ASSOCIATION OF AMERICAN MEDICAL COLLEGES

UGME Section

Assessment of Professionalism Annotated bibliography

Charles, Patti
Cleary, Lynn
Dudding, Burt
Hemesath, Karla
Marcdante, Karen
Shumway, Jamie
Smith, Chris
Stearns, Jeff
Yoder, Ernie

June 1, 2004

UGME Professionalism References: Critical, Annotated Bibliography

1. Arnold, EL, Blank, LL. Et al. (1998). Can Professionalism Be Measured? The Development of a Scale for Use in the Medical Environment. Academic Medicine. 73:1119-1121.

Type of Report/Study:	Scale Development
Population/Application:	Medical Students
Instrument Title:	Scale to Measure Professional Attidues and Behaviors
Type (Method) of Assessment:	Questionnaire
Indicators and Scale:	Agreement Scale
Traits/Competencies Assessed:	Excellence, Honor/Integrity, and Altruism/Respect
Reliability/Validity Data:	Chronbach's Alpha: Eigenvalues
Conclusions:	First step in the development of a scale, which can measure components of professionalism. Internal reliability and item-scale coefficients are moderately high.
Comments:	Excellence scale appears particularly strong.

2. Arnold, l, Willoughby, l, et al. (1981). Use of Peer Evaluation in the Assessment of Medical Students. Journal of Medical Education. 56:35-42.

Type of Report/Study:	Survey, utilizing a standard evaluation tool, Factor-analysis
Population/Application:	First year post graduate residents who graduated from UMKC
Instrument Title:	Residency Evaluation Form
Type (Method) of Assessment:	Criterion ratings utilizing a 7-point Likert scale
Indicators and Scale:	33 Criteria in the areas of professional responsibility, colleague relations, self-appraisal, clinical skills, patient relations, working in groups, critical thinking, independent learning, problem solving
Traits/Competencies Assessed:	Significant indicators (factors): Knowledge and intellectual abilities; interpersonal skills-professionals; technical skills (H&P); interpersonal skills-patients
Reliability/Validity Data:	32 of 33 items correlated with at least one of the 4 factors at .50 or greater. Reliability data not reported
Conclusions:	Supports multi dimensional conceptualization of clinical performance. Four factors identified.
Comments:	Items appear to be relevant and applicable to competencies.

3. Barrows, HS. (1993). An Overview of the Uses of Standardized Patients for Teaching and Evaluating Clinical Skills. Academic Medicine. 68:443-451.

Type of Report/Study:	Review article
Population/Application:	Any level medical education
Instrument Title:	Standardized Patients
Type (Method) of Assessment:	Traces history and reported use/application of standardized patients in teaching and evaluation of medical students and resident physicians
Indicators and Scale:	Not Applicable
Traits/Competencies Assessed:	Not Applicable
Reliability/Validity Data:	Not Applicable
Conclusions:	High quality research has established the utility of standardized patients in medical education. Value-added is documented for teaching, student skill development, program quality, student assessment
Comments:	Excellent resource for those developing or participating in programs utilizing standardized patients

4. Battistone, MJ, Pendleton, B, et al. (2001). Global Descriptive Evaluations Are More Responsive than Global Numeric Ratings in Detecting Students' Progress during the Inpatient Portion of an Internal Medicine Clerkship. Academic Medicine. 76:S105-S107.

Type of Report/Study:	Validation of a descriptive method of medical student evaluation (RIME model)
Population/Application:	Medical students on clinical clerkship rotations
Instrument Title:	Evaluation tool utilizing modified RIME descriptors
Type (Method) of Assessment:	Rating scale evaluation tool
Indicators and Scale:	Students rated as: Observer-Reporter-Interpreter-Manager-Educator relative to clinical skills
Traits/Competencies Assessed:	Focused on application of medical knowledge to patient care, in particular, clinical assessments and patient management plans. Evaluators were trained on the system, and provided ratings in conference setting, requiring evidence to support ratings
Reliability/Validity Data:	Descriptive rating system allowed detection and documentation of student skill acquisition. No formal statistical analysis.
Conclusions:	Halo effect was nearly eliminated through use of the descriptive scale

Comments:	Good descriptive study of implementation of a descriptive rating tool/system for evaluating student clinical skill development

5. Blackwell, TA, Ainsworth, MA, et al. (1991). A Comparison of Short-Answer and Extended-Matching Question Scores in an Objective Structured Clinical Exam. Academic Medicine. 66:S40-S42.

Type of Report/Study:	Randomized, controlled study comparing utilization of Short Answer Questions (SAQ) to Extended Matching Questions (EMQ) on 9 of 26 OSCE cases
Population/Application:	Students completing the Year 3 Internal Medicine Clerkship
Instrument Title:	OSCE at University of Texas Medical Branch
Type (Method) of Assessment:	OSCE
Indicators and Scale:	SAQ vs. EMQ during 9/26 cases
Traits/Competencies Assessed:	Clinical skills (test selection, differential diagnosis, etc.)
Reliability/Validity Data:	Results supported use of the easily scored EMQs as comparable to SAQs. Students scored somewhat higher on EMQs, but in general, the relationship between the two question types was linear.
Conclusions:	EMQs resulted in significant faculty time saving (facilitated scoring), reduced realism, and had little affect on final grade.
Comments:	Provides a good comparative basis for design of OSCE stations, validating EMQs as fairly comparable to SAQs.

6. Boulet, JR, Friedman, M, et al. (1998). High-Stakes Examinations: What Do We Know About Measurement? Using Standardized Patients to Assess the Interpersonal Skills of Physicians. Academic Medicine. 73:S94-S96.

Type of Report/Study:	Reliability study of standardized patient stations on the new CSA examination for measuring interpersonal skills of physician IMGs
Population/Application:	International Medical Graduates who have passed USMLE-1 and USMLE-2
Instrument Title:	CSA: Clinical Skills Assessment of ECFMG
Type (Method) of Assessment:	Standardized patients (SP), check lists
Indicators and Scale:	Behavior-anchored rating tool

Traits/Competencies Assessed:	Interview/data collection skills; Counseling and information delivery skills; Rapport/attentiveness; Personal manner
Reliability/Validity Data:	Reliability across scales, □ = .70, .81, .81, .72 Generalizability, □^{2} = .85 Dependability, □ = .63
Conclusions:	Well trained SPs can provide reliable data on IMG physician interpersonal skills
Comments:	CSA shows reliability in interpersonal skill measurement

7. Bridge, PD & Ginsburg, KA. (2001). An Integrated Approach for Evaluating Students' Achievement of Clinical Objectives. Med Educ Online 2001:609. www.med-ed-online.org.

Type of Report/Study:	Case report – development and implementation of evaluation system
Population/Application:	Medical students on clinical clerkships
Instrument Title:	School-wide evaluation system for clinical experience during Undergraduate Medical Education
Type (Method) of Assessment:	Personal Data Assistants are utilized for students to complete data entry fields (patient encounters) documenting their clinical experience. Data is collected on a central computer, aggregated and analyzed to determine accomplishment of objectives
Indicators and Scale:	Behaviors/tasks are linked to specific objectives, with 3 levels of participation (observation, assistance, conduct of procedure)
Traits/Competencies Assessed:	H&P conduct, Clinical decision making, Procedure performance, Procedure observation
Reliability/Validity Data:	Not reported
Conclusions:	Reports development of a functional evaluation system for tracking objectives
Comments:	Needs follow-up report on reliability and validity

8. Cate, ThJ & De Haes, JCJM. (2000). Summative Assessment of Medical Students in the Affective Domain. Medical Teacher. 22:40-43.

Type of Report/Study:	Descriptive report of assessment scales
Population/Application:	Medical students on clinical rotations
Instrument Title:	Amsterdam Attitude and Communication Scale (AACS)
Type (Method) of Assessment:	Observation scales (9)

Indicators and Scale:	Observation by clinicians, nurses, psychologists, and patients. Scales not provided
Traits/Competencies Assessed:	Courtesy/respect, Information gathering, Information giving, Handling emotions/empathy, Structuring communication, Insight into self/emotions, Cooperation with colleagues/nurses, Knowing one's limits, Display of dedication/responsibility/engagement
Reliability/Validity Data:	Not reported
Conclusions:	Education and assessment of these skills will increase in importance
Comments:	Interesting scale, in need of validity and reliability studies

9. Cohen, R. (2001). Assessing Professional Behaviour and Medical Error. Medical Teacher. 23:145-151.

Type of Report/Study:	A Review of Assessments of Clinical Competence
Population/Application:	Medical students
Instrument Title:	None provided/various mentioned
Type (Method) of Assessment:	Direct observation recommended
Indicators and Scale:	None provided
Traits/Competencies Assessed:	Professionalism and Medical error
Reliability/Validity Data:	None provided
Conclusions:	Author makes the case for direct observation (based upon defined traits/behaviors)for assessment of professionalism
Comments:	Well written review providing sound recommendations for assessing professionalism. Also recommends components of professionalism

10. Cohen, R, Rothman, AI, et al. (1996). Analysis of the Psychometric Properties of Eight Administrations of and Objective Structured Clinical Examination Used to Assess International Medical Graduates. Academic Medicine. 71:522-524.

