



# Students' Performance in Pharmacy Objective Structured Clinical Examination (OSCE) and Written Examinations – A Comparative Study

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## Introduction

- The Objective Structured Clinical Examination (OSCE) is an objective circuit examination used to assess students' clinical competence through direct observation of their performance in different stations<sup>1</sup>
- It enabled evaluation of "show how" as illustrated by the Miller's pyramid of competence assessment in 1990<sup>2</sup>
- Pharmacy OSCE has been used worldwide, but research comparing students' pharmacy OSCE performance with traditional written examination performance is limited and only conducted in Western countries
- Pharmacy OSCE has been adopted in Hong Kong since 2012, but there has been currently no published research regarding its use in Hong Kong

## Aims

- To investigate the correlation between students' pharmacy OSCE performance and written examination performance
- To study the relationship between students' perceived stress towards pharmacy OSCE and their OSCE performance

## Materials and Methods

- A retrospective comparative study
- Ethically approved by the Human Research Ethics Committee of the University of Hong Kong
- In a total of 132 University of Hong Kong Bachelor of Pharmacy graduates of 2012-2016 (5 student cohorts), 119 (90%) of them were included in the study while 13 of them were excluded due to deferral of the degree
- Subjects' OSCE results and written examination results were collected from the examination results database of the Department of Pharmacology and Pharmacy of the University of Hong Kong
- The questionnaire results were collected from the previous unpublished study called "Pharmacy Students' Attitude on Objective Structured Clinical Examination (OSCE) - A Hong Kong Perspective"<sup>3</sup>
- The identity of all subjects was masked by a third party and blinded from the investigators to ensure anonymity

## Acknowledgement

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## References

- Harden RM. What is an OSCE? *Med Teach*. 1988;10(1):19-22.
- Miller GE. The assessment of clinical skills/ competence/ performance. *Acad Med*. 1990;65(9):63-7.
- Wong PY, Chan WL. Pharmacy students' attitude on objective structured clinical examination (OSCE) - a Hong Kong perspective [unpublished manuscript]. Hong Kong: University of Hong Kong; 2016.

## Results

### I. The OSCE and written examination results distribution

- Majority (70%) of the examination results of both OSCE and written examinations were in normal distribution with Shapiro-Wilk test significance values ranged from 0.057 to 0.981

### II. Differences in cohort performance in the OSCE and written examinations

- The mean written examination score (70.59% ± 6.33%) was statistically significantly higher than the mean OSCE score (67.5% ± 12.1%) (t = 2.966, p = 0.004)
- The mean OSCE score of Class of 2012 (58.3% ± 11.9%) was statistically significantly lower than that of Class of 2016 (77.1% ± 8.8%) by 18.8% (t = -6.173, p = 0.000)

