

Self-Assessment Skills and Influencing Factors in Dental Education

David L. Kornmehl DMD, Hiroe Ohyama DDS MMSc PhD DMD

Harvard School of Dental Medicine, Boston, Massachusetts



INTRODUCTION

Self-assessment is the evaluation of one's performance at a job or learning task considered in relation to an objective standard.¹⁻³ As life-long, self-directed learners and self-regulating practitioners, accurate self-assessment is essential in the current model of healthcare. Because of the importance, competence in self-assessment is a required component by most health education regulatory bodies, including the Commission on Dental Accreditation in the United States.^{4,5} Most dentists practice as self-regulating, solo practitioners for their entire professional career necessitating the need for excellent self-assessment abilities. Identifying factors that correlate to one's self-assessment ability is important for students and educators.

METHODS & MATERIAL

During the operative dentistry preclinical course at Harvard School of Dental Medicine (HSDM), third-year students were tasked with competency examinations and self-assessment of their performance without faculty interventions or guidance. The difference between the students' self-assessment and mean faculty grading scores (S-F gaps as self-assessment skills) were calculated and analyzed to determine associations with preclinical performance, admissions scores, gender, culture and 3D technology. The Harvard University Faculty of Medicine Office of Human Research Administration Office of Human Research Administration verified that this study met the exemption criteria (Protocol #IRB 20-1131 and 2018-0146).

RESULTS

1a	Mean Faculty score ± SD	Mean Self-Assessment ± SD	Mean S-F Gap	Lower Quartile Mean S-F Gap	Upper Quartile Mean S-F Gap
	82±1%	88±1%	6%*	16%*	-4%

