

Correlation Analysis between COMAT and COMLEX-USA Scores

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Research Debrief: Correlation Analysis between COMAT and COMLEX-USA scores

This report aims to summarize recent research findings on the relationships between COMAT scores (COMAT Clinical and COMAT FBS) and COMLEX-USA scores (Level 1 and Level 2-CE). Specifically, it addresses:

- 1) The relationship between FBS-Targeted (FBS-T) exam scores and COMLEX-USA Level 1 scores.
- 2) The relationship between FBS-Comprehensive (FBS-C) exam scores and COMLEX-USA Level 1 scores.
- 3) The relationship between COMAT Clinical exam scores and COMLEX-USA Level 2-CE scores, with analysis based on the mode of test delivery.

Methodology

In all studies, only first-time test takers were included. Almost all test takers completed the FBS-T, FBS-C, and/or COMAT Clinical exams prior to taking the COMLEX-USA exams. Pairwise Pearson correlation coefficients were calculated to assess the relationships between these scores.

To interpret the magnitude of the correlations, Cohen's guidelines (1992) were applied:

- Correlation coefficients above 0.50 are considered a large effect size.
- Correlation coefficients between 0.30 and 0.50 are considered a medium effect size.
- Correlation coefficients below 0.30 are considered a small effect size.

Study 1: Score relationship between FBS-Targeted (FBS-T) exams and COMLEX-USA Level 1 scores

Sample. This analysis included first-time test takers in their second year of osteopathic medical school. The FBS-T testing window spanned November 2022 to April 2024, while the COMLEX-USA Level 1 testing window covered April 2022 to November 2024. Only 48 out of more than 13,000 students (0.3%) completed the COMLEX-USA Level 1 before taking the FBS-T exams, making this scenario exceptionally rare. All other students took the FBS-T exams first.



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Additional data cleaning rules were applied:

- Test takers with raw scores below the chance level, indicating a lack of motivation, were excluded from the analysis.
- Scores from test takers who completed the FBS-T via self-proctoring were also excluded.

Results. Table 1 presents the sample sizes and correlation coefficients for each of the 14 FBS-T exams in relation to COMLEX-USA Level 1 scores. Overall, the results indicate strong correlations, with all 14 FBS-T exams demonstrating correlation coefficients above 0.50, which is considered a large effect size.

Table 1

Correlation between FBS-T exams and COMLEX-USA Level 1 scores

Subject	Sample Size	Correlation Coefficient
Foundational Anatomical Sciences	396	0.51
Cardiovascular and Hematologic Systems	1,223	0.64
Endocrine System and Metabolism	946	0.53
Gastrointestinal System and Nutritional Health	1,588	0.53
Genitourinary/Renal System	651	0.60
Human Development, Reproduction and Sexuality	1,212	0.53
Integumentary System	399	0.52
Biochemistry and Genetics	533	0.50
Musculoskeletal System	494	0.56
Foundational Neurosciences	1,617	0.55
Pharmacologic Principles and Concepts	760	0.64
Physiologic Basis of Health and Disease	242	0.52
Respiratory System	1,170	0.59
Microbiology and Immunology	1,022	0.60



