

Examining the Stability of SAT Predictive Relationships Across Cohorts and Over Time

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Key Takeaways

- The SAT remains a stable and strong predictor of college success.
 - Correlations between SAT scores and first-year GPA in the 2018 entering college cohort are strong and consistent with those in the 2017 entering college cohort.
 - SAT scores are as predictive of cumulative GPA through second-year of college and retention to the third-year, as they are of first-year GPA and retention to the second-year.
- These study results allow institutions to more confidently use SAT scores in admissions, placement, scholarship/honors program, instructional support, and advising decisions on campus, as we know SAT scores predict college success beyond the first-year.

Purpose

The purpose of this study is to understand how well the [national SAT Validity Study results](#) (Westrick et al., 2019), which is based on the entering class of 2017, generalize to other cohorts of students and how well the SAT predicts longer term outcomes beyond first-year grade point average (FYGPA) and second-year retention. Results show that the validity of the SAT for predicting FYGPA remains stable and strong, and that the SAT is as predictive of the longer-term college outcomes (cumulative GPA through second-year and retention to third-year) analyzed in this study as it is of first-year college outcomes. Findings support the continued use of SAT scores in understanding student readiness for college and for making more informed decisions related to admissions, placement, scholarship/honors program, instructional support, and advising on campus.

Replicating SAT Validity Evidence: 2018 Entering College Cohort

Sample

We collected data on 237,883 first-year students attending 146 four-year institutions of varying size, selectivity, control (public/private) and region of the country. The students in the sample had to have SAT scores, a self-reported high school grade point average (HSGPA), and an FYGPA provided by their institution.

Results

We were interested in comparing correlational analyses of SAT scores and first-year college performance from the 2017 entering college cohort – the first to have taken the redesigned SAT, with the results from another cohort of students, namely the 2018 entering college cohort. Table 1 below shows that all correlations increased slightly from the 2017 entering college cohort to the 2018 entering college cohort. In particular, we can see that the SAT maintains its strong predictive validity across cohorts ($r=.54$ in 2018 and $.51$ in 2017).

Table 1. Corrected (Raw) Correlations of Predictors with FYGPA

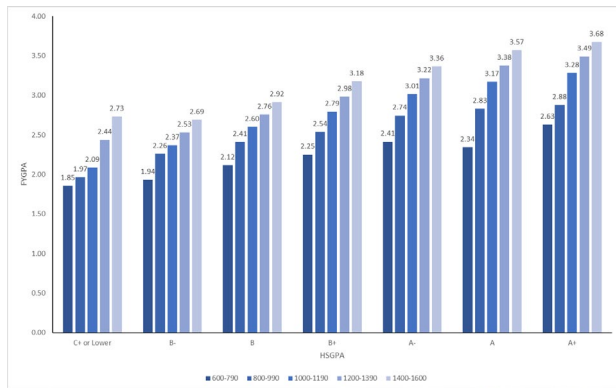
Predictors(s)	2018 Cohort Correlations	2017 Cohort Correlations
SAT, HSGPA	.64 (.43)	.61 (.42)
HSGPA	.57 (.34)	.53 (.33)
SAT	.54 (.33)	.51 (.32)
SAT ERW	.52 (.30)	.49 (.29)
SAT Math	.51 (.28)	.47 (.27)

Note. $n = 237,883$. References to "SAT" on its own include SAT ERW and SAT Math sections.

To better visualize the information added by the SAT above HSGPA for understanding FYGPA within the 2018 entering cohort, we can examine Figure 1 below. Controlling for HSGPA, student performance in college increases by SAT

score band. For example, among students with an “A” HSGPA, students with SAT Total scores between 600 and 790 had a mean FYGPA of 2.34, but students with SAT Total scores between 1400 and 1600 had a mean FYGPA of 3.57, more than a full letter grade higher than the students with the lower scores but in the same HSGPA group.

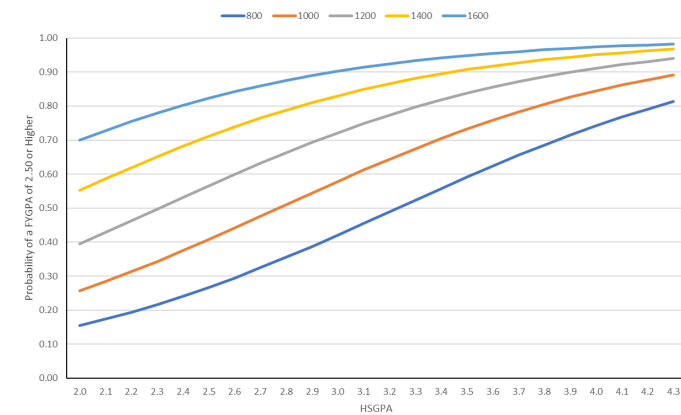
Figure 1. Mean FYGPA by HSGPA and SAT Total Score Bands



Note. Results are reported for categories with at least 15 students.