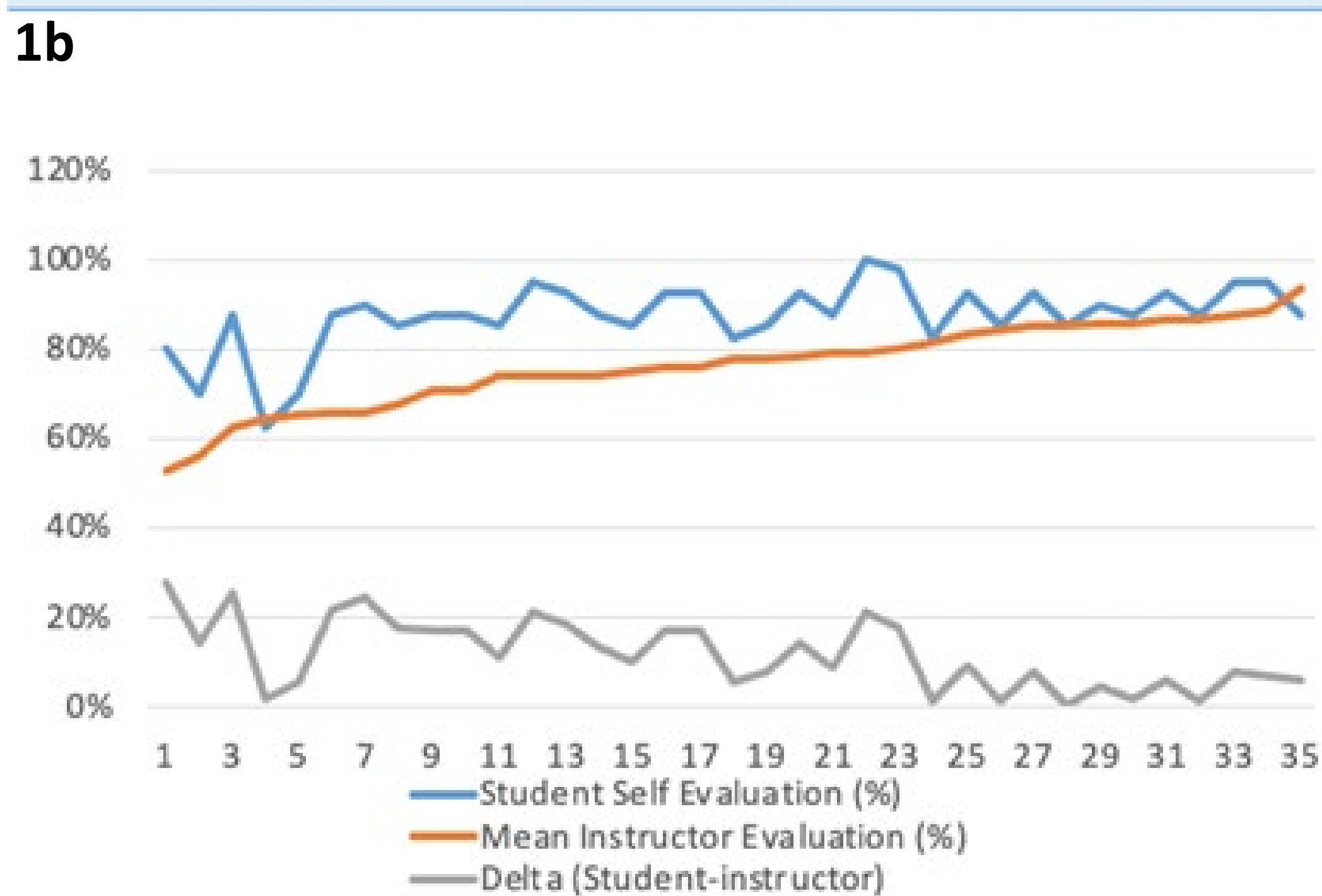


Figure 1: a. Summary of faculty and student assessments of preclinical performance (n=71) b. Trend of student Self Evaluation and Student-Faculty Gap (S-F Gap) for one of the competency exams, which was similar for the other competencies exams

