exam warrants further study.

The lack of a strong association between students' scores on the two different SP satisfaction measures may be attributable to factors associated with the two different examination settings in which the SP satisfaction measures were scored. First, while both examinations assessed clinical skills, they differed some in relation to clinical tasks to be performed. The family medicine OSCE interviewing stations emphasize the need for students to engage in counseling and negotiation with patients. About half of the CPX stations require the student to elicit a chief complaint and conduct a physical examination during the SP encounter, while the other half emphasize students' use of advanced communication skills, such as delivering bad news or negotiating with a patient. The differences in the tasks between the two examinations may prompt students to use different communication styles that lead to different SP perceptions of communication and interpersonal skills.

Second, the SP encounter length differed between the two examinations. The family medicine OSCE was an 8-minute encounter, while the CPX involved a 15-minute encounter. The time difference could account for SPs' perception of a student's communication and interpersonal skills abilities. However, one would hope that effective communication and interpersonal skills would be used consistently across different encounter lengths.

Finally, students do receive faculty feedback after each family medicine OSCE station. SPs do not share their evaluation of the student in detail, though brief feedback may be provided to the student. Such feedback may influence students' performance on the next station. However, our results indicate a high level of internal consistency for the OSCE. This suggests that a rating of a student's performance remains consistent

across the exam stations, and the feedback is not having a measurable effect on students' performance.

Additionally, though both sets of SPs are trained to use the instruments for assessing students' interpersonal skills, differences in SP training may still have accounted for the study results. The NBME training is extensive, and patients are trained to national standards for both fidelity of patient portrayal and accuracy of documenting students' behavior. Locally developed clerkship examinations that rely primarily on faculty to evaluate students may place more emphasis during SP training on fidelity of patient portrayal and less on accuracy of documenting students' behavior in a consistent manner. Additionally, during the family medicine OSCE, SPs may not have completed their checklist prior to the faculty feedback to the student, and the SP may be influenced by the faculty's evaluation of the student. However, the SPs are instructed to complete their evaluation independently. Further, while our own research has found a moderate correlation between faculty observers' scores and SPs' satisfaction scores,<sup>5</sup> the magnitude does not suggest strong influence of the faculty's feedback on the SPs' own evaluation.

#### *Limitations*

One limitation of this study is that the analysis of students' communication and interpersonal skills relied on performance data from only one clerkship OSCE (the family medicine OSCE). Using student performance data from more than clerkship OSCEs may provide a broader picture of students' performance. However, while the tasks in the family medicine clerkship vary slightly from those required in the CPX, the family medicine clerkship OSCE is designed to assess students' performance with common, primary care clinical encounters, such as does the CPX. Other clerkship OSCEs, such as a surgery clerkship OSCE, may require students to perform more-specialized clinical tasks.

Another limitation may be that while our analyses attempted to use an identical instrument, we were not able to do so, and the two instruments differed by one item. Given that there was only one of seven items that was not identical, and the one item was conceptually similar, it is unlikely that this difference could account entirely for the study's findings.

#### *Conclusions*

Our research indicates that measures of students' communication and interpersonal skills in one clinical performance examination setting are not consistent with similar measures in another setting. With the addition of the USMLE Standardized Patient Examination component as part of the licensure process for US medical graduates, medical schools will want to develop predictors of student success and failure. Schools will want

to identify at-risk students early enough in their training to make a difference and also be able to provide instruction that will improve performance and ensure passing performance. Our study calls into question the ability of a routine end-of-clerkship OSCE to identify students at risk for poor performance on the interpersonal skills component of the USMLE CPX.

*Corresponding Author:* Address correspondence to Dr Chessman, Medical University of South Carolina, Department of Family Medicine, 295 Calhoun Street, PO Box 250192, Charleston, SC 29425. 843-792-2431. Fax: 843-792-3598. chessman@musc.edu.

## REFERENCES

1. Collier JA, Swartz MH, Robbs RS, Cohen DS. Relationship between clinical competence and interpersonal and communication skills in standardized patient assessment. *Acad Med* 1999;74:271-4.
2. Kalet A, Earp J, Kowlowitz V. How well do faculty evaluate the interviewing skills of medical students? *J Gen Intern Med* 1992;7:499-505.
3. Klessig J, Robbins AS, Wieland D, Rubenstein L. Evaluating humanistic attributes of internal medicine residents. *J Gen Intern Med* 1989;4:514-21.
4. Wooliscraft JO, Calhoun JG, Billiu GA, Stross JK, MacDonald M, Templeton B. House officer interviewing techniques: impact on data elicitation and patient perceptions. *J Gen Intern Med* 1989;4:108-14.
5. Blue AV, Chessman AW, Gilbert GE, Mainous AG III. Responding to patients' emotions: important for standardized patients satisfaction. *Fam Med* 2000;32(5):326-30.
6. Collier JA, Marcy ML, Vu NV, Steward DE, Robbs RS. Effect of using multiple standardized patients to rate interpersonal and communication skills on intercase reliability. *Teach Learn Med* 1994;6:45-8.
7. Cohen DS, Collier JA, Marcy MS, Fried ED, Swartz MH. Psychometric properties of a standardized patient checklist and rating-scale form used to assess interpersonal and communication skills. *Acad Med* 1996;71(Jan. suppl):S87-S89.
8. Vu NV, Marcy ML, Verhulst SJ, Barrows HS. Generalizability of standardized patients' satisfaction ratings of their clinical encounter with fourth-year medical students. *Acad Med* 1990;65(Sept. suppl):S29-S30.
9. Huack FR, Zyzanski SJ, Alemagno SA, Medalie JH. Patient perceptions of humanism in physicians: effects on positive behaviors. *Fam Med* 1990;22(6):447-52.
10. Kassebaum DG, Eaglen RH. Shortcomings in the evaluation of students' clinical skills and behaviors in medical school. *Acad Med* 1999;74(7):842-9.
11. National Board of Medical Examiners. 2002 annual meeting highlights. [www.nbme.org/annualreport/2002/toc.htm](http://www.nbme.org/annualreport/2002/toc.htm). Accessed 8-28-2003.
12. Helfer RE, Ealy KF. Observations of paediatric interviewing skills. *Am J Dis Child* 1972;123:556-60.
13. Scott N, Donnelly M, Hess J. Changes in interviewing styles of medical students. *J Med Educ* 1975;50:1124-6.
14. Davis H, Nicholaou T. A comparison of the interviewing skills of first- and final-year medical students. *Med Educ* 1992;26:441-7.
15. Tomblyn R, Abrahamowicz M, Schnarch B, Collier JA, Benaroya A, Snell L. Can standardized patients predict real patient satisfaction with the doctor-patient relationship? *Teach Learn Med* 1994;6:36-44.
16. Roter DL, Hall JA. Studies of doctor-patient interaction. *Annu Rev Public Health* 1989;10:163-80.
17. White J, Levinson W, Roter D. "Oh, by the way . . .": the closing moments of the medical visit. *J Gen Intern Med* 1994;9:24-8.
18. Bertakis KD, Roter D, Putnam SM. The relationship of physician medical interview style to patient satisfaction. *J Fam Pract* 1991;32(2):175-81.
19. Joos SK, Hickam DH, Borders LM. Patients' desires and satisfaction in general medicine clinics. *Public Health Reports* 1993;108(6):751-9.
20. Mathews D, Hingson R. Improving patient compliance: a guide for physicians. *Med Clin North Am* 1977;61:879-89.
21. Levinson W, Roter D, Mullooly JP, et al. Physician-patient communication: the relationship with malpractice claims among primary care physicians and surgeons. *JAMA* 1997;277(7):553-9.