Type of Report/Study:	Review of OSCE and MCQ formats to determine if the two different formats are assessing similar or different skills (Reliability and validity)
Population/Application:	Internal Medicine graduate applicants to a pre-internship
Instrument Title:	MCQ pre-test, OSCE with Post-encounter problems (PEP)

Type (Method) of Assessment:	OSCE/Standardized Patients: Review results and assess correlations of subsequent administrations of OSCE and MCQ
Indicators and Scale:	Checklists during patient encounters, Short answer questions, post-encounter
Traits/Competencies Assessed:	Correlation of patient contact skills with MCQ, PEP. Do OSCE five minute stations, ten minute stations and multiple choice questionnaires assess the same skills in a pre-internship candidate?
Reliability/Validity Data:	OSCE reliability □ = .85 MCQ reliability □ = .89 Patient contact □ = .83 PEP □ = .71 Correlations were modest (.48-.60), suggesting that each test component was measuring unique skills/knowledge
Conclusions:	Do not eliminate the postencounter written OSCE but rather consider more complete stations. This study provides strong support for use of OSCEs and MCQs for assessment, finding that results are stable when similar testing procedures are used. The use of longer station OSCEs is not supported by the findings as they do not provide unique information.
Comments:	The aim is to produce valid OSCE results in a consistent and cost-effective manner. The analysis is context related and demands rigorous attention to each OSCE and MCQ administered.

11. Coldwell, LL, Gibson, DG, Kiewit, SF. (1998). Assessing Student Professionalism: First Steps. Presented at: The 8th Ottawa International Conference.

Type of Report/Study:	Descriptive
Population/Application:	Medical Students
Instrument:	Student Professional Development Assessment Form
Type (Method) of Assessment:	Rating Form
Indicators and Scale:	Self-Assessment Faculty Rating Form
Traits/Competencies Assessed:	Reliability and Responsibility Maturity Critique Honesty/Integrity Respect for others Altruism

	Interpersonal Skills Impairment-Psychological/Chemical
Reliability/Validity Data:	In progress
Conclusions:	Once defined, traits of professionalism may be measured. These tools allow students to analyze their strengths and weaknesses, and clarifies professionalism as a set of behaviors, attitudes, and values that develop over a lifetime.
Comments:	

12. Colliver, JA, Marcy, ML, Travis, TA, & Robbs, RS. (1991). The Interaction of Student Gender and the Standardized-Patient Gender on a Performance-Based Examination of Clinical Competence. Academic Medicine. 66:S31-S33.

Type of Report/Study:	Study conducted for the purpose of testing the possibility of interaction between examinee gender and standardized patient gender.
Population/Application:	Senior medical students in six different cohorts (classes); Standardized Patients (SP) involved in 80 different cases
Instrument:	Student written scores and SP checklist scores
Type (Method) of Assessment:	Split-plot ANOVA on scores by gender, student, class, case and SP gender
Indicators and Scale:	ANOVA and independent group t tests
Traits/Competencies Assessed:	Does the gender of the student interact with the gender of the SP and are these revealed in checklist and written scores?
Reliability/Validity Data:	Data was systematically and consistently derived
Conclusions:	There is no evidence in the findings that would be cause for concern regarding the psychometric characteristics of SP exams related to student or SP gender
Comments:	Although the authors found some significant findings by class, the overall analysis of the data revealed no concern regarding gender affects

13. Crandall, SJS, Volk, R, &Loemker, V. (1993). Medical Students' Attitudes Toward Providing Care for the Underserved. JAMA. 269:2519-2523.

Type of Report/Study:	Study used scales to compare the attitudes of 124 first year and 89 fourth year medical students toward the medically underserved
Population/Application:	Medical students at a U.S. medical school in the southwest

Instrument:	57 item questionnaire developed for this study
Type (Method) of Assessment:	Self-report
Indicators and Scale:	57 item Questionnaire utilized a 5 point Likert scale; included Rotter's locus of control and items chosen from Marlow-Crowne's Social Desirability Scales
Traits/Competencies Assessed:	Overall attitude, societal expectations, physician/student responsibility, personal efficacy
Reliability/Validity Data:	Internal consistency established by giving the questionnaire to students in all four classes. However only the responses from first and fourth year students were included in the analysis. Both the Rotter's and Marlow-Crowne scales previously validated.
Conclusions:	Male fourth year students less inclined toward caring for medically indigent patients than first year male students. No significant differences seen among female students.
Comments:	Did not establish validity or reliability of much of the 57 item questionnaire used in the study

14. Dans, PE. (1996). Personal and Professional Qualities of Medical Students. Academic Medicine. 71:S70-S71.

Type of Report/Study:	Student surveys regarding self-reports of cheating
Population/Application:	3 cohorts (years) of medical students in two different classes (MSI entry and MSIV exit)
Instrument:	30 question, anonymous questionnaire; modified instrument used with exit groups
Type (Method) of Assessment:	Analysis of quantitative and qualitative survey responses; were not able to match pre and post (entry and exit) responses
Indicators and Scale:	Correlation of entry and exit responses, percentages for yes/no responses
Traits/Competencies Assessed:	Student self-report of cheating, estimates of anticipated cheating among classmates
Reliability/Validity Data:	Survey questions created by research group; did not mention validity/reliability of instrument. Questions asked students to estimate the extent of cheating that they anticipated among classmates; this was a hypothetical question compromising validity of data

Conclusions:	Authors claim that this is the first reported study of cheating among medicals students. Findings are consistent in some ways with other reports on cheating. The study has limitations but suggests that the environment of medical school may encourage dishonesty
Comments:	The survey results were used for a class session on honesty generating great interest and discussion; this research also encouraged the development of a code of honor. Follow-up studies have not been conducted.

15. Dawson-Saunders, B & Paiva, REA. (1986). The Validity of Clerkship Performance Evaluations. Medical Education. 20:240-245.

Type of Report/Study:	The authors asked the question, are there any associations between the evaluations by clerkship teachers of medical student competence and subsequent ratings by residency supervisors
Population/Application:	Clerkship evaluations for three classes of medical students who were evaluated 9-12 months later by residency supervisors
Instrument:	Narrative measures of student performance during the third year clinical clerkships rated on a 5 point performance; evaluations of same students as residents using a 17 variables rated on a 10 point scale
Type (Method) of Assessment:	Retrospective analysis of evaluative data
Indicators and Scale:	Student performance evaluations used a 5 point scale; evaluations of same students as residents used a 10 point scale. Sophisticated statistical analysis yielded new information because it included canonical correlation and redundancy analysis
Traits/Competencies Assessed:	Student performance evaluations measured four domains: 1) clinical sophistication, 2) knowledge base, 3)personal and professional maturity, and 4) communication skills; Student performance as residents assessed clinical problem solving, technical skills, fund of knowledge and professional and interpersonal skills
Reliability/Validity Data:	As reliable and valid as any student clinical performance data reported in the literature.
Conclusions:	Study supports previous findings that a student's over-all performance as a first year resident could

	be predicted with only a moderate degree of confidence based upon their performance during medical school. Professional behavior of the student as a resident more difficult to predict based on performance during medical school than the overall clinical performance.
Comments:	Use of canonical correlation and redundancy analysis offers a new approach; Study results lead one to question the validity of assessment tools used in clerkship evaluations

16. Dupras, DM & Li, JT. (1995). Use of an Objective Structured Clinical Examination to Determine Clinical Competence. Academic Medicine. 70:1029-1034.

Type of Report/Study:	Review of OSCE and Clinical Rotation Scores to describe performance of residents in an OSCE and to analyze the role of the OSCE as a measure of clinical performance.
Population/Application:	51 second year internal medicine residents from one cohort in one residency
Instrument:	OSCE exam findings and clinical rotation score
Type (Method) of Assessment:	14 OSCE stations (12 testing and 2 rest); departmental clinical rotation score
Indicators and Scale:	Descriptive statistics, Student's t-test, one-way ANOVA used to compare scores; correlations were conducted to assess inter-rater reliability
Traits/Competencies Assessed:	Gender, medical school training (US/Canada vs. other) and OSCE ABIM in-training exam and clinical rotation scores
Reliability/Validity Data:	Researchers included efforts to assure the inter-rater reliability and exercised rigor in analysis although sample was limited
Conclusions:	OSCE provides improved objectivity in the assessment of resident competency in physical diagnosis. The OSCE is an important addition to evaluation of the clinical competency of residents
Comments:	Although the sample was limited, the analysis was extensive

17. Edelstein, RA, Reid, HM, Usatine, R, & Wilkes, MS. (2000). A Comparative Study of Measures to Evaluate Medical Students' Performances. Academic Medicine. 75:825-833.

Type of Report/Study:	Compares traditional measures of medical student performance with their performance on computer based and standardized patient examinations
Population/Application:	154 fourth year medical students at UCLA
Instrument:	Performance measures derived from 1)Computer based examinations and 2) Standardized patient examinations; also utilized student self-report regarding what they thought the various examinations were measuring
Type (Method) of Assessment:	Traditional student performance measures compared to those derived from computer-based exams and standardized patient exams
Indicators and Scale:	Scores on computer-based exams and standardized patient exams
Traits/Competencies Assessed:	Clinical performance including decision making, knowledge based; student attitudes toward various assessment tools
Reliability/Validity Data:	Not established for standardized patients; better for computer-based exams…
Conclusions:	Supports using multi-pronged assessment approaches; physician competency may be a multi-dimensional trait
Comments:	A well designed seminal study comparing two "new" measures of students clinical competency with traditional measures of student performance

18. Epstein, RM & Hundert, EM. (2002). Defining and Assessing Professional Competence. JAMA 287:226-235.

Type of Report/Study:	Literature review for the purpose of defining competence and investigating methods of assessing competence
Population/Application:	Medical schools; approach to evaluation
Instrument:	Sorting; review of multiple articles; themes; highlights of tools; discussion
Type (Method) of Assessment:	Read, review, and sort into thematic areas
Indicators and Scale:	Focused on reliability and validity of various methods of assessment
Traits/Competencies Assessed:	Professionalism, clinical skills, clinical competence
Reliability/Validity Data:	As reported in reviewed articles
Conclusions:	A variety of methods of evaluation tools are available for medical educators to achieve an understanding and assessment of students

Comments:	This is a comprehensive review yet it is difficult to isolate findings or points of discussion from the article

19. Evans, BJ, Stanley, RO, & Burrows, GD. (1993). Measuring Medical Students' Empathy Skills. British Journal of Psychology. 66:121-133.