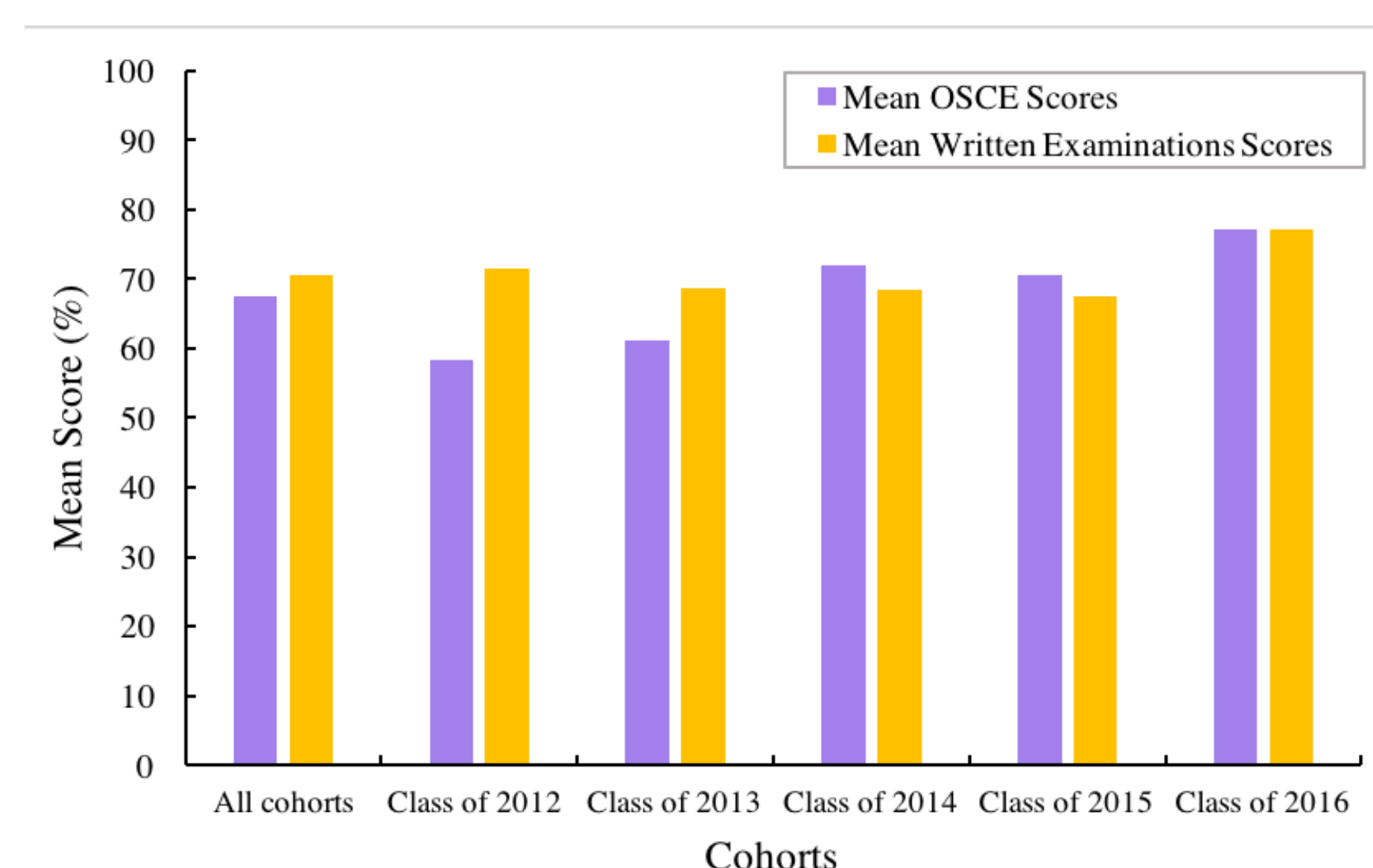


Figure 1. Mean OSCE and written examinations scores of all cohorts

### III. Correlation between subjects' OSCE results and written examination results

- Weak correlation (r = 0.384, p = 0.000)