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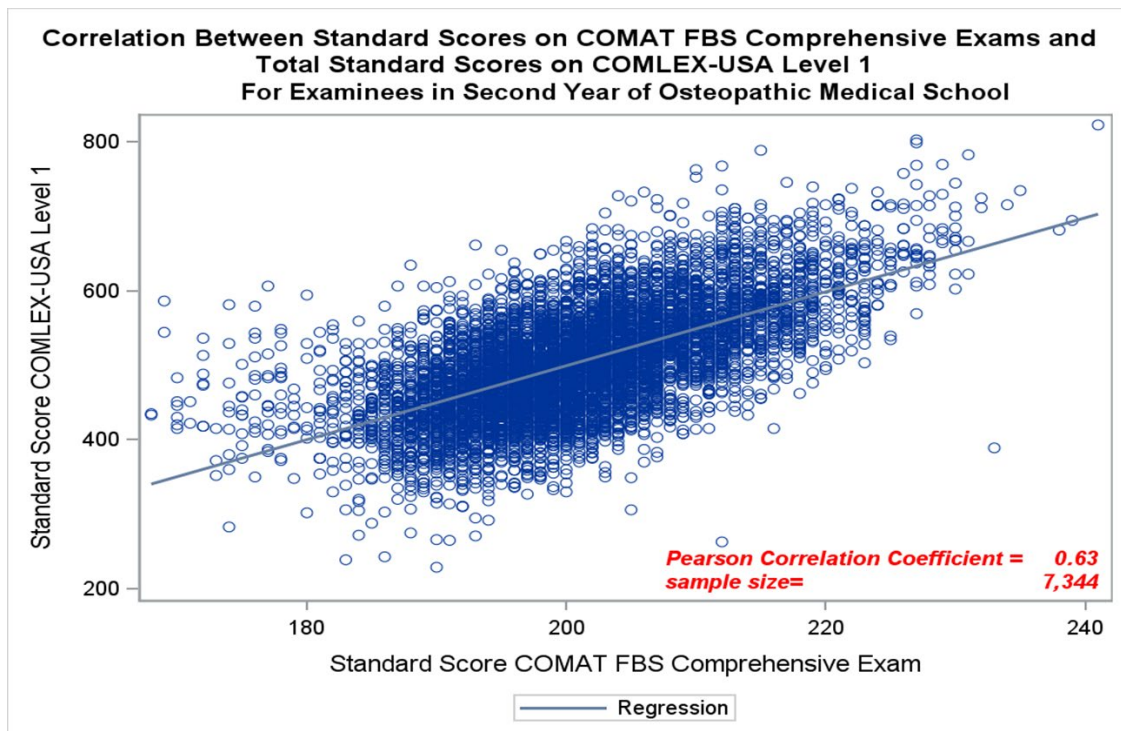
Study 2: Relationship between FBS-Comprehensive (FBS-C) exam score and COMLEX-USA Level 1 scores

Sample. Similar to Study 1, the Study 2 analysis included first-time test takers in their second year of osteopathic medical school. The FBS-C testing window spanned July 2021 to June 2024, while the COMLEX-USA Level 1 testing window covered November 2021 to May 2024. All test takers took the FBS-C prior to taking COMLEX – USA Level 1. As in the previous study, test takers with scores below the chance level and those who completed the FBS-C via self-proctoring were excluded from the analysis.

Results. Figure 1 presents a scatterplot illustrating the relationship between FBS-C exam scores and COMLEX-USA Level 1 scores. Among second-year osteopathic medical students (N = 7,344), the correlation coefficient was 0.63, indicating a large effect size.

Figure 1

Scatterplot of COMAT FBS-C and COMLEX-USA Level 1 scores



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Study 3: Score relationship between COMAT Clinical exams and COMLEX-USA Level 2-CE

Sample. The Study 3 analysis included first-time test takers in their third or fourth year of osteopathic medical school. Unlike the previous two studies, which excluded self-proctoring results, Study 3 included both in-person proctoring at school and self-proctored COMAT Clinical exam results to compare the modes of delivery. The COMAT Clinical exam window spanned August 2021 to June 2024, and the COMLEX – USA Level 2-CE covered May 2021 to December 2024. Approximately 6% of examinees took Level 2-CE *before* taking COMAT Clinical.

Results. Table 2 shows the correlation coefficients between COMAT Clinical exam scores and COMLEX-USA Level 2-CE scores. Overall, strong correlations were observed, with coefficients exceeding 0.50 for all eight exams. Several correlations approached or surpassed 0.70, indicating very strong relationships.

Table 2

Correlation between COMAT Clinical and COMLEX-USA Level 2-CE scores

Subject	Sample Size	Correlation Coefficient
Emergency Medicine (EM)	12,928	0.63
Family Medicine (FM)	13,442	0.68
Internal Medicine (IM)	13,213	0.71
Obstetrics & Gynecology (OB)	13,007	0.66
Osteopathic Principles & Practice (OPP)	9,058	0.51
Pediatrics (PEDS)	12,966	0.69
Psychiatry (PS)	12,532	0.61
Surgery (SU)	13,146	0.65

We further analyzed score correlations based on the delivery mode of COMAT Clinical exams: comparing in-person proctoring with self-proctoring – as part of due diligence to examine test security. Table 3 provides the sample sizes for each subject under each delivery mode.