Type of Report/Study:	Randomized control, trained and untrained
Population/Application:	55 third year medical students (n=28; n=27)
Instrument:	Five, one hour sessions on communication theory Three, two-hour small group skill workshops Self report of empathy levels Analysis of 3 videotaped patient encounters
Indicators and Scale:	Interview Rating Scale (IRI)—measured student empathy levels Truax & Carkhuff Accurate empathy scale was used to analyzed videotapes History taking Interview Review Scale (5 items) used to analyze videotapes
Traits/Competencies Assessed:	IRI--Multiple domains of empathy (perspective taking, fantasy, empathic concern, personal distress Accurate Empathy scale--Used by observers to rate student interviews in regard to warmth, empathy, & genuineness Interview Rating scale—used by observers to rate student interviews in regard to empathic responsiveness (psychosocial concern, empathy, use of silence, personal issues, and warmth)
Reliability/Validity Data:	IRI—good test-retest reliability, internally valid Inter-rater reliability established for observers
Conclusions:	Students' scores on the IRI did not differ with training or over time. No significant difference was noted between the groups in the ratings on the Accurate empathy scale Trained student scored higher on three dimensions of the Interview Rating Scale: Psychosocial concern, Empathy, Use of silence
Comments:	

20. Feudtner, C, Christkis, DA, & Christakis, NA. (1994). Do Clinical Clerks Suffer Ethical Erosion. Students' Perceptions of Their Ethical Environment and Personal Development. Academic Medicine. 69:670-679.

Type of Report/Study:	Anonymous survey of third and fourth year medical students from 6 Pennsylvania medical schools
Population/Application:	Medical Students
Instrument:	Survey with 38 questions regarding ethical dilemmas and situations Several clinical vignettes were included Respondents were asked if they had ever seen or done something they thought was improper, wrong or unethical
Type (Method) of Assessment:	Survey, self report
Indicators and Scale:	
Traits/Competencies Assessed:	80% reported having acted unethically or willing mislead patients 61% witnessed unethical behavior peers, residents, or attendings 40% had done something unethical to "fit in" 40% did something unethical because they feared poor evaluations 98% heard patients referred to in a derogatory manner 42% felt they had done something that put them at risk (health wise)
Reliability/Validity Data:	Ethical dilemmas were widely reported Much are due to students' subordinate role Clinical training does "erode" ethical principles
Conclusions:	Realistic, case-based ethical education and discussion in clinical years Practical guidance when ethical situations arise Openness to discuss and deal with ethical situations when they arise
Comments:	

21. Ginsgurg, S, Regehr, G, et al. (2000). Context, Conflict, and Resolution: A New Conceptual Framework for Evaluating Professionalism. Academic Medicine. 75:S6-S11.

Type of Report/Study:	Review of articles discussing professionalism evaluation
Population/Application:	
Instrument:	
Type (Method) of Assessment:	
Indicators and Scale:	
Traits/Competencies Assessed:	Few studies address specific efforts to evaluate professionalism

	Many calls for improvement and discussion of professionalism issues Most common form are "ward-rating form" completed by attendings
Reliability/Validity Data:	
Conclusions:	Use of **behaviorally** focused items to assess professionalism Appropriate use of trained standardized patients Repeated assessments, longitudinal Multiple raters (attendings, nurses, ancillary staff) Multiple items assessing different aspects of professionalism Peer assessments if appropriately designed and peers properly trained Self assessment (with appropriate training and expectations)
Comments:	

22. Gordon, J. (2003). Assessing Students' Personal and Professional Development Using Portfolios and Interviews. Medical Education. 37:335-340.

Type of Report/Study:	Assessment of student portfolios and student interviews regarding personal and professional development
Population/Application:	Year 1 medical students –University of Sydney
Instrument:	
Type (Method) of Assessment:	Portfolio development, faculty review & interview
Indicators and Scale:	Produce a portfolio that demonstrates a genuine attempt to engage in self reflection Discuss with faculty the portfolio contents as they relate to the objectives of the exercise
Traits/Competencies Assessed:	Commitment to compassionate, ethical professional behavior Ability to work cooperatively as a team member Optimal decision-making capability in ambiguous/stressful situations Recognition of own personal and professional needs and responses to stress and be able to access assistance when needed an ongoing commitment to advancement of learning Skills in information technology
Reliability/Validity Data:	97% of students agreed that they had engaged in useful reflection 91% agreed it was worthwhile

	76% saw opportunities to modify their approach because of this exercise
Conclusions:	Useful tool to start the process of self-reflection Hard to "quantify" or create a "gold standard" for evaluation
Comments	

23. Gordon, MJ. (1991). A Review of the Validity and Accuracy of Self-Asse ssments in Health Professions Training. Academic Medicine. 66:762-769.

Type of Report/Study:	Review of 18 articles comparing self-assessment to observer ratings or objective tests
Population/Application:	
Instrument:	
Type (Method) of Assessment:	How valid & accurate are learner self-assessments under various conditions and levels of training?
Indicators and Scale:	
Traits/Competencies Assessed:	
Reliability/Validity Data:	Validity of self-assessment performance was low to moderate Validity of self-assessment did not improve over time and with training Validity of self-assessment was moderate to high in learners trained in programs that stress self-assessment and train learners to reflect and self assess
Conclusions:	Self-assessment without training and comparison to objective measures is likely to have low validity and an accurate reflection of learner ability and skill
Comments:	

24. Gordon, MJ. (1992). Self-Assessment Programs and Their Implications for Health Professions Training. Academic Medicine. 67:672-679.

Type of Report/Study:	Analysis of 11 studies
Population/Application:	
Instrument:	
Type (Method) of Assessment:	
Indicators and Scale:	
Traits/Competencies Assessed:	Expectation that learners systematically gather and interpret data on their performance. Formal requirements to reconcile learners' self-

	assessments with credible external evaluations (testing, observation)
Reliability/Validity Data:	Validity of self-assessment was moderate to high in learners trained in programs that stress self-assessment and train learners to reflect and self assess
Conclusions:	Self-assessment without training and comparison to objective measures is likely to have low validity and an accurate reflection of learner ability and skill When introducing self-assessment, careful planning, educating and monitoring are essential. Must work diligently to reconcile self-assessment with standard assessment (faculty observation and testing) Self-assessment cannot supplant other forms of evaluation yet Do not yet know how self-assessment training affects behaviors after completion of training program (self monitoring as a practicing professional)

25. Guagnano, ME, Merlitti, D, et al. (2002). New Medical Licensing Examination Using Computer-Based Case Simulations and Standardized Patients. Academic Medicine. 77:87-90.

Type of Report/Study:	Retrospective review of results of the Italian medical licensing exam (MLE)
Population/Application:	80 medical school graduates from 1997-98
Instrument:	MLE is composed of two sections
Type (Method) of Assessment:	Computer administered cases with decision-making points Standardized patient encounters (observed by three physicians and scored using standardized checklists)
Indicators and Scale:	
Traits/Competencies Assessed:	Case questions assess skills in differential diagnosis, diagnostic test utilization, management planning, and basic knowledge SP encounters assess skills in history taking, physical examination, and communication skills
Reliability/Validity Data:	Inter-rater reliability demonstrated

Conclusions:	Moderate correlation of total score (SP and case questions) with pre-clinical, clinical, and total grades from medical school The case question scores and SP scores correlated
Comments:	SPs are viable option for testing clinical skills Case based questions can effectively assess "knowledge" skills Combination of both appears to be the best method for assessment of clinical skills

26. Haidet, P, Dains, JE, et al. (2002). Medical Student Attitudes Toward the Doctor-Patient Relationship. Medical Education. 36:568-574.

Type of Report/Study:	Survey of 510 first, third, & fourth medical students at a large US medical school
Population/Application:	Medical students
Instrument:	
Type (Method) of Assessment:	
Indicators and Scale:	Patient-practitioner orientation scale (PPOS)
Traits/Competencies Assessed:	Measures individual preferences toward aspects of physician-patient relationship Sharing control of decision making between patient and doctor Caring about patient as a person—warmth and support
Reliability/Validity Data:	Previous validity reported Female gender was associated with patient-centered attitudes Earlier year of medical school was associated with patient-centered attitudes Among 4th year students, primary care choice was associated with patient-centered attitudes Among 4th year student, European-American ancestry was associated with patient-centered attitudes
Conclusions:	Necessary to encourage reflection on attitudes toward the physician-patient relationship Increase awareness of the cultural differences between the physician and his/her patients Increase awareness of personal biases/opinions toward patients Increase emphasis and training in the later years of medical school
Comments:	Assessed attitudes, not demonstrated behaviors Cross sectional design, not longitudinal Small sample size

Limited generalizability to other institutions

27. Halpern, R, Lee, MY, Boulter, PR, & Phillips, RR. (2001). A Synthesis of Nine Major Reports on Physicians' Competencies for the Emerging Practice Environment. Academic Medicine. 76:606-615.