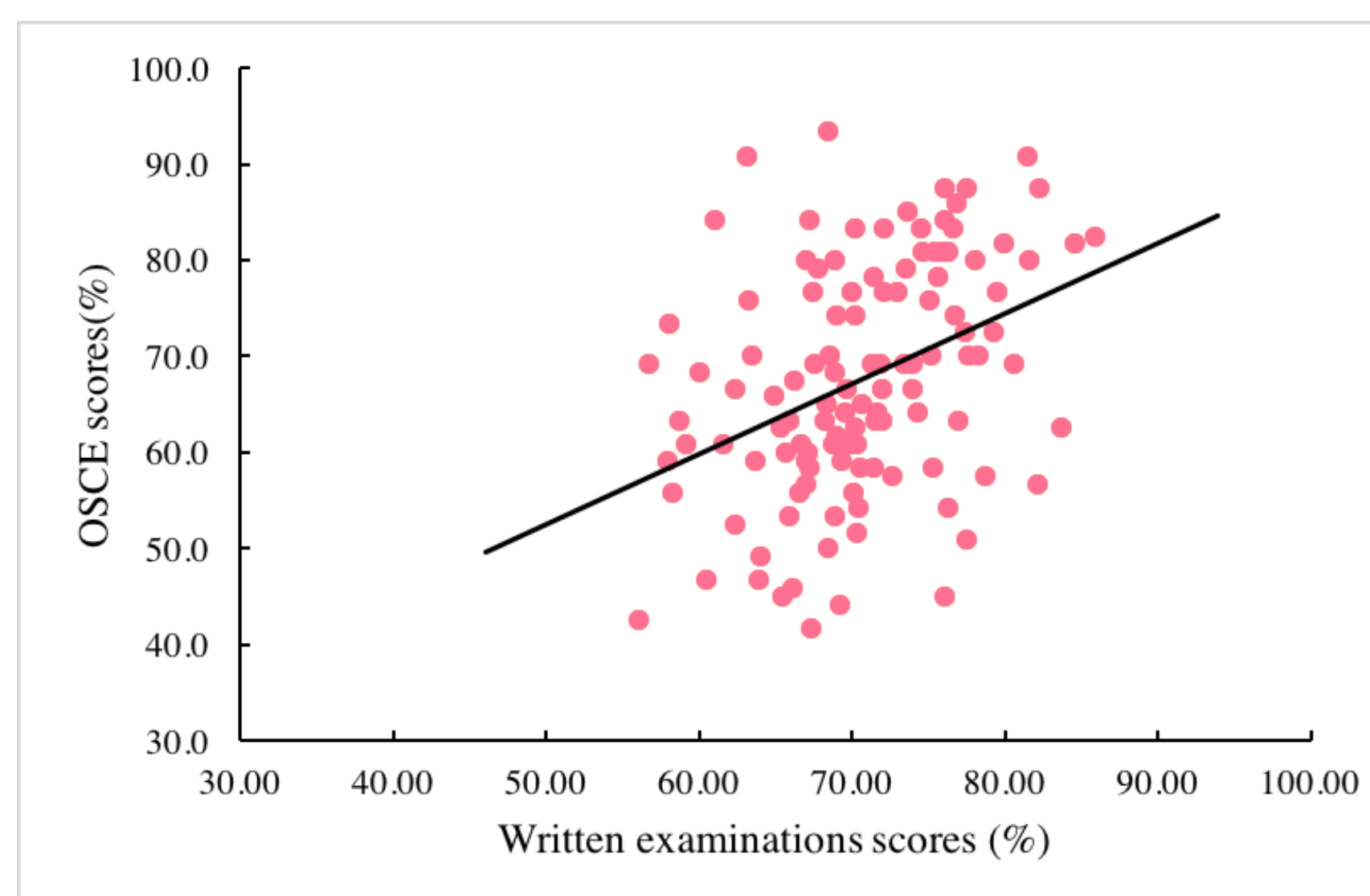


Figure 2. Scatterplot showing the correlation between OSCE results and written examination results

### IV. Correlation between cohorts' perceived stress and performance of the OSCE

- A strong positive correlation (r = 0.931, p = 0.022)