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Table 3.

Sample sizes of test takers taking COMAT Clinical under different delivery modes

	In-Person Proctoring	Self-Proctoring
Emergency Medicine (EM)	6,297	5,459
Family Medicine (FM)	7,922	8,145
Internal Medicine (IM)	7,839	7,784
Obstetrics & Gynecology (OB)	7,761	7,652
Osteopathic Principles & Practice (OPP)	5,722	4,532
Pediatrics (PD)	7,727	7,684
Psychiatry (PS)	7,702	7,286
Surgery (SU)	7,817	7,757

Table 4 lists the mean scores for COMAT Clinical and COMLEX – USA Level 2-CE exams by delivery mode. Figure 2 illustrates group performance on COMAT Clinical exams across delivery modes. With one exception among the eight subjects, the self-proctoring group consistently scored higher than the in-person proctoring group on COMAT Clinical exams. Although the differences were minor, the pattern remained consistent.



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Table 4

Comparison of test scores by delivery mode

	COMAT Clinical		COMLEX-USA Level 2-CE*	
	In-Person Proctoring	Self-Proctoring	In-Person Proctoring	Self-Proctoring
Emergency Medicine (EM)	100.5	100.5	548.9	531.7
Family Medicine (FM)	100.4	101.4	542.2	534.1
Internal Medicine (IM)	99.8	101.8	542.6	533.3
Obstetrics & Gynecology (OB)	100.6	101.0	542.8	533.8
Osteopathic Principles & Practice (OPP)	101.8	102.9	544.6	538.7
Pediatrics (PD)	100.2	102.0	542.3	534.9
Psychiatry (PS)	100.7	101.7	542.4	533.3
Surgery (SU)	99.3	100.7	542.0	533.8

*Level 2-CE was administered exclusively at professional testing centers with in-person proctoring. The distinction of the delivery mode was based on COMAT Clinical. The interpretation of the data under COMLEX – USA Level 2-CE should be, for example, the test takers who took COMAT Clinical via in-person proctoring scored 548.9 on EM on COMLEX – USA Level 2-CE; and the test takers who took COMAT Clinical via self-proctoring scored 531.7 on EM on COMLEX – USA Level 2-CE.

In contrast, Figure 3 highlights an opposite pattern in COMLEX – USA Level 2-CE performance. Although the self-proctoring group scored higher on COMAT Clinical exams, they performed substantially worse than the in-person proctoring group on COMLEX – USA Level 2-CE. It is important to note that COMLEX – USA Level 2-CE was administered exclusively at professional testing centers with in-person proctoring.

Figure 4 illustrates the Pearson correlation coefficients between COMAT Clinical and COMLEX – USA Level 2-CE scores, segmented by delivery mode. Correlation coefficients were consistently higher for in-person proctoring compared to self-proctoring (with only one exception: OPP).

In summary, the findings reveal a clear mismatch between COMAT Clinical scores and subsequent COMLEX – USA Level 2-CE performance for the self-proctoring group. As a result, self-proctoring will be discontinued in the near future.



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Figure 2.