Type of Report/Study:	Review of nine seminal reports on curricular reform for medical education
Population/Application:	Medical students, resident physicians
Instrument:	
Type (Method) of Assessment:	Literature review
Indicators and Scale:	Changes in practice and environment are inevitable Physicians must adapt to be most effective Opportunities exist to improve care and functioning of health care system All refer to some type of managed care and necessity of physicians to function with them
Traits/Competencies Assessed:	Health care system overview Population based care Quality measurement & improvement Medical management Preventive care Physician-patient communication Ethics, Teamwork and collaboration Information management and technology Practice management
Reliability/Validity Data:	
Conclusions:	Integrate these domains into existing curricula whenever possible Involve the highest levels of leadership at each institution to provide support for the changes Draw from available instructional materials and web-based resources Strengthen faculty members knowledge through faculty development and CME Encourage collaboration between established programs and new programs
Comments:	Limitations are due to: the inability to generalize the results to other groups with higher ethnic representation.

28. Hawk, C, Buckwalter, K, et al. (2002). Health Professions Students' Perceptions of Interprofessional Relationships. Academic Medicine. 77:354-357.

Type of Report/Study:	Survey of health professions students in Iowa Geriatric Education Center partner institutions
Population/Application:	Health professions students (medicine, osteopathy, PT, PA, nursing, social work, podiatry)
Instrument:	
Type (Method) of Assessment:	Self report, (Interdisciplinary Education Perception Scale (IEPS) and demographic questions)
Indicators and Scale:	18 items assessing attitudes toward interprofessional cooperation
Traits/Competencies Assessed:	Competence & autonomy, perceived need for cooperation, perception of actual cooperation, and understanding others' values
Reliability/Validity Data:	Not yet determined for a comparative study among multiple disciplines. Okay for homogenous groups of allied health professions
Conclusions:	588 students from 8 different disciplines completed the questionnaire. PA students scored highest (most favorable opinions on interdisciplinary cooperation) with chiropractic students scoring lowest. Medical students scored between PA students and chiropractic students.
Comments:	Limitations are due to: the inability to generalize the results to other groups with higher ethnic representation

29. Hemmer, PA, Hawkins, R, et al. (2000). Assessing How Well Three Evaluation Methods Detect Deficiencies in Medical Students' Professionalism in Two Settings of an Internal Medicine Clerkship. Academic Medicine. 75:167-173.

Type of Report/Study:	Retrospective analysis of 3 methods
Population/Application:	Medical students identified as deficient in professionalism
Type (Method) of Assessment:	Grounded theory qualitative analysis
Indicators and Scale:	Standard evaluation form (checklist and comments) plus comments from face-to-face evaluations
Traits/Competencies Assessed:	Professionalism behaviors
Reliability/Validity Data:	None reported
Conclusions:	Deficiencies in professionalism are more likely to be identified in inpatient setting. Face-to-face formal evaluation comments increased the detection index.
Comments:	This study focused specifically on professionalism issues and found what many academic physicians believe. I wonder, however, if part of the problem is what we tell preceptors (especially those in

outpatient settings) about what we want them to evaluate. It doesn't surprise me that people are more likely to comment than to write about issues in this area. It would be great to figure out how to change that.

30. Herman, MW, Veloski, JJ, & Hojat, M. (1983). Validity and Importance of Low Ratings Given Medical Graduates in Noncognitive Areas. Journal of Medical Education.
58:837-843.

Type of Report/Study:	Observational cohort study
Population/Application:	Medical school graduates
Type (Method) of Assessment:	Analysis of the impact of perceptions about core skills and success within a residency program.
Indicators and Scale:	Survey of supervisors of PL1s and medical school clerkship grades
Traits/Competencies Assessed:	Professional attitudes, knowledge, data gathering and clinical judgment
Reliability/Validity Data:	Construct validity, low to moderate internal validity
Conclusions:	Graduates receiving lower ratings of professional attitudes least likely to be offered ongoing position. Those with 2 or more low ratings in clerkships more likely to receive lower rating of professional attitudes
Comments:	This study supports what I have often thought was true – that most of the "problem" learners aren't in trouble because of cognitive or psychomotor skills, but because of differences in their professionalism qualities.

31. Hobfoll, SE, Anson, O, & Antonovsky, A. (1982). Personality Factors as Predictors of Medical Student Performance. Medical Education. 16:251-258.

Type of Report/Study:	Prospective observational study
Population/Application:	Matriculating medical students
Type (Method) of Assessment:	Personality inventory, interview ratings, cognitive written examinations and clinical performance evaluations.
Indicators and Scale:	California Psychological Inventory (CPI),
Traits/Competencies Assessed:	CPI variables includeing: dominance, self-acceptance, well-being, tolerance, responsibility, achievement via conformance and achievement via independence.
Reliability/Validity Data:	Moderate inter-rater reliability in interviews;

	appropriate reliability of clinical performance evaluations
Conclusions:	There was a small correlation between interviews and CPI results, modest correlation between cognitive performance and CPI (with 3 of the variables useful in predicting performance). There was no correlation of the CPI with clinical performances
Comments:	While the study was relatively negative, the two best predictors of success were achievement via independence (self-directed learning) and self-acceptance. As educators, these are traits that we are just beginning to assess during training. Perhaps we need to do more in this area at the start of medical school.

32. Hodges, B. Turnbull, J, et al. (1996). Evaluating Communication Skills in the OSCE Format: Reliability and Generalizability. Medical Education. 30:38-43.

Type of Report/Study:	Descriptive study
Population/Application:	Fourth year medical students and first year internal medicine residents
Type (Method) of Assessment:	OSCEs on difficult communication
Indicators and Scale:	1) Categorical scale 2) Global scale 3) American Board of Internal Medicine patient satisfaction questionnaire
Traits/Competencies Assessed:	Communication
Reliability/Validity Data:	Interrater reliability, validity and generalizability of stations
Conclusions:	Development is feasible; Impact of learner knowledge difficult to separate form communication skill. Correlation of content and communication skills exists, but is not large.
Comments:	This article highlights how difficult it is to develop evaluation tools for communication that distinguish between skills and contextual knowledge. It also points out that "difficult" situations vary for each of us.

33. Hodges, B, & McIlroy, JH. (2003). Analytic Global OSCE Ratings Are Sensitive to Level of Training. Medical Education 37:1012-1016.

Type of Report/Study:	Validation of global rating scales in OSCE
Population/Application:	Clinical clerks (medical students)
Instrument:	Global rating scale for OSCE

Type (Method) of Assessment:	10 Station OSCE
Indicators and Scale:	Empathy, Coherence, Verbal, Non-verbal expression
Traits/Competencies Assessed:	Response to patient's feelings and needs Degree of coherence in the interview Verbal expression, Non-verbal expression
Reliability/Validity Data:	Construct Validity established, Internal consistency coefficients 0.58-0.70
Conclusions:	Global rating demonstrated construct validity and distinguished senior clerks from juniors
Comments:	Small N, not randomly selectded

34. Hojat, M, Gonella, JS, et al. (2002). Empathy in Medical Students as Related to Academic Performance, Clinical Competence, and Gender. Medical Education. 36:522-527.

Type of Report/Study:	Cohort study
Population/Application:	M3 students
Type (Method) of Assessment:	Empathy questionnaire, clerkship evaluations, standardized tests
Indicators and Scale:	Comparison of Jefferson Scale of Physician Empathy score to global clinical competence and to gender
Traits/Competencies Assessed:	Empathy
Reliability/Validity Data:	Reliability of Jefferson scale; construct validity and reliability of global clerkship score
Conclusions:	This measure of empathy is linearly associated with clinical competence but not results of MCQ exam. Women score higher than men on empathy scale.
Comments:	While differences between gender is statistically significant there was a small difference of the means with large overlap of the standard deviations raising concerns, at least for me, about the ability to take results from the group and use it in thinking about any individual.

35. Hull, AL, Hodder, S, et al. (1995). Validity of Three Clinical Performance Assessments of Internal Medicine Clerks. Academic Medicine. 70:517-522.

Type of Report/Study:	Multi-trait, multi method cohort study
Population/Application:	M3 students
Type (Method) of Assessment:	Correlation matrix of 3 evaluation methods
Indicators and Scale:	Clinical evaluation form, OSCE and NBME subject examination
Traits/Competencies Assessed:	Clinical skills, knowledge and personal

	characteristics
Reliability/Validity Data:	Convergent and divergent validity
Conclusions:	Convergent validity with some evidence of divergent validity was detected. Conclusions include: the need to improve reliability of OSCE, clinical evaluation forms must be redesigned to improve discrimination, additional methods to assess personal characteristics are needed and the use of several methods of assessment is important.
Comments:	This is a nice (and very honest) description of the issues that arise with development of OSCEs. If you are planning on developing this method at your institution, this paper may help you address all of the issues in the design phase.

36. Humphris, GM & Kaney, S. (2000). The Objective Structured Video Exam for Assessment of Communication Skills. Medical Education. 34:939-945.

Type of Report/Study:	Descriptive study
Population/Application:	M1 students
Type (Method) of Assessment:	Objective structured video exam to assess cognitive aspects of communication skills; OSCE
Indicators and Scale:	Scoring scheme for video based written examination
Traits/Competencies Assessed:	Knowledge of communication skills
Reliability/Validity Data:	High reliability of marking scheme, moderate construct validity determined by OSCE
Conclusions:	Able to develop efficient written examination of cognitive aspects of communication with some evidence of validity
Comments:	This method may be a nice adjunct, especially for programs with large numbers of learners. (Unfortunately, these same authors, in the next paper reviewed below) go on to demonstrate that cognitive knowledge doesn't correlate with actual performance.