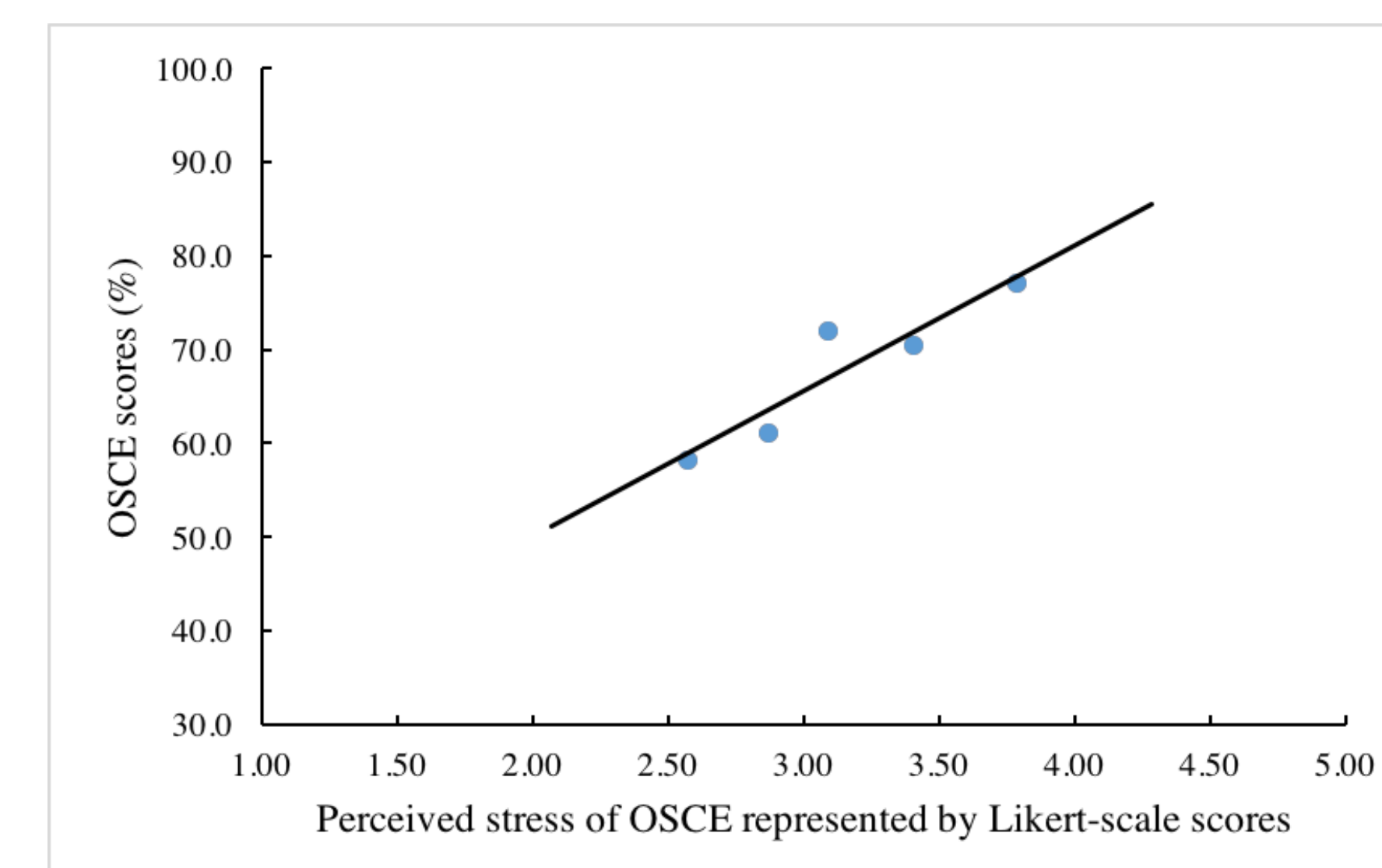


Figure 3. Scatterplot showing the correlation between perceived stress of OSCE (represented by Likert-scale scores) and OSCE results

## Discussion

### I. Validity in assessment

- Examination papers of both OSCE and written examinations were valid in grading students at different levels of academic and clinical competence

### II. Correlation between performance in the OSCE and written examinations

- The OSCE and written examinations assess different levels of clinical competence
- They share the same knowledge basis in clinical pharmacy and pharmacy practice

### III. Perceived stress and OSCE performance

- Eustress instead of distress experienced by students improves their OSCE performance
- Higher perceived stress appears to motivate students to have more preparation work
- Higher perceived stress promotes cooperative learning, which may have a positive effect on OSCE results

### IV. Improvements in OSCE performance over the years

- Experience sharing from earlier cohorts allows students in the later cohorts to polish their skills and work collaboratively in developing strategies in preparing for the OSCE
- Receiving rumours from earlier cohorts motivates students to have better preparation for the OSCE

