Critical Analysis of the Objective Structured Teaching Exercise (OSTE) in Faculty Feedback Skills

Introduction:

We recommend first reading the Critical Analysis of the Objective Structured Teaching Exercise (OSTE) in Faculty Feedback Skills, which covers basic descriptive and psychometric information, including the number of items, instrument purpose, and psychometric (i.e. validity) data; and can help determine if the Objective Structured Teaching Exercise (OSTE) meets your needs. If you are interested in getting more detailed information about the items in the instrument or have decided to consider using the Objective Structured Teaching Exercise (OSTE) in Faculty Feedback Skills, we recommend reviewing the Objective Structured Teaching Exercise (OSTE) in Faculty Feedback Skills instrument file and scoring guide.

Educational Objectives:

1. To describe the purpose and basic properties of the Objective Structured Teaching Exercise (OSTE) in Faculty Feedback Skills, including number of items and scales, and psychometric properties;
2. To describe the application of the Objective Structured Teaching Exercise (OSTE) in Faculty Feedback Skills to the field of health sciences education;
3. To evaluate the relative strengths and weaknesses of the Objective Structured Teaching Exercise (OSTE) in Faculty Feedback Skills; and
4. To provide the Objective Structured Teaching Exercise (OSTE) in Faculty Feedback Skills and supplemental materials to aid in its administration.

Resource files:

- Critical Analysis of the OSTE in Faculty Feedback Skills.pdf
- FFS OSTE Instrument .doc
- FFS OSTE Development and Scoring Guide.pdf

A. Original Citation: Stone S MK, Devaney-O'Neil S, Starr S, Ferguson W, Wellman S, Jacobson E, Hatem DS, Quirk M. Development and Implementation of an Objective Structured Teaching Exercise (OSTE) to Evaluate Improvement in Feedback Skills Following a Faculty Development Workshop. Teaching and Learning in Medicine. 2003;15(1):7-13.[(1)]

B. Brief Description/Purpose:

- **Construct:** The instrument was developed as a performance-based instrument for evaluating faculty development efforts of clinical preceptors. To administer the OSTE in Faculty Feedback Skills, the preceptor spends the first three minutes watching a videotaped encounter between a standardized student and standardized patient. The preceptor is then given one minute to prepare to discuss the encounter with the

standardized student before the student enters the preceptor's room. The preceptor then has five minutes to provide feedback to the student before rotating to the other four cases. The total time to complete the entire OSTE is 55 minutes.

- **Target Population:** The instrument is intended to assess the feedback skills of faculty educators in medical education.

- **Method of Assessment:** The instrument is administered as part of an OSTE. It is a paper-based standardized student-assessment instrument. Four skill domains (feedback about medical skills, feedback about communication skills, action planning, and perceptions and feelings about encounter) are noted as being present or absent via a checklist. Five Likert-type questions are used to assess overall perceptions including the perceived impact on learning experience.

C. Development and Psychometrics:

Development of the OSTE:

Prior to development of this instrument, faculty development efforts were often evaluated based on faculty self-reports of satisfaction or progress. This instrument was developed to be used as a performance-based measure to evaluate faculty development efforts in the area of providing feedback to learners.

Development of the instrument began with case and item-writing workshops. Standardized patients and standardized students were trained and videotaped interacting on eight cases. Videotaped interactions were used to narrow the cases to five, and those five cases were pilot tested using faculty volunteers on two different occasions. The documentation of the instrument does not provide additional clarity on how the videotapes were used to narrow the cases. Standardized students were given final training in applying scoring guidelines and finalized checklists.

The five Objective Structured Teaching Exercises (OSTE) cases had two parts: a videotaped encounter between the standardized patient and the standardized student, and the faculty preceptor feedback interaction with the standardized student. Videotaped interactions between the standardized patient and the standardized student demonstrated ineffective communication skills of the standardized student. The faculty preceptor had five minutes with the standardized student to provide feedback on his or her performance on the videotape.

The Objective Structured Teaching Exercise (OSTE) in Faculty Feedback Skills instrument is comprised of two sets of items. The first set is a checklist which the standardized student indicates whether or not the faculty preceptor performed during the OSTE encounter. The checklist includes substantive content categories measuring feedback of communication skills, medical skills, action planning, and learner's perceptions and feelings. The second set of items is intended to solicit student's subjective, holistic ratings of the preceptor's performance. The five items are assessed on a 5-point Likert type scale with endpoints of strongly disagree and strongly agree.

The Paper and Pencil Test:
A 25-item, written scenario-based multiple-choice instrument was used to assess correlation of assessment between the OSTE and written assessment formats. The author of the OSTE was not able to provide further information about the 25-item instrument. Reliability analyses resulted in alpha estimates of 0.66 for the OSTE checklist total scores, 0.66 for the OSTE rating scale scores, and 0.52 for the 25-item written multiple-choice test. Correlations between the OSTE and the written test were not strong. The correlation between the OSTE total checklist scores and the total written test score was 0.196, which increased to 0.225 when corrected for unreliability in the measures. The correlation between the OSTE rating scale items and the written multiple-choice test score was 0.063, which increased to 0.174 after correcting for unreliability.[2]

The OSTE Process:
To assess reliability and validity, one expert faculty rater and one trained graduate student rater scored all taped encounters for three randomly-selected cases. A subsample of 20% of those 150 encounters was also scored by five additional expert faculty raters and two additional graduate student raters to determine the reliability of the raters. Scores were then averaged by faculty preceptor across cases.