37. Humphris, GM & Kaney, S. (2001). Assessing the Development of Communication Skills in Undergraduate Medical Students. Medical Education. 35:225-231.

Type of Report/Study:	Longitudinal cohort study
Population/Application:	Cohort of first year medical students followed longitudinally
Type (Method) of Assessment:	Objective structured video examination (written) and OSCEs
Indicators and Scale:	12 item communication skills assessment form; global simulated patient rating scale

Traits/Competencies Assessed:	Comparison of communication knowledge and OSCE performance
Reliability/Validity Data:	OSVE and Assessment form - "reported elsewhere"; reliability of 4 station OSCE determined during pilot
Conclusions:	There was slight improvement of communication skills over time (17 months). However, knowledge and understanding of skills was not associated with level of performance at final OSCE.
Comments:	With it's somewhat disappointing results (i.e. the lack of more improvement), this article raised quite a few questions for me. Are we starting at the right place when teaching about communication? Is there a way to make more of an impact – since this is one of the critical skills for physicians?

38. Hunt, DD. (1992). Functional and Dysfunctional Characteristics of the Prevailing Model of Clinical Evaluation Systems in North American Medical Schools. Academic Medicine. 67:254-259.

Type of Report/Study:	Descriptive study
Population/Application:	Medical schools
Type (Method) of Assessment:	Review and synthesis of literature, survey of student affairs deans and observation from AAMC Clinical Evaluation Project
Indicators and Scale:	None
Traits/Competencies Assessed:	Evaluation systems
Reliability/Validity Data:	Not applicable
Conclusions:	Identification of four stages of clinical evaluation as well as delineation of "symptoms" that can be signs of system errors.
Comments:	An interesting approach and systematic method to assess your own program's issues. I liked the key symptoms identified by the author – they may be useful as quality indicators for education.

39. Kassebaum, DG & Eaglen, RH. (1999). Shortcomings of the Evaluation of Students' Clinical Skills and Behaviors in Medical School. Academic Medicine. 74:841-849.

Type of Report/Study:	Review/commentary
Population/Application:	Medical schools
Type (Method) of Assessment:	Review/analysis of LCME files on schools undergoing accreditation surveys and the LCME Part II Medical School Questionnaire
Indicators and Scale:	Not applicable
Traits/Competencies Assessed:	Evaluation methods of non-cognitive abilities
Reliability/Validity Data:	Not determined

Conclusions:	Non-cognitive abilities are not evaluated by most basic science courses. In clerkships subjective ratings predominated although the use of structured observations is increasing slowly. Introduction of new methods continues at a "tortoise pace".
Comments:	This article identifies the problem nicely. It would be nice to have similar articles that help us create methods that are feasible (both in time and cost) in resolving the problem.

40. Keely, E, Myers, K, & Dojeiji, S. (2002). Can Written Communication Skills Be Tested in an Objective Structured Clinical Examination Format? Academic Medicine. 77:82-86.

Type of Report/Study:	Descriptive study
Population/Application:	Internal Medicine residents
Type (Method) of Assessment:	OSCE (development)
Indicators and Scale:	34 item rating scale for evaluation of consult letters
Traits/Competencies Assessed:	Written communication skills
Reliability/Validity Data:	Inter-rater reliability and generalizability.
Conclusions:	An OSCE is a feasible way to evaluate written communication skills.
Comments:	This addresses an area we don't often evaluate in our learners and provides us with a method that can be duplicated in most programs.

41. Klamen, DL & Williams, RG. (1997). The Effect of Medical Education on Students' Patient-Satisfaction Ratings. Academic Medicine. 72:57-61.

Type of Report/Study:	Longitudinal cohort study
Population/Application:	Medical students (as 2nd years and 4th years)
Type (Method) of Assessment:	Clinical performance exam with standardized patients
Indicators and Scale:	SP rating forms, American Board of Internal Medicine Patient Satisfaction Questionnaire
Traits/Competencies Assessed:	Communication skills
Reliability/Validity Data:	Internal validity
Conclusions:	Interpersonal and communication skills improved with experience. Patient satisfaction increased between the students' 2nd and 4th year.
Comments:	There were small changes over time (comparing means of the group) and a relatively large percentage (12%) of fair/poor ratings at the end of the fourth year. Thus, it seems we need to address this crucial skill more effectively.

42. Krebs, D. (1975). Empathy and Altruism. Journal of Personality and Social Psychology. 32:1134-1146.

Type of Report/Study:	Observational, analytical study
Population/Application:	Adult, male volunteers
Type (Method) of Assessment:	Measures of psychophysiological responses, quantification measure of altruism and post-test survey
Indicators and Scale:	Empathy measures (including physiologic responses); response to experimental conditions
Traits/Competencies Assessed:	Empathy and altruism
Reliability/Validity Data:	Not applicable
Conclusions:	Subjects who were led to believe they were similar to a "test subject" demonstrated empathy and were the most altruistic in a final intervention
Comments:	An interesting study that measured responses to observing another in 2 perceived settings – receiving pleasure or pain vs. performing a motor or cognitive test. The investigators have designed the study to measure empathy and altruism in innovative ways, demonstrating that they exist. Unfortunately, the methods aren't useful in determining student or physician empathy/altruism in an easy manner.

43. Kreiter, CD, Ferguson, K, et al. (1998). A Generalizability Study of a New Standardized Rating Form Used to Evaluate Students' Clinical Clerkship Performances. Academic Medicine. 73:1294-1298.

Type of Report/Study:	Descriptive study
Population/Application:	Clinical clerkships
Type (Method) of Assessment:	Analysis of clerkship evaluations to assess generalizability and impact of number of raters
Indicators and Scale:	Clinical evaluation form
Traits/Competencies Assessed:	Reliability of assigning clerkship grades
Reliability/Validity Data:	Reliability (no validity data)
Conclusions:	Increasing the number of raters to 3 or more can increase accuracy of clinical evaluations.
Comments:	Not only does this study support the use of multiple raters, it also demonstrated that increasing the number of variables being evaluated does not improve reliability. Since the forms could be filled out by faculty or residents, this study doesn't answer the questions of level of experience on evaluation.

44. Littlefield, JH, DaRosa, DA, et al. (1991). Accuracy of Surgery Clerkship Performance Raters. Academic Medicine. 66:S16-SS18.

Type of Report/Study:	Descriptive study
Population/Application:	Surgical faculty rating M3 students
Type (Method) of Assessment:	Calculation of accuracy score using ratings from 5 medical schools
Indicators and Scale:	Accuracy score
Traits/Competencies Assessed:	Stringency/leniency of raters
Reliability/Validity Data:	Not assessed
Conclusions:	Rater characteristics (stringency/leniency) impact on grade assignment. A substantial proportion of raters of are significantly more stringent/lenient than colleages.
Comments:	An interesting study that demonstrates what many have hypothesized. However, it still doesn't answer the question about who is really "accurate" – i.e. which grade appropriately describes the student's performance, not the raters' perceptions.

45. Martin, JA, Reznick, RK, et al. (1996). Who Should Rate Candidates in and Objective Structured Clinical Examination. Academic Medicine. 71:170-175.

Type of Report/Study:	Validation of OSCE station raters (physicians, standardized patients, SP observers)
Population/Application:	Residents, Students
Instrument:	Medical Council of Canada's qualifying examination
Type (Method) of Assessment:	OSCE station scoring checklist
Indicators and Scale:	
Traits/Competencies Assessed:	History taking
Reliability/Validity Data:	MD raters matched the standard (3 MD expert raters, while SPs and SPOs did not)
Conclusions:	SP and SPO ratings are of questionable validity, compared to this standard. To bring SPs and SPOs up to standard will require extra training. The use of physician raters is supported.
Comments:	

46. Maxim, BR & Dielman, TE. (1987). Dimensionality, Internal Consistency, and Inter Rater Reliability of Clinical Performance Ratings. Medical Education. 21:130-137.

Type of Report/Study: Replication of earlier study with similar instrument; validation of instrument's reliability.
Population/Application: medical students
Instrument: 13 behavioral-anchored rating scales
Type (Method) of Assessment: faculty and housestaff ratings of students

Indicators and Scale: 6-point scale with behaviorally defined anchor points.
Traits/Competencies Assessed: Problem solving and interpersonal skills.
Reliability/Validity Data: Internal consistency (Cronbach coefficient alpha) = 0.90; interrater reliabilities ranged from 0.14 to 0.33.
Conclusions: The dimensions of problem solving and interpersonal skills as measured by the rating scale are highly replicable and internally consistent with medical students' clinical performance.
Comments: This is a replication study of an earlier work (1980). It is well designed and uses appropriate statistical methods to provide valid and reliable information.

47. Miller, GE. (1990). The Assessment of Clinical Skills/Competence/Performance. Academic Medicine.65:S63-S67.

Type of Report/Study: Assessment review of literature derived from a speech given as a RIME Invited Review.
Population/Application: Medical educators
Instrument: multiple instruments reviewed
Type (Method) of Assessment: SP-based examinations, OSCEs, CSE reviewed.
Indicators and Scale: N/A
Traits/Competencies Assessed: clinical competence (general)
Reliability/Validity Data: general review of literature findings
Conclusions: not specific, opinion of presenter
Comments: This is a often referenced medical education article that was given as a RIME Invited Review. The classic Miller pyramid of the framework for clinical assessment was delineated. Dr. Miller outlined what he saw as the major issues facing assessment at the time: 1) examinations drive the educational system, 2) there is lack of standardization among instruments currently in use, 3) large-scale examinations measuring universal clinical competence are costly, 4) single-case examinations are poor predictors of performance, 5) how to assess professionalism, 6) optimal methods of scoring, 7) and the need to adopt criterion-referenced testing over the more traditional normative-referenced testing strategies.