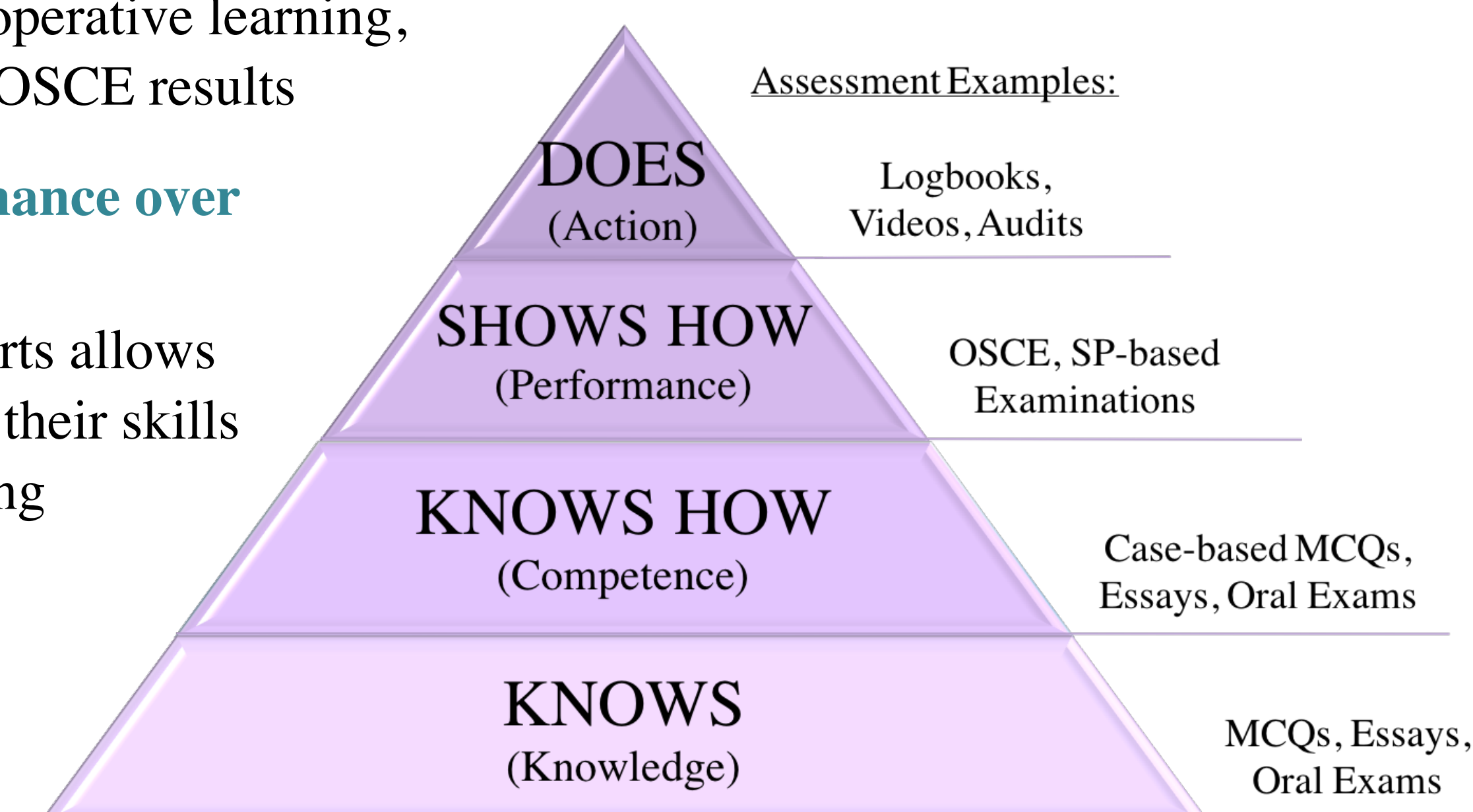


Figure 4. Miller's pyramid of competence assessment<sup>2</sup>

## Conclusion

- Pharmacy OSCE helps evaluate different level of clinical competence from that assessed by written examinations and should therefore be used together for the comprehensive assessment of pharmacy students' clinical competence
- Perceived stress and test anxiety may have a positive effect on pharmacy OSCE performance