Findings of the reliability and validity study concluded that global ratings are potentially more reliable across rater types than behavior checklists in the OSTE. Standardized students were found to rate faculty preceptors teaching behavior significantly higher than trained graduate students on checklist behaviors and higher than expert faculty raters on global performance scales.[3]

Other literature has suggested that leniency bias in grading can lead to concern in validity of evaluation of teaching. [4-6] Students have been shown to be less critical of their teachers as the students develop a relationship with their teachers.[5] The impact of this effect is seen in checklist-type ratings and more global ratings.[6]

D. Additional Studies Reporting Validity Evidence:
No further studies have been performed on the validity of the instrument at this time. The instrument has been cited in the community-based faculty preceptor training literature, but was not used as an assessment in the study that cited it.[7]

E. Application to Health Sciences Education and/or Health Sciences Education Research:
Implementation of the instrument requires standardized students and standardized patients. Reliability was optimized when at least five cases were used for the OSTE, which allowed five preceptors to rotate through the OSTE at one time. Standardized students and standardized patients must be recruited, trained and videotaped. The methods for these activities are not clearly delineated in the supporting literature for this instrument.

F. Commentary:

In summary, the instrument is an innovative assessment tool for use in faculty development of clinical preceptors. By using five cases, the tool has acceptable reliability to identify preceptors in need of further development in providing student feedback. Despite its publication date of 2003, the instrument has not been reported in the literature as being implemented in a variety of samples. Thus, it is not known whether the instrument might perform better in other samples or populations. While the assessment tool is available in this resource packet, the cases and training materials for the standardized patients and standardized students are not provided by the author.

Common pitfalls when implementing an OSTE include having goals that are unclear, not clearly identifying the target audience, and failure to focus on specific teaching skills. The instrument is designed to assist users in avoiding these pitfalls. Choosing and training the standardized student, holding a dry run, providing context, and promoting engagement are also critical success factors.[8]

As with any tool, there are potential aspects in which this tool could be improved. Standardized students appear to be more reliable but less valid alternatives to trained raters or faculty experts in an OSTE. The current reliability may be tolerable if the assessment is used for the purpose of identifying preceptors in need of remedial training. Trained graduate student raters may be a better alternative when OSTE results are used as a basis for selecting faculty preceptors for rewards, certifying teaching competence or other high stakes evaluations. Higher numbers of cases could increase the reliability of the instrument, thus allowing it to be used for broader purposes in the faculty development of clinical preceptors. One of the major strengths of this instrument is the extent to which change in skill over time can be assessed. As it becomes used more broadly, use in this manner may offer further evidence to its validity.

G. Additional Citations:

1. Stone S, Mazor K, Devaney-O'Neil S, Starr S, Ferguson W, Wellman S, et al. Development and implementation of an objective structured teaching exercise (OSTE) to evaluate improvement in feedback skills following a faculty development workshop. Teach Learn Med. 2003;15(1):7-13. doi: 10.1207/S15328015TLM1501_03. PubMed PMID: 12632702.
2. Downing SM. Validity: on meaningful interpretation of assessment data. Med Educ. 2003;37(9):830-7. PubMed PMID: 14506816.
3. Quirk MK, Haley HL, Wellman S, Keller D, Hatem D, Keller LA. Reliability and Validity fo Checklists and Global Ratings by Standardized Students, Trained Raters, and Faculty Raters in an Objective Structured Teaching Exercise (OSTE). Teaching and Learning in Medicine. 2005;17(3):202-9.
4. Greenwald AG, Gillmore GM. Grading leniency is a removable contaminant of student ratings. American Psychologist. 1997;52(11):1209-17. doi: Doi 10.1037//0003-066x.52.11.1209. PubMed PMID: WOS:A1997YD01500005.
5. McKeachie WJ. Student ratings - The validity of use. American Psychologist. 1997;52(11):1218-25. doi: Doi 10.1037/0003-066x.52.11.1218. PubMed PMID: WOS:A1997YD01500006.
6. dApollonia S, Abrami PC. Navigating student ratings of instruction. American Psychologist. 1997;52(11):1198-208. doi: Doi 10.1037//0003-066x.52.11.1198. PubMed PMID: WOS:A1997YD01500004.

7. Wilkes MS, Hoffman JR, Usatine R, Baillie S. An innovative program to augment community preceptors' practice and teaching skills. Academic medicine : journal of the Association of American Medical Colleges. 2006;81(4):332-41. PubMed PMID: 16565184.
8. Boillat M, Bethune C, Ohle E, Razack S, Steinert Y. Twelve tips for using the objective structured teaching exercise for faculty development. Med Teach. 2012;34(4):269-73. doi: 10.3109/0142159X.2011.599891. PubMed PMID: 22455695.

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