48. Miller, GD, Frank, D, Franks, RD, & Getto, CJ. (1989). Noncognitive Criteria for Assessing Students in North American Medical Schools. Academic Medicine. 64:42-45.

Type of Report/Study: Results of a survey conducted of medical schools
Population/Application: 138 US and Canadian medical schools surveyed
Instrument: one-page questionnaire
Type (Method) of Assessment: survey of medical schools
Indicators and Scale: review of medical schools were using non-cognitive criteria in their assessment of students.
Traits/Competencies Assessed: honesty, professional behavior, dedication to learning, appearance, respect for law, respect for others, confidentiality, aid to others, substance abuse, and financial responsibility.
Reliability/Validity Data: not reported

Conclusions: Non-cognitive criteria should be as emphasized as are cognitive criteria in medical education. Non-cognitive criteria should be used in the admissions process as well as in the promotion process. "Strong consideration should be given to including non-cognitive criteria as an assessment factor in the accreditation of medical schools."
Comments: The article lacks specificity on the design, as well as the validity and reliability of the questionnaire. A copy of the instrument is not included. The article provides a picture of the general use of non-cognitive criteria among medical schools.

49. Murden, R, Galloway, GM, et al. (1978). Academic and Personal Predictors of Clinical Success in Medical School. Journal of Medical Education. 53:711-719.

Type of Report/Study: correlational
Population/Application: medical students/admissions
Instrument: correlation of admission characteristics with program director ratings
Type (Method) of Assessment: correlation of ratings
Indicators and Scale: 5 point scale (Likert type)
Traits/Competencies Assessed: maturity, nonacademic achievement, motivation, rapport
Reliability/Validity Data: not available
Conclusions: Provides validation for admissions committees to collect nonacademic and personal student characteristics during the admission process.
Comments: This is an older article (1978) but is well constructed and provides much of the evidence and thought supporting the use of non-cognitive predictors of students' success as physicians.

50. Novak, DH, Detering, BJ, et al. Physicians' (1989). Attitudes Toward Using Deception to Resolve Difficult Ethical Problems. 261:2980-2985.

Type of Report/Study: questionnaire, case response analysis
Population/Application: physicians/attitudes
Instrument: 4 case scenarios requiring response to MCQ questions
Type (Method) of Assessment: MCQ
Indicators and Scale: best answer
Traits/Competencies Assessed: deception, truth telling
Reliability/Validity Data: none reported
Conclusions: Is it ever ethical to deceive? If some deception is ethical, where should the line be drawn? How can medical ethics more specifically help physicians to adhere to the principle of truthfulness but take into account the protection of patients in different situations.
Comments: This is a fascinating article. It was shocking to read that deception clearly came out in physician responses to very clear scenarios. It effectively deals with the inherent conflicts between the principle of "do not harm" and "honesty is best policy". The article note that in all cases, THE fundamental value is "that of respect for persons."

51. Pangaro, L. (1998). Evaluating the Development of Professional Skills: A Vocabulary and Method for the Descriptive Evaluation of Students in Clinical Clerkships. www.usuhs.mil/med/evaldevprofskills.htm. 1-11.

    Type of Report/Study: Web-based description of a framework and taxonomy for describing the transitions of a medical student from Reporter to Interpreter to Manager and to Educator.
    Population/Application: clinical medical students
    Instrument: contextual RIME scale
    Type (Method) of Assessment: faculty ratings
    Indicators and Scale: A vocabulary for describing a learner's stage of progress towards competency. The framework emphasizes a developmental approach. The scale's acronym is RIME (Reporter, Interpreter, Manager, Educator).
    Traits/Competencies Assessed: At the Reporter level, the trainee can accurately gather and communicate clinical facts about patient. As an Interpreter, the trainee must be able to prioritize the problems identified for the patient and offer a differential diagnosis. As a Manager, the trainee must be able to tailor a specific plan for the patient including the circumstances and patient's preferences. As an Educator, the trainee is required to go beyond the basic steps of the previous three levels. The trainee must be able to share the new learning with others.
    Reliability/Validity Data: N/A, but delineates application of the RIME format in evaluation of students during various educational experiences and in domains such as professionalism, medical knowledge, and patient care activities.
    Conclusions: N/A

Comments: This is not a published article, but a call on a website for a collaborative study. The article "A New Vocabulary and Other Innovations for Improving Descriptive In-Training Evaluations"

52. Pangaro, L. (1999). A New Vocabulary and Other Innovations for Improving Descriptive In-Training Evaluations. Academic Medicine. 1203-1207.

    Type of Report/Study: Descriptive overview.
    Population/Application: GME, residents
    Instrument: rating context and system
    Type (Method) of Assessment: qualitative, faculty ratings.
    Indicators and Scale: A vocabulary for describing a learner's stage of progress towards competency. The framework emphasizes a developmental approach. The scale's acronym is RIME (Reporter, Interpreter, Manager, Educator).
    Traits/Competencies Assessed: At the Reporter level, the trainee can accurately gather and communicate clinical facts about the patient. As an Interpreter, the trainee must be able to prioritize the problems identified for the patient

and offer a differential diagnosis. As a Manager, the trainee must be able to tailor a specific plan for the patient including the circumstances and patient's preferences. As an Educator, the trainee is required to go beyond the basic steps of the previous three levels. The trainee must be able to share the new learning with others.

Reliability/Validity Data: Review of the meaning of these terms is covered, but evidence of specific studies of the use of the RIME rating system was not provided.

Conclusions: In-training evaluations can be used as formative assessments for learners to generate feedback. Done repeatedly they can be a reliable, valid and feasible approach to evaluating residents (summative, as well as formative). Methods such as these need to be done to develop teachers as competent evaluators. Documenting the performance of trainees for each patient case that is observed and employing the RIME system can lead to valid, reliable and feasible evaluations.

Comments: This is an excellent article that describes the state of the art of assessment in a practical and meaningful manner. The author is particularly adept at making complex assessment issues that seem clear and offer practical approaches for assessing residents.

53. Pangaro, L. (1999). Implementation and Programmatic Evaluation of Standardized Formal Evaluation System with Synthetic Descriptors. www.usuhs.mil/med/ravadescript.htm. 1-4.

Type of Report/Study: Web-based call for a collaborative study to conduct a multi-institution assessment project.

Population/Application: clinical medical students

Instrument: contextual RIME scale

Type (Method) of Assessment: faculty ratings

Indicators and Scale: A vocabulary for describing a learner's stage of progress towards competency. The framework emphasizes a developmental approach. The scale's acronym is RIME (Reporter, Interpreter, Manager, Educator).

Traits/Competencies Assessed: At the Reporter level, the trainee can accurately gather and communicate clinical facts about patient. As an Interpreter, the trainee must be able to prioritize the problems identified for the patient and offer a differential diagnosis. As a Manager, the trainee must be able to tailor a specific plan for the patient including the circumstances and patient's preferences. As an Educator, the trainee is required to go beyond the basic steps of the previous three levels. The trainee must be able to share the new learning with others.

Reliability/Validity Data: N/A

Conclusions: N/A

Comments: This is not a published article, but a call on a website for a collaborative study. The article "A New Vocabulary and Other Innovations for Improving Descriptive In-Training Evaluations" (Pangaro, L., 1999,

Academic Medicine. 1203-120) more accurately describes the assessment approach.

54. Pangaro, LN. (2000). Investing in a Descriptive Evaluation: A Vision for the Future of Assessment. Medical Teacher. 22:478-481.

Type of Report/Study: descriptive opinion piece
Population/Application: medical students and residents
Instrument: RIME
Type (Method) of Assessment: faculty ratings of learners' progress in their development as physicians.
Indicators and Scale: A vocabulary for describing a learner's stage of progress towards competency. The framework emphasizes a developmental approach. The scale's acronym is RIME (Reporter, Interpreter, Manager, Educator).
Traits/Competencies Assessed: At the Reporter level, the trainee can accurately gather and communicate clinical facts about patient. As an Interpreter, the trainee must be able to prioritize the problems identified for the patient and offer a differential diagnosis. As a Manager, the trainee must be able to tailor a specific plan for the patient including the circumstances and patient's preferences. As an Educator, the trainee is required to go beyond the basic steps of the previous three levels. The trainee must be able to share the new learning with others.
Reliability/Validity Data: none reported.
Conclusions: The RIME system helps teachers provide honest evaluations of their learners throughout their developmental process on the way to competence. It provides an approach for consistent and on-going feedback in real time. It gives teachers of medical students and residents confidence in their ability to assess, describe and document what a learner should be doing.
Comments: This article published in the UK journal, Medical Teacher, is essentially a rehash of the earlier article published in the US (Pangaro, L., 1999, Academic Medicine. 1203-120). It is more of an opinion piece than it is a study with data.

55. Papadakis, MA, Osborn, EHS, et al. (1999). A Strategy for the Detection and Evaluation of Unprofessional Behavior in Medical Students. Academic Medicine.l 74:980-990.

Type of Report/Study: Descriptive report on the first four years of utilization of the Physicianship Evaluation Tool
Population/Application: First and second year medical students
Instrument: Physicianship evaluation tool (longitudinal process)
Type (Method) of Assessment: Structured "incident-report" form utilized when a student is identified as demonstrating inappropriate behaviors in

areas such as: reliability, responsibility, self - improvement, adaptability, professional relationships, and upholding the school's statement of principles.

