MCAT Scores Do More than Predict Step 1 Performance

This summary presents research findings related to the predictive validity of MCAT scores, including the latest results from our preliminary analysis on how well MCAT scores predict medical students' performance on Step 2 CK. For more information, you can access the guide to Using MCAT Data in 2021 Medical Student Selection and an accompanying PowerPoint presentation to help you prepare your admissions committee for the 2021 application cycle.

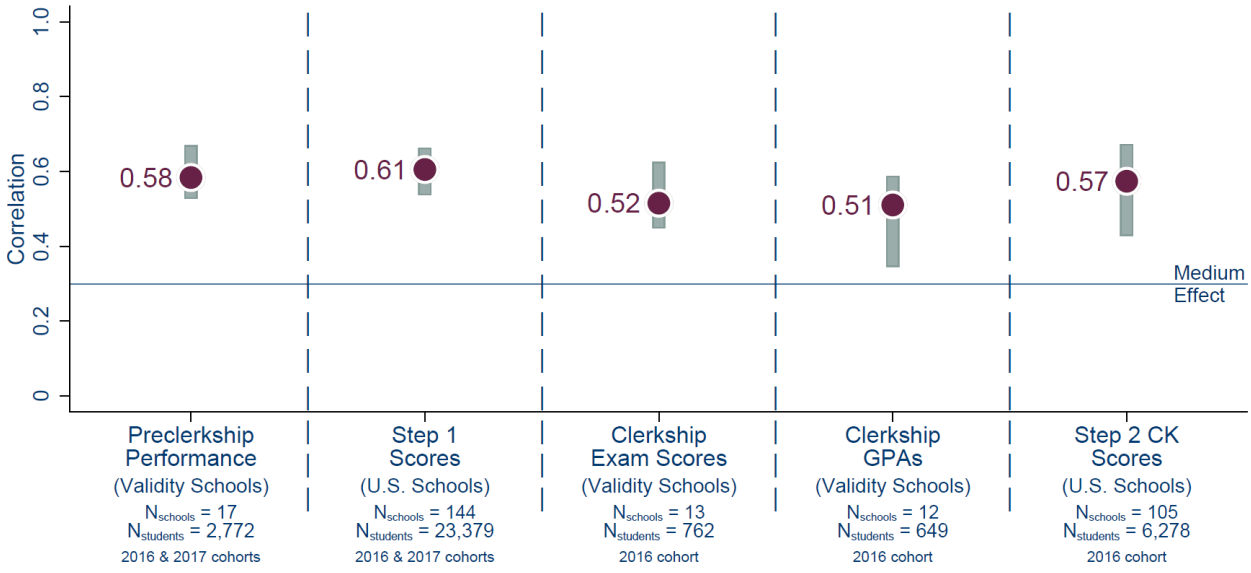
MCAT scores predict medical student performance from entry through graduation from medical school.

MCAT scores strongly predict a wide range of medical student performance outcomes throughout undergraduate medical education.

- MCAT scores predict how well students do in preclerkship courses such as biochemistry, cellular and molecular biology, cardiovascular and pulmonary systems, and behavioral health.
- MCAT scores predict how well students do in their clerkship courses – on clinical science subject exams and clerkship grades.
- Higher MCAT scores are correlated with higher scores and pass rates on the Step 1 exam.
- Preliminary analysis shows that MCAT scores also strongly predict Step 2 CK scores.

Figure 1 shows how well MCAT scores predict students' preclerkship performance, Step 1 scores from the first attempt, clerkship exam scores, clerkship GPAs, and Step 2 CK scores from the first attempt.

Figure 1. MCAT score correlations with medical students' academic outcomes: median and interquartile ranges across schools[1, 2, 3, 4, 5, 6]