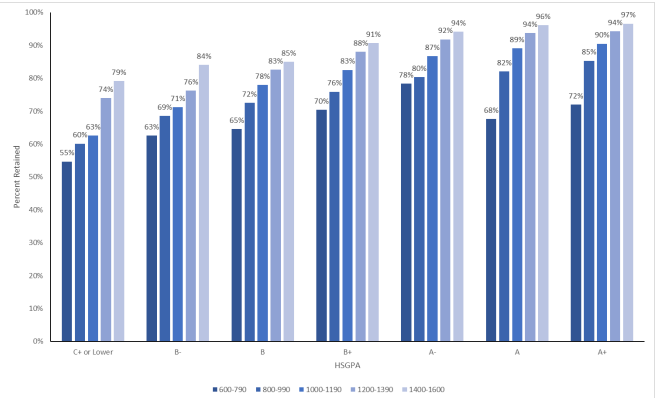
To further demonstrate the added informational value of SAT scores above HSGPA in predicting college performance, Figure 2 shows the probability of a student earning a FYGPA of 2.50 or higher in college given their HSGPA and selected SAT Total score. For example, a student with a HSGPA of 3.00 and an SAT Total score of 1000, has approximately a 58% chance of earning a FYGPA of 2.50 or higher, while a student with the same HSGPA (3.00) and an SAT Total score of 1400 has approximately an 83% chance of earning a FYGPA of 2.50 or higher. Even among students with higher HSGPAs, we see the added SAT value in understanding student success in college.

Figure 2. Probability of a 2.50 or Higher FYGPA Given HSGPA and SAT Total Score



With regard to SAT relationships with retention to the 2nd year, we see that similar to the 2017 entering college cohort, the SAT remains a useful tool to understand student retention, above and beyond the information provided by HSGPA. Figure 3 shows a positive relationship between SAT scores and retention, controlling for all HSGPA categories. For example, for those students with a HSGPA of A but with an SAT score between 800–990, they have an average second-year retention rate of 68%, while the same A students with an SAT score between 1400–1600 have a 96% retention rate. Combining HSGPA and SAT information reveals additional insights about student performance in college that is not evident to an institution when using either measure alone.

Figure 3. Mean Second-Year Retention Rate by HSGPA and SAT Total Score Bands



Note. Results are reported for categories with at least 15 students.

SAT Score Relationships with Longer-Term College Outcomes: 2017 Entering College Cohort

Sample

After publishing the first operational predictive validity study on the redesigned SAT based on the 2017 entering college cohort (Westrick et al., 2019), we partnered with many of the same colleges and universities to follow these students through college to understand SAT score relationships with longer term college outcomes.

We collected data on 125,289 second-year students attending 109 four-year institutions of varying size, selectivity, control (public/private) and region of the country. The students in the sample had to have SAT scores, a self-reported high school grade point average (HSGPA), and cumulative GPA through the end of the second year of college (SYGPA) that was provided by their institution. The sample of students and institutions returning for the second-year of the study closely

resembled the original sample for the first-year results from that same 2017 entering college cohort.

Results

Table 2 below shows that all correlations increased slightly from the predictor relationships with FYGPA for the 2017 entering college cohort to the SYGPA relationships in that same cohort. In particular, we can see that the SAT maintains its strong predictive validity through the end of the second year of college, and even seems to slightly strengthen with the longer-term outcome (from $r = .51$ in year 1 to $r = .54$ in year 2).

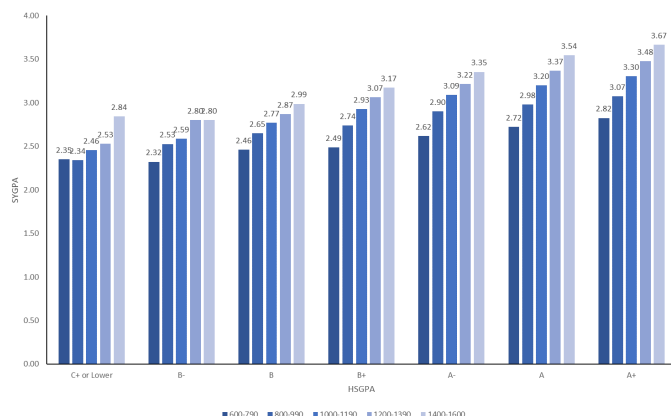
Table 2. Corrected (Raw) Correlations of Predictors with FYGPA and SYGPA for the 2017 Entering College Cohort

Predictor(s)	FYGPA	SYGPA
SAT, HSGPA	.61 (.42)	.64 (.44)
HSGPA	.53 (.33)	.57 (.35)
SAT	.51 (.32)	.54 (.34)
SAT ERW	.49 (.29)	.52 (.31)
SAT Math	.47 (.27)	.50 (.28)

Note. $n = 223,858$ for FYGPA sample and $n = 125,289$ for SYGPA sample. References to "SAT" on its own include SAT ERW and SAT Math sections.