Indicators and Scale: Physicianship reporting tool
Traits/Competencies Assessed: Professionalism components
Reliability/Validity Data: Not provided, but describes student and faculty members' responses to implementation of the tool and related policies and procedures.
Conclusions: Empirically effective in establishing a record of problematic student behaviors/attitudes. Well defined policy and process for data collection and follow-up is described.
Comments: Potentially applicable to any medical school. Will require local definitions and faculty training. Well described.

56. Papadakis, MA, Loeser, H, & Healy, K. (2001). Early Detection and Evaluation o Professionalism Deficiencies in Medical Students: One School's Approach. Academic Medicine. 76:1100-1106.

Type of Report/Study: Descriptive report of application of updated version of Physicianship evaluation tool
Population/Application: First and second year medical students
Instrument: Physicianship evaluation tool (longitudinal process)
Type (Method) of Assessment: Structured "incident-report" form utilized when a student is identified as demonstrating inappropriate behaviors in areas such as: reliability, responsibility, self - improvement, adaptability, professional relationships, and upholding the school's statement of principles.
Indicators and Scale: Physicianship reporting tool
Traits/Competencies Assessed: Professionalism components
Reliability/Validity Data: Not provided
Conclusions: Empirically effective in establishing a record of problematic student behaviors/attitudes. Well defined policy and process for data collection and follow-up is described.
Comments: Potentially applicable to any medical school. Will require local definitions and faculty training. Well described.

57. Papadakis, MA. UCSF School of Medicine Physicianship Evaluation Form for First and Second Year Students. UCSF School of Medicine.

Type of Report/Study: Not applicable
Population/Application: Medical students (1st and 2nd year)
Instrument: UCSF Physicianship Evaluation Form
Type (Method) of Assessment: Rating scales (observational)
Indicators and Scale: Reliability & responsibility; Self-improvement & adaptability; Relationships with students, faculty, staff &

patients; and Upholding the school's statement of principles
Traits/Competencies Assessed: See above
Reliability/Validity Data: See Papadakis studies referenced
Conclusions: Not applicable
Comments: Not applicable

58. Pee, B, Woodman, T, Fry, H, & Davenport, E. (2000). Practice-based Learning: Views on the Development of a Reflective Learning Tool. Medical Education. 34:754-761.

Type of Report/Study: Descriptive/qualitative study
Population/Application: Medical students (applicable to all learners)
Instrument: Progress File (reflection)
Type (Method) of Assessment: Progress File: designed for people to use throughout their lives to include an official record of achievement plus a means by which students could monitor, build, and reflect upon their own personal development.
Indicators and Scale: Attitudes of students and tutors toward reflection as a learning tool and expectations for and views toward the Progress File
Traits/Competencies Assessed: Utilization of and attitudes toward reflection and the Progress File
Reliability/Validity Data: None provided
Conclusions: The Progress File offers a personal process/tool for tracking individual progress in education. Reflection and application of the Progress File likely require change in institutional culture
Comments: Potentially applicable as a self-evaluation tool. Would likely support self-directed lifelong learning

59. Phelan, S, Obenshain, SS, & Galey, WR. (1993). Evaluation of the Noncognitive Professional Traits of Medical Students. Academic Medicine. 68:799-803.

Type of Report/Study: Descriptive
Population/Application: Medical students
Instrument: Evaluation tool for noncognitive aspects of professionalism
Type (Method) of Assessment: Rating form, faculty utilize to identify problem students
Indicators and Scale: Reliability/responsibility, maturity, critique, communication skills, honesty/integrity, respect, signs of chemical dependency/mood disorder
Traits/Competencies Assessed: See above
Reliability/Validity Data: Not reported

Conclusions: Tool facilitated faculty reporting and identification of problem students. Provided the basis for intervention.
Comments: Similar to UCLS Physicianship tool, with report of similar utility

60. Prislin, MD, Lie, D. et al. (2001). Standardized Patients – Will the Questions Never End? Using Standardized Patients to Assess Medical Students' Professionalism. Academic Medicine. 76:S90-S92.

Type of Report/Study: Description of longitudinal, multi method evaluation of professionalism
Population/Application: Medical students
Instrument: Rating scale of student communication skills and professionalism (by standardized patients [SP] – 3 cases), 'professional behavior' rating by faculty, 'essay' in response to a poem describing rapid patient demise following an acute MI – scored for empathy and coping attributes
Type (Method) of Assessment: Multiple methods summed to provide a cumulative communication score (9-30, mean = 20) and cumulative professionalism score range 5-15, mean = 9.81
Indicators and Scale: 5-point Likert scale (outstanding through marginal)
Traits/Competencies Assessed: Professional knowledge/competency, integrity, altruism; 'professional behavior' rating by faculty: citizenship, academic honesty, team participation, standardized-patient interactions
Reliability/Validity Data: Inter-rater reliability for cumulative professionalism score = 0.65; inter-correlations of the various sub scales are reported
Conclusions: Inter-case correlations were low, overlap among communication, professionalism, and SP satisfaction scores was high. Lack of clarity regarding what the 'professionalism' scale measures, as was highly correlated with communication skills
Comments: Systematic approach with results for one medical school class. Requires additional validity determination. Appears to have good face-validity.

61. Rezler, AG, Schwartz, RL, et al. (1992). Assessment of Ethical Decisions and Values. Medical Education. 26:7-16.

Type of Report/Study: Descriptive of instrument development
Population/Application: Medical students (and law students)
Instrument: Professional Decisions and Values Test (PVD), designed to assess how ethical conflicts are dealt with by medical

and law students, and which moral values motivate them. Designed to assess action tendencies when faced with ethical dilemmas, and to identify underlying values.

Type (Method) of Assessment: Diagnostic test, providing feedback to students and instructors. Provision of longitudinal performance as instrument is used over years of curriculum. Paper & pencil test utilizing 10 case vignettes, each with 3 possible actions and 7 reasons to explain the action taken. Actions are ranked from most to least intrusive.

Indicators and Scale: 3 levels of intervention, no intrusion to full intrusion
7 reasons (values) Autonomy, Beneficence, Confidentiality, Harm avoidance, Justice, Professional responsibility, Truth

Traits/Competencies Assessed: Obligation to patient vs. society, Respect for patient autonomy vs. professional responsibility, Protecting the patient's interest vs. respect for authority

Reliability/Validity Data: Choices were situation specific. Action scores showed internal reliability (8/10 kappa values reached significance [not reported], while values scores showed evolution over time (kappa .25-.57). Construct validity was estimated, and thought to be moderate to high.

Conclusions: 10 cases presenting ethical dilemmas may assist in clarification/identification of student values, assessment of the effect of ongoing instruction, comparison of students at different levels of training, and comparison of students in different professions. Autonomy and harm avoidance were high ranking values. Sample sizes were too small for generalization.

Comments: Students received no formal ethics instruction, but values score evolved over time. Further application is warranted.

62. Roberts, LW. (1997). Sequential Assessment of Medical Student Competence with Respect to Professional Attitudes, Values, and Ethics. Academic Medicine. 72:428-429.

Type of report/study: Descriptive, brief overview.

Population**:** Medical students at New Mexico (end of first year, middle of second year, beginning of fourth year).

Instruments: Multimodal, student progress assessments (SPAs). Includes standardized patient exams, and formal written assignments.
SP checklists, reflective essays on ethical issues
Faculty review of videotaped encounter

Type of Assessment: Sequential student progress assessments (SPAs)—3 day "examinations", multimodal. One conducted at the end of the first year, one during middle of second year and last one at beginning of fourth year.

Traits assessed: Knowledge of ethical issues (Year 1)
Ability to analyze and assess an ethical issue (Year 1 & 2)
Ability to develop plan addressing difficult issue (Year 2)
Ability to obtain informed consent (Year 4)
Skill & sensitivity in providing patient care (Year 4)
All assess professional attitudes, values, and ethics

Reliability/Validity: Not reported.

Conclusions:

- Sequential assessment allows for periodic assessment and for faculty observation in a routine manner.
- Able to catch situations that might otherwise not be addressed.
- Resource intense and complicated to plan but appears to be worth the effort

63. Rogers, JC & Couts, L. (2000). Do Students' Attitudes During Preclinical Years Predict Their Humanism as Clerkshp Students? Academic Medicine. S74-S77.

Type of report/study: Prospective study of humanistic attitudes of preclinical students as they enter clinical training.

Population**:** Second year medical students, resampled in third year

Instruments: Physician Belief Scale (PBS)
Physician reactions to uncertainty scale (PRU)
Risk in clinical practice questionnaire
Decision making style questionnaire

Type of Assessment: Self report on scales during second year
Self report on scales during third year Family Practice clerkship

SP assessment on humanism during clinical performance exam

Traits assessed: Belief in psychosocial aspects of care (PBS)
Reaction to uncertainty and ambiguity
Risk in clinical practice (RCP)
Decision making style (DMS)
Humanism (as assessed by SP)

Reliability/Validity: Scales were internally consistent, (data not available for DMS or RCP)
Humanism scale was found to be reliable.

Conclusions:

Students who rated the importance of psychosocial elements of care lower had lower humanism scores as assessed by the SPs in year 3. PBS scale may be predictive of humanism for medical students.

Attitudes about uncertainty, risk, and decision making were not found to be related to humanism.

64. Rose, M & Wilkerson, L. (2001). Widening the Lens on Standardized Patient Assessment: What the Encounter Can Reveal About the Development of Clinical Competence. Academic Medicine. 76:856-859.