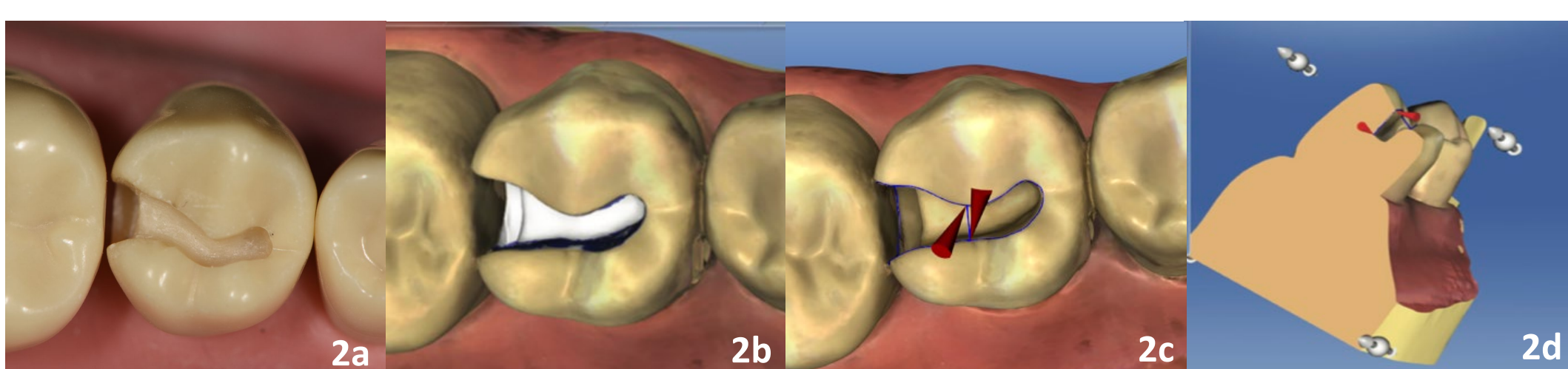


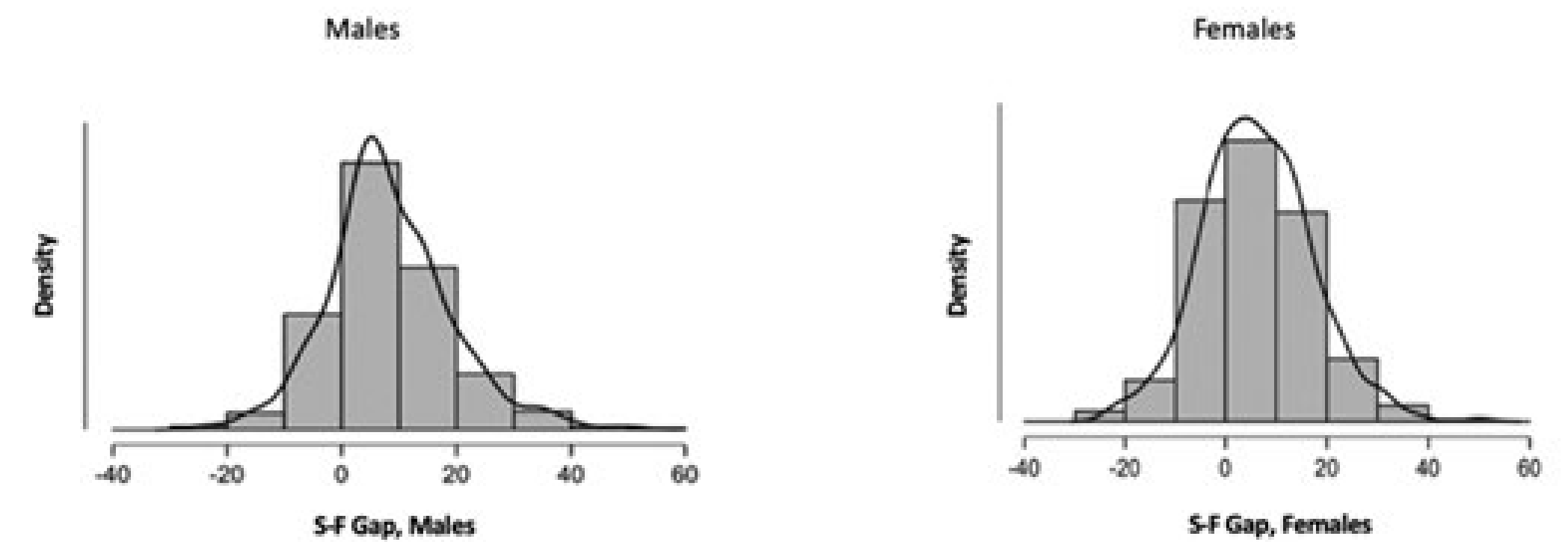
Figure 2: a. Operative manikin typodont cavity preparation (drilling) photograph. b-d. Cavity preparation images from digital scan using CEREC Omnicam (Dentsply Sirona, York, PA)

RESULTS

3a

	Mean Faculty score ± SD	Mean Self-Assessment ± SD	Mean S-F Gap	Lower Quartile Mean S-F Gap	Upper Quartile Mean S-F Gap
US (n=174)	79.7±8.1%	87.7±9.0%	7.6%	14.6%	0.58%
Japan (n=175)	68.3±10.4%	71.1±12.3%	2.8%	4.9%	-1.3%

3b



	Underestimated Self-Assessment	Accurate Self-Assessment	Overestimated Self-Assessment
Number	66	17	313
Percentage	16.67%	4.29%	79.04%

	Underestimated Self-Assessment	Accurate Self-Assessment	Overestimated Self-Assessment
Number	116	25	294
Percentage	27.29%	5.75%	67.59%

Figure 3: a. Comparison of faculty and student assessments of preclinical performance between males and females b. S-F gaps for all procedures