Group performance on COMAT Clinical by delivery mode

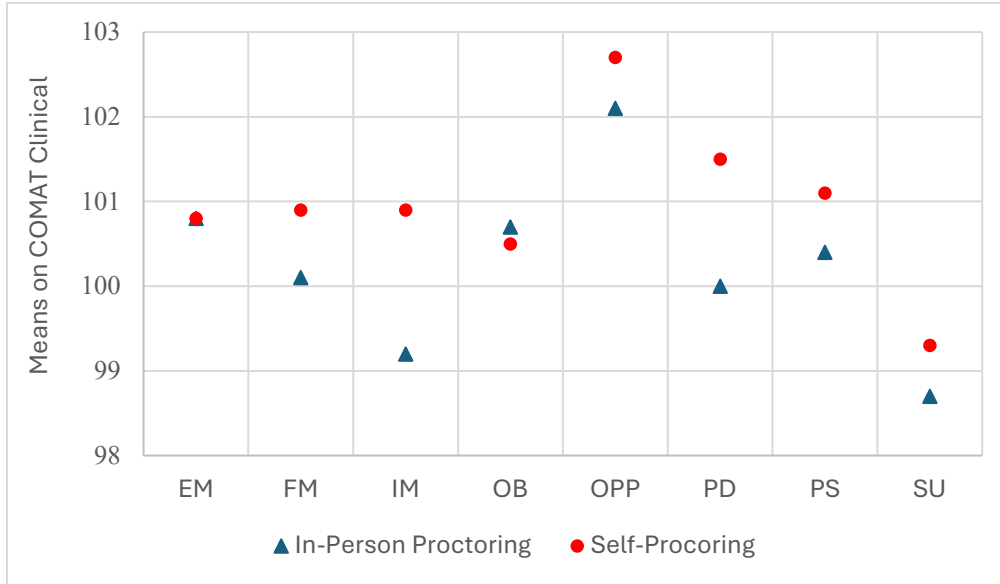


Figure 3.

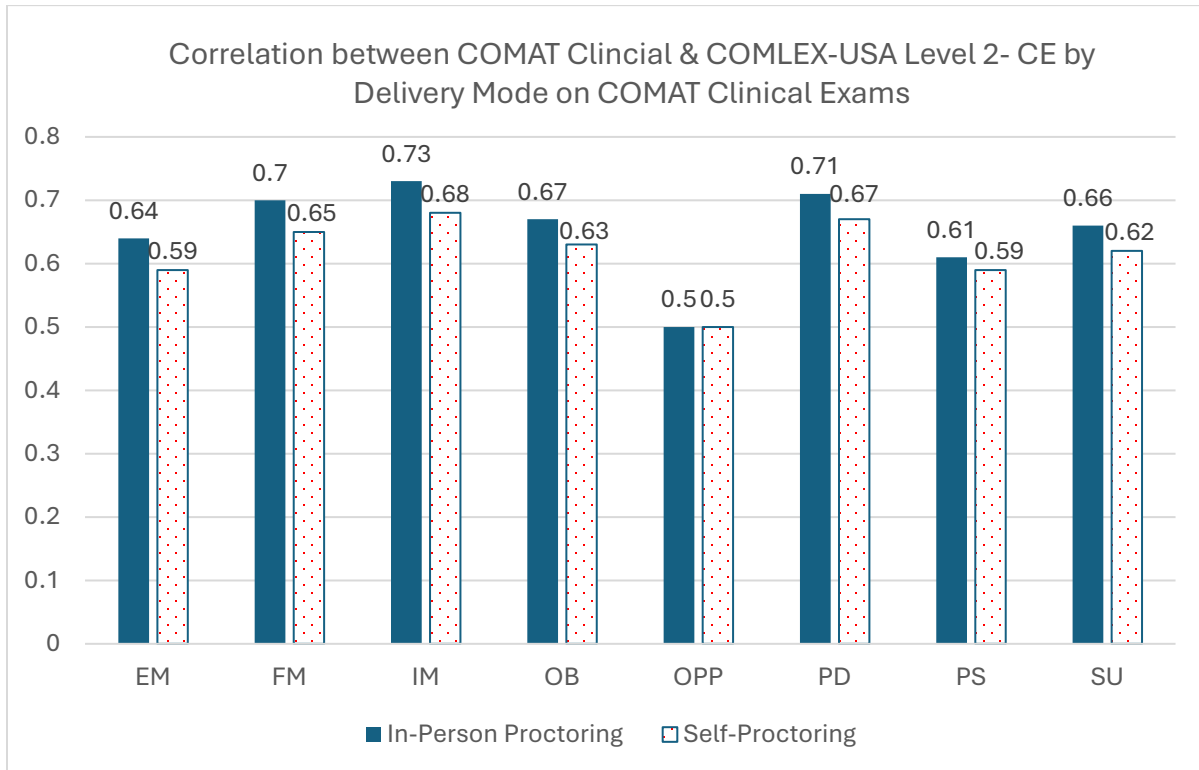
Group performance on COMLEX-USA Level 2-CE by delivery mode on COMAT Clinical



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Figure 4.

Comparison of Pearson correlation coefficients across delivery modes



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Reference

Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112 (1), 155–159.