Type of report: Descriptive report of observations during standardized patient assessment of M4 students.

Population**:** Fourth year medical students participating in required SP assessment

Instruments: Added a qualitative component to a subset (20%) of the SP rating instruments.
Video review of sub-set by faculty.

Type of Assessment: Qualitative assessment by SPs during clinical performance exam
"Real-time" video review of the encounters by faculty
Reviewing of encounter by student and faculty together

Traits assessed: Integration of basic science knowledge, clinical competence, technical skill, empathy, communication, professional role and personal history.

Reliability/Validity: Not reported, not applicable

Conclusions: SP examinations are often used and quantitative data gathered about students' performance. There is ample opportunity to offer teaching and reflection opportunities to students if faculty review the encounter with the student and offer questions and thoughts.

There are multiple uses for SP examinations to assist students in integration of knowledge and skills in an encounter.

SPs' qualitative feedback is also useful as it can represent a perspective on student performance that is different than faculty comments and observation (part of 360^{o} evaluation).

65. Sawyer, J. (Year?). The Altruism Scale: A Measure of Co-operative, Individualistic, and Competitive Interpersonal Orientation. The American Journal of Sociology. Vol? Pages 407-416.

Type of report/study: Survey of aspects of altruism among three separate groups of students.

Population**:** Sociology graduate students, business graduate school students, & college students in social science majors.

Instruments: Each participant was given standard scenarios to respond to based on their own thoughts and their response based on the relationship of the respondent to the "other" (good friend, stranger, person with whom the respondent has had difficulty).

Type of Assessment: Scenario-based responses.

Traits assessed: Sense of welfare of self and others.

Reliability/Validity: Moderate validity and reliability reported.

Conclusions: This format could be to assess a sense of altruism in leaners and professionals by developing relevant cases in which the respondents rate outcomes for self and other (patients or peers). Altruism is then assessed by comparing the responses to the different types of others (friend, stranger, antagonist) against learner preference. Bias could be determined in that ideally a health professional would not change response based on their relationship to the other nor would place their own welfare above that of their patient.

66. Schnabl, GK, Hassard, TH, & Kopelow, ML. (1991). Extending the Skills Measured with Standardized Patient Examinations. Academic Medicine. 66:S34-S36.

Type of report/study: Cohort study of with data aggregated from 4 years of testing.

Population**:** Fourth year medical students (n=346), two groups of internal medicine residents (n=51) and six groups of foreign medical graduates (n=71).

Instruments: SP checklists and The Interpersonal Skills (IPS) rating scale. (Some of IPS items were taken from Barrett-Lennard Relationship Inventory)

IPS yielded two primary factors:

- Communication skills
- Empathy

Type of Assessment: Comprehensive clinical examination (CCE). Uses multiple SP encounters.

Traits assessed: Global clinical performance, empathy, communication and patient satisfaction with encounter.

Reliability/Validity: Inter-rater reliability was not assessed.
IPS scores correlated with data collection skills in the CCE and with management skills assessed by the CCE

Conclusions:

- IPS does measure empathy and communication of information between provider and patient.
- IPS is reliable assessment tool of interpersonal skills with SPs
- No minimum baseline was established for use in determining competence
- Demonstrated a correlation between data collection skills and patient feeling understood and cared for.
- IPS could be used as formative assessment tool to identify areas for growth in communication skills.

67. Shatzer, JH, Wardrop, JL, et al. (1994). Generalizability of Performance on Different-Station-Length Standardized Patient Cases. Teaching and Learning in Medicine. 6:54-58.

Type of report/study: Sequential study with two successive second year medical student cohorts.

Population**:** Second year medical students in a clinical skills course

Instruments: Faculty observer checklists used during SP encounter

Type of Assessment: Standardized patient encounter with faculty observer assessing student performance during the encounter.

Traits assessed: History taking skills:

- Elaboration of chief complaint (ECC)
- Relevant review of systems (SYS)
- Relevant family history (AMH)

Reliability/Validity:

- 10 minute testing period produced higher generalizability than did the 5 or 20 minute testing period.

Conclusions:

- May not be necessary to use SP stations longer than 10 minutes for assessing skills in taking a focused history.
- The extra testing time could be used to add additional cases for testing.

68. Singer, PA, Cohen, R, Robb, A, & Rothman, A. (1993). The Ethics Objective Structured Clinical Examination. Journal of General Internal Medicine. 8:23-28.

Type of report/study: Cohort study of IMG's taking a pre-internship preparation program.

Population**:** 69 international medical graduates taking pre-internship program at University of Toronto.

Instruments: Case-based SP checklists, specific to each case scenario

Type of Assessment: Objective-structured clinical evaluation

Traits assessed: Ability to address clinical-ethical situations dealing with DNR's and intubation.

Reliability/Validity: Face and content validity, inter-rater agreement.

Conclusions: Developed Ethics OSCE stations with face and content validity and inter-rater agreement. (See Singer, et al., 1996 for further psychometric information).

69. Singer, PA, Robb, A, Cohen, R, et al. (1996). Performance-Based Assessment of Clinical Ethics Using an Objective Structured Clinical Examination. Academic Medicine. 71: 495-498.

Type of report/study: Cohort study of 88 volunteer final year Canadian medical students.

Population**:** Final year Canadian medical students

Instruments: Case-based SP checklists, specific to each scenario

Type of Assessment: Objective-structured clinical evaluation

Traits assessed: Ethical decision making around issue of discontinuing care.

Reliability/Validity: Very low reliability. Would take multiple hours of testing to establish adequate reliability. Not feasible.

Conclusions: Because of very low reliability an OSCE cannot be used as a stand alone summative assessment for assessing ethics knowledge. Best used as a formative evaluation tool or in combination with another method of assessment for summative evaluation.

70. Smith, SR, Balint, JA, et al. (1994). Performance-Based Assessment of Moral Reasoning and Ethical Judgment Among Medical Students. Academic Medicine. 69:381-386.

Type of Report/Study:	Descriptive and correlational study of SP evaluation & performance and medical student self-analysis of ethical conflicts
Population/Application:	Fourth year medical students
Instrument:	SP rating instrument, using 5-point Likert scale
Type (Method) of Assessment:	Rating instrument, self assessment
Indicators and Scale:	Interactive behaviors: Elicitation, Moral reasoning, Formation of plans, Execution of plans, Mutuality Moral conflicts: Suffering vs, quality of life; Patient autonomy; Truthfulness of data presented to patient; Role as researcher vs. caregiver; Abuse of authority of attending physician; Desire for good grade vs. truthfulness
Traits/Competencies Assessed:	See above
Reliability/Validity Data:	Not provided
Conclusions:	Provides a model for linking interactive and analytical skills; Little relationship between failure in analytical skills and failure in interactive skills
Comments:	Shows promise in formative evaluation of students, and would improve with utilization of multiple cases

71. Van Luijk, SJ, Smeets, JGE, et al. (2000). Assessing Professional Behaviour and the Role of Academic Advice at the Maastricht Medical School. Medical Teacher. 22:168-172.

Type of Report/Study:	Description of evaluation tools and scales developed to assess professional behavior of medical students
Population/Application:	Medical students
Instrument:	Assessment of Professional Behavior
Type (Method) of Assessment:	Rating scale used by faculty observers
Indicators and Scale:	Performing tasks, Aspects of communication, Personal performance, Overall judgment
Traits/Competencies Assessed:	Time management, Independence, Self-confidence, Cooperation, Collegiality, Patient communication, Dealing with criticism, Self criticism
Reliability/Validity Data:	Not provided
Conclusions:	Provides the instrument and definitions of all concepts, observer instructions, and conditions for assessment of professional behavior

Comments: Implemented at time of writing, no results reported

72. Vu, NV, Marcy, ML, Verhulst, SJ, & Barrows, HS. (1990). Generalizability of Standardized Patients' Satisfaction Ratins of Their Clinical Encounter with Fourth-Year Medical Students. Academic Medicine. 65:S29-S30.

Type of Report/Study: Evaluation study
Population/Application: Medical students, from three successive years
Instrument: Standardized patient (SP) rating of students' communication and professional skills during SP encounters
Type (Method) of Assessment: Rating form
Indicators and Scale: Communication skills: students' clarity and thoroughness of communication; Professional manner: demonstration of thoroughness, carefulness and competence in dealing with the patients' problems and their personal manner – demonstration of respect, courtesy, and sensitivity toward the patient; one item assessing the patient's overall satisfaction, trust, and anticipated compliance with the student's recommendations
Traits/Competencies Assessed: Professional manner, Communication
Reliability/Validity Data: Generalizability (reliability) coefficients .77/.83/.78 for communication; .73/.80/.77 for professional manner; .69/.82/.78 for patient satisfaction;
Conclusions: SPs are able to generate valid, accurate, and reliable ratings of students' professional and communication skills
Comments:

73. Wolf, TM, Balson, PM, et al. (1989). A Retrospective Study of Attitude Change During Medical Education. 23:19-23.

Type of Report/Study: Retrospective survey
Population/Application: Medical students
Instrument: Questionnaire regarding student attitudes
Type (Method) of Assessment: Not applicable
Indicators and Scale: Not applicable
Traits/Competencies Assessed: Cynicism, Concern for making money, Concern for patients, Helpfulness, Humanitarianism, Empathy, Sensitivity, Anxiety, Emotions, Condescension
Reliability/Validity Data: Not provided
Conclusions: Students reported becoming more cynical, more concerned with making money, more concerned for patients, and more helpful
Comments: The authors postulate that medical education may increase risk of burnout and impairment