4a

	Mean Faculty score ± SD	Mean Self-Assessment ± SD	Mean S-F Gap	Lower Quartile Mean S-F Gap	Upper Quartile Mean S-F Gap
Male (n=99)	79.9±11%	88.2±8%	8.3%	18.2%	-0.3%
Female (n=109)	80.8±11%	86.8±10%	6.1%	14.8%	-1.6%

p=0.003* p=0.019*

4b

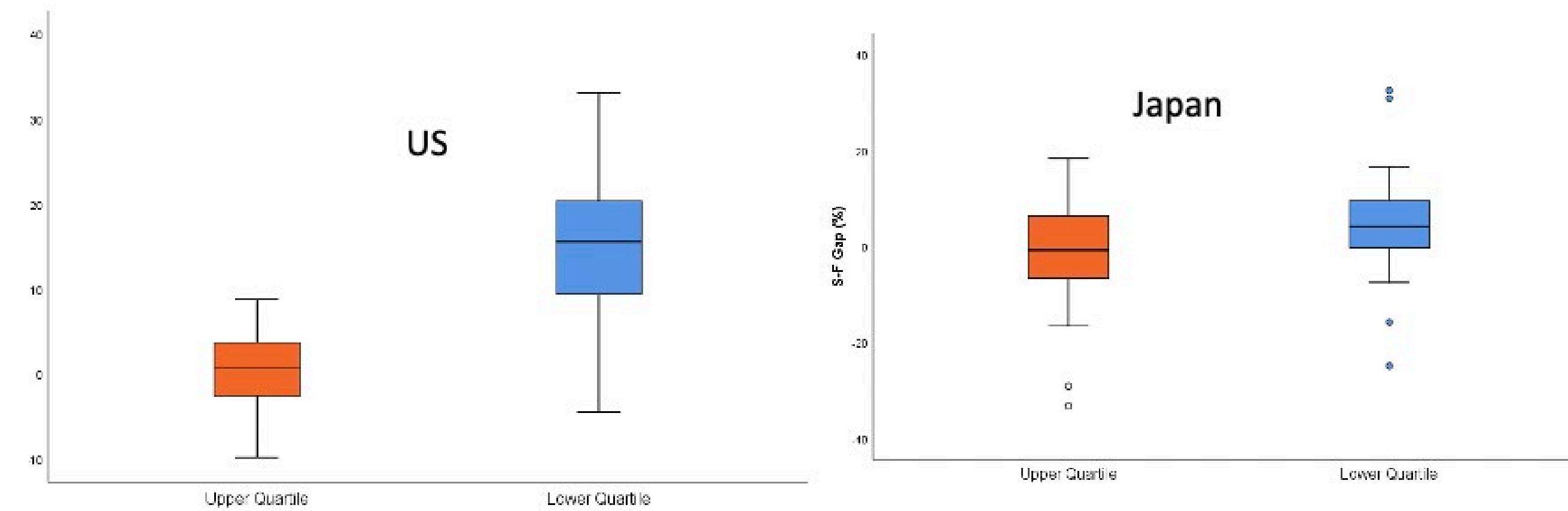


Figure 4: a. Overview of faculty and student self-assessment by students in the US and Japan b. Box plots of S-F Gaps of the lower and upper quartiles of students in the US and Japan

CONCLUSION

Student self-assessment was impacted by many variables as the research has demonstrated. Each study was carefully undertaken to elucidate the extent self-assessment has in a dental curriculum. Most students in these studies overestimated their abilities. Without the experience students receive in understanding the self-assessment process and evaluating their work through a critical lens, they may be ignorant to their performance during their clinical education and into their future careers.

WORK CITED

- Evans AW, McKenna C, Oliver M. Self-assessment in medical practice. *J R Soc Med.* 2002;95(10):511-3.
- Blanch-Hartigan D. Medical students' self-assessment of performance: results from three meta-analyses. *Patient Educ Couns* 2011;84(1):3-9.
- Colthart I, Bagnall G, Evans A, et al. The effectiveness of self-assessment on the identification of learner needs, learner activity, and impact on clinical practice: BEME guide no. 10. *Med Teach* 2008;30(0131):124-45.
- Mays KA, Branch-Mays GL. A systemic review of the use of self-assessment in preclinical dental education. *J Dent Educ.* 2016;80(8):902-13.
- CODA. [accessed on April 1st, 2023]. Retrieved from: CODA.org: Predoctoral Accreditation Standards (ada.org)