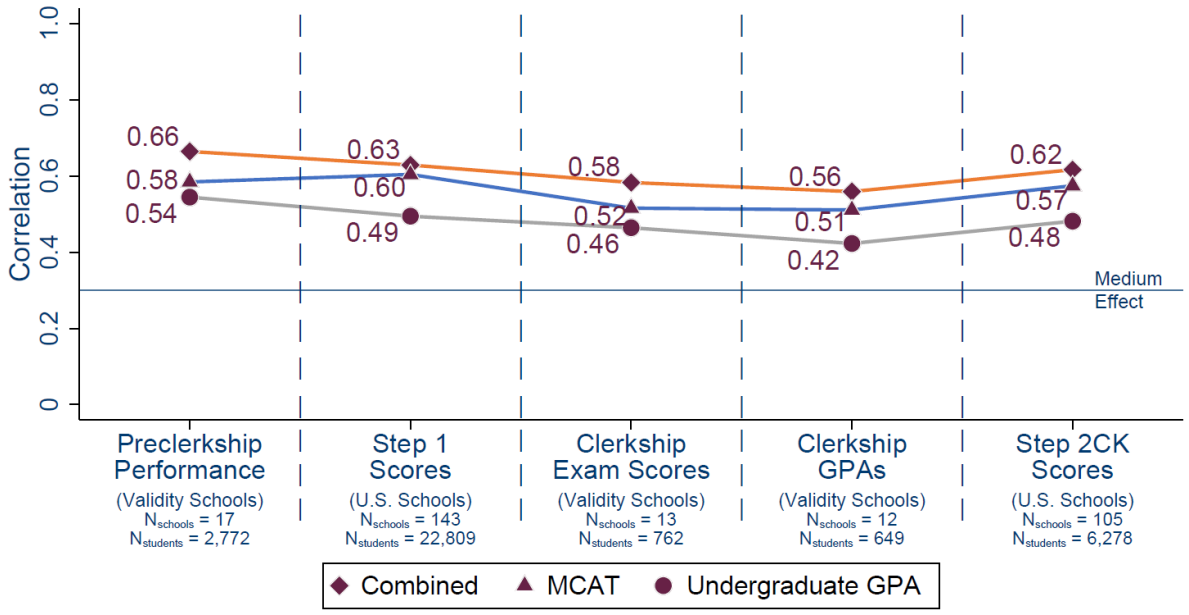


The median correlations of MCAT scores with preclerkship, Step 1, clerkship and Step 2 CK performance shown in this figure are large. That means MCAT total scores provide an important signal of students' readiness for the heavy knowledge acquisition in the first two years of medical school (i.e., preclerkship and Step 1) and in their application of knowledge in their clinical years (i.e., clerkships and Step 2 CK).

MCAT scores predict students' performance better than undergraduate GPAs. Together, they provide better prediction than either academic metric alone.

MCAT scores consistently predict students' performance in medical school better than undergraduate GPAs, although both MCAT scores and undergraduate GPAs show strong relationships with medical students' performance. Using MCAT scores and undergraduate GPAs to assess academic readiness provides a better prediction of future performance in medical school and on licensure exams than using either academic metric alone. Figure 2 shows how MCAT scores and undergraduate GPAs together provide more information about applicants' likely performance in medical school than either academic metric alone.

Figure 2. Correlations of MCAT scores and undergraduate GPAs alone and together with medical students' academic outcomes: medians across schools[1, 2, 3, 5, 6, 7, 8]



Medical schools use MCAT scores in different ways, and scores do much more than provide admissions officers with information about their students' likely performance in coursework and on Step exams. MCAT scores enable admissions officers to evaluate students with more modest GPAs and to identify which students may need academic support in medical school. When evaluating students' academic readiness for medical school, MCAT scores should always be used in the context of other important information related to applicants' coursework, GPAs, and other academic experiences. This practice is foundational to holistic review and is a recommended best practice by the AAMC and the *Standards for Educational and Psychological Testing* (AERA, APA, & NCME, 2014).

Technical Notes.

1. Medical students' most recent MCAT scores at the time of matriculation were used in the analysis.
2. Correlational analyses were done separately for each school on each of the five performance outcomes. Then, the correlations for each outcome were grouped together to show the midpoint and range of these correlations.
3. Sample correlations were corrected for range restriction on MCAT total scores and total undergraduate GPAs due to student selection in the admissions process (Betty, Barratt, Berry, & Sackett, 2014) but not for unreliability in MCAT total scores or medical student outcomes. Corrections for range restriction were made at the institution level. At each medical school, the applicants from an application cycle served as the reference population. Using established statistical methods, the observed correlations were adjusted to reflect what the correlations would be if there had been no selection — that is, if all applicants had been selected for admission.
4. The median corrected correlation is shown with a circle, and the two ends of the gray bar show the correlations at the 25th and 75th percentiles.
5. According to Cohen (1992), a correlation coefficient of 0.10 is considered a small association in the social sciences; a correlation coefficient of 0.30 is considered a medium correlation; and a correlation of 0.50 or greater is considered a large correlation. The horizontal line at a correlation of 0.3 shows the threshold for a medium effect size for correlation coefficients.
6. The preclerkship and clerkship findings in this figure come from validity schools, where students volunteered for validity research about locally defined medical student performance outcomes tied to their school's curriculum, academic support, and learning environment. Step 1 and Step 2 CK findings are based on national data from U.S. medical schools. Additionally, the preclerkship and Step 1 findings are from students who entered medical school in 2016 or 2017, while the clerkship and Step 2 CK findings are from students who entered medical school in 2016 because clerkship outcomes and Step 2 CK scores for the students who entered in 2017 are not yet available at the time this analysis was conducted.
7. Three correlational analyses were performed at each school to examine the associations of MCAT scores and undergraduate GPAs with medical student outcomes — one for MCAT scores alone as the predictor, one for total undergraduate GPAs alone as the predictor, and one to examine the joint contribution of MCAT total scores and undergraduate GPAs in predicting students' performance. Conducting these correlational analyses by school allows us to see how the correlations of academic metrics and student performance outcomes vary across schools, each of which has its own approach to teaching, evaluating, and supporting students. Information about undergraduate GPAs also helps explain why some students perform better than their MCAT scores predict, and others perform less well.
8. This figure shows results for five medical student performance outcomes — preclerkship performance, Step 1 scores, clerkship exam scores, clerkship GPAs, and Step 2 CK scores. In each panel, the triangle shows the median correlation (the correlation at the 50th percentile) of MCAT scores alone with each outcome, the circle shows the correlation of undergraduate GPAs alone, and the diamond shows the correlations of MCAT scores and undergraduate GPAs combined.

REFERENCES

American Educational Research Association; American Psychological Association; National Council on Measurement in Education. *Standards for Educational and Psychological Testing*. Washington DC: American Educational Research Association; 2014;198.

Betty AS, Barratt CL, Berry CM, Sackett PR. Testing the generalizability of indirect range restriction corrections. *J Appl Psychol*. 2014;99(4):587-598.

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