To better visualize the information added by the SAT above HSGPA for understanding SYGPA within the 2017 entering cohort, we can examine Figure 4 below. Controlling for HSGPA, student performance in college increases by SAT score band. For example, among students with an "A" HSGPA, students with SAT Total scores between 600 and 790 had a mean SYGPA of 2.72, but students with SAT Total scores between 1400 and 1600 had a mean SYGPA of 3.54, just about full letter grade higher than the students with the lower scores but in the same HSGPA group.

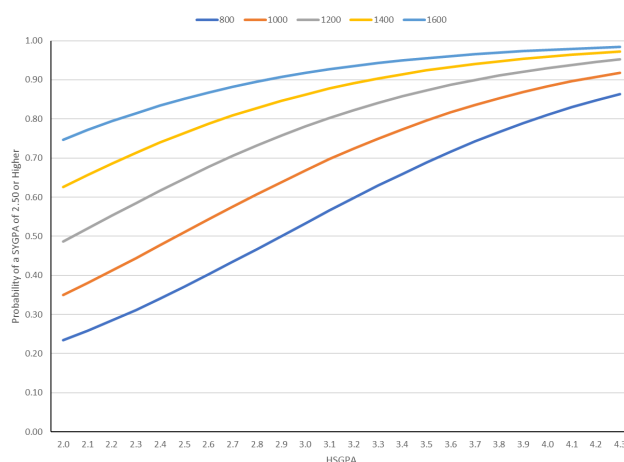
Figure 4. Mean SYGPA by HSGPA and SAT Total Score Bands



Note. Results are reported for categories with at least 15 students.

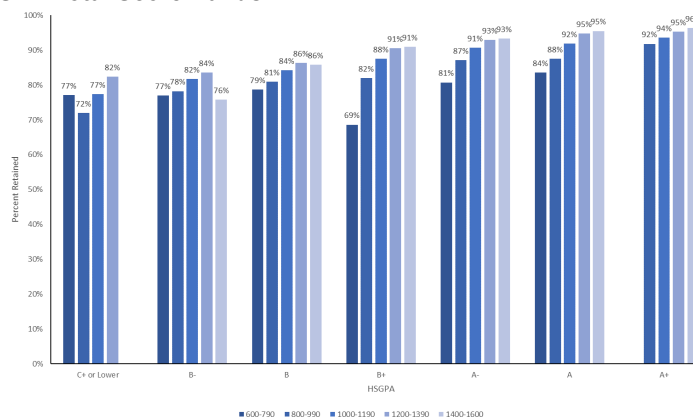
To further demonstrate the added informational value of SAT scores above HSGPA in predicting college performance, Figure 5 shows the probability of a student earning a SYGPA of 2.50 or higher in college given their HSGPA and selected SAT Total score. For example, a student with a HSGPA of 3.00 and an SAT Total score of 1000, has approximately a 67% chance of earning a SYGPA of 2.50 or higher, while a student with the same HSGPA (3.00) and an SAT Total score of 1400 has approximately an 86% chance of earning a SYGPA of 2.50 or higher. Even among students with higher HSGPAs, we see the added SAT value in understanding student success through the second year of college.

Figure 5. Probability of a 2.50 or Higher SYGPA Given HSGPA and SAT Total Score



With regard to SAT relationships with retention to the 3rd year, we see that the SAT remains a useful tool to understand student retention, above and beyond the information provided by HSGPA. Figure 6 shows a positive relationship between SAT scores and retention to the third year, controlling for all HSGPA categories. For example, for those students with a HSGPA of A but with an SAT score between 600–790, they have an average third-year retention rate of 84%, while the same A students with an SAT score between 1400–1600 have a 95% retention rate. Combining HSGPA and SAT information reveals additional insights about student performance in college that are not evident to an institution when using either measure alone.

Figure 6. Mean Third-Year Retention Rate by HSGPA and SAT Total Score Bands



Note: $n = 114,199$ for the retention sample. Results are reported for categories with at least 15 students.

Conclusion

This study showed that the validity of the SAT for predicting FYGPA remains stable and strong, and that the SAT is essentially as predictive of the longer-term college outcomes analyzed in this study as it is of first-year college outcomes. In other words, the predictive nature of SAT scores with college outcomes is sustained over a longer period of time than many likely realize to be the case. This information can allow institutions to more confidently use SAT scores in admissions, placement, scholarship/honors program, instructional support, and advising decisions on campus, knowing that SAT scores continue to be strong and accurate indicators of student performance throughout college. Institutions interested in conducting their own custom SAT validity research studies can use the College Board’s free online service, the [Admitted Class Evaluation Service™](#) or ACES™ system, at any time to do so.

References

Westrick, P. A., Marini, J. P., Young, L., Ng, H., Shmueli, D., & Shaw, E. J. (2019). *Validity of the SAT for Predicting First-Year Grades and Retention to the Second Year* (College Board Research Report). New York: The College Board.