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Examining the Validity of the SAT® at Higher Education Institutions Outside of the U.S.

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Abstract

This study provides an initial analysis of the validity of the SAT to predict the academic performance of students attending higher education institutions outside of the U.S. The results from these three institutions (located in India, Scotland [United Kingdom], and Lebanon, respectively) provide evidence that the SAT is indeed a strong predictor of student performance at institutions (with instruction in English) outside of the U.S. The results also are similar to those of international students studying at U.S. institutions. Notably, the boost in predictive utility produced by the SAT above high school grade point average (HSGPA) to predict university undergraduate first year grade point average (FYGPA) at each of the three institutions ranged from 26% to 37%, which is even more robust than the SAT boost of 15% seen in the full validity study sample of institutions based in the U.S. Results from this initial sample of international institutions show that the SAT can be an extremely useful tool to inform enrollment-related decisions and ultimately best position all students for success in higher education by understanding which students may need additional academic support to succeed upon admission/enrollment.

Introduction

The SAT is a higher education admission test that reflects the work that students do in high school, focusing on the core knowledge and skills that research has shown to be critical for students to be ready for higher education and career (College Board, 2017). Most recently, the SAT was taken by more than two million students globally in the class of 2019 and is accepted or required at nearly all four-year colleges and universities in the U.S. (College Board, 2019). There are also nearly 450 higher education institutions (HEIs) outside of the U.S. that consider SAT scores in their enrollment-related decisions.

Much of the research examining the validity of SAT scores for predicting higher education success focuses on U.S. students attending colleges and universities in the U.S., and findings tend to show that SAT scores are strongly predictive of higher education performance and using SAT scores in conjunction with HSGPA is the most powerful way to predict future academic performance (Westrick, Marini, Young, Ng, Shmueli, & Shaw, 2019). However, a recent study (Marini, Westrick, Young, & Shaw, in press) explored the validity of SAT scores for international students attending U.S. institutions. This study found that SAT scores are strongly predictive of first-year GPA for international students attending four-year institutions in the U.S. Also, on average, SAT scores add 44% more predictive power above high school grades alone to understand how an international student will perform in the first year of higher education, compared to 15% in the full validity study sample. This indicates that the SAT is critical for understanding which international students have the highest probability of being successful and which may need additional support to be successful on campus.

This current study takes a different approach – a case study approach -- to examining the validity of the SAT for students attending international HEIs (outside of the U.S.). There are a number of international institutions that receive and use SAT scores, and it is very important to examine whether the strongly predictive SAT relationships that we see in our national population, and within international students in the U.S., also hold for students attending international institutions of higher education.

Methodology

Sample

The data for this study come from the 2017 entering cohort of first-year students from three international institutions of higher education, which will be referred to as Institution A, Institution B, and Institution C. Institution A is a private, co-ed HEI in India located in a suburb setting of a very large metropolitan region. Institution B is a private, co-ed HEI in Lebanon located in a very large city in a suburban setting. Institution C is a public, co-ed HEI in Scotland situated in a town in a rural setting outside of a major city. For a student to be included in the sample at each institution, the student needed to have new SAT scores, a valid self-reported high school GPA (HSGPA), and a valid first year grade point average (FYGPA) provided by the institution. The resulting sample sizes at each institution were relatively small. Institution A had 52 students in their sample, Institution B had 126 students in their sample, and Institution C had 102 students in their sample.

Measures

The following describes the various measures used in this study. For descriptive statistics from each institution, please refer to Table 1.

High School GPA (HSGPA). Students' self-reported HSGPA was obtained from the SAT Questionnaire when they registered for the SAT and is reported on a 12-point interval scale, ranging from 0.00 (F) to 4.33 (A+). The ranges for HSGPA for each institution in this study was as follows. Institution A: 2.33 to 4.33; Institution B: 1.00 to 4.33; Institution C: 2.67 to 4.33.

SAT Scores. SAT scores were obtained from College Board's database and matched to each student provided in the institution files. The SAT scores included in this study are:

> **SAT Total Score (400 to 1600 scale)**—increments of 10. The ranges for SAT Total score for each institution in this study was as follows. Institution A: 980 to 1530; Institution B: 820 to 1460; Institution C: 1120 to 1520.
>
> **SAT Evidence-based Reading and Writing (ERW) Section Score (200 to 800 scale)** —increments of 10. The ranges for SAT ERW section score for each institution in this study was as follows. Institution A: 500 to 750; Institution B: 360 to 700; Institution C: 600 to 780.
>
> **SAT Math Section Score (200 to 800 scale)** —increments of 10. The ranges for SAT Math section score for each institution in this study was as follows. Institution A: 450 to 790; Institution B: 400 to 760; Institution C: 500 to 770.

College Grades. Each institution provided FYGPA values for their 2017 first-time, first-year students. The ranges for FYGPA for each institution in this study was as follows. Institution A: 1.92 to 3.97; Institution B: 1.01 to 4.00; Institution C: 1.10 to 4.00.

Descriptive Statistics

Table 1 shows the mean and standard deviation of each study variable for the three institutions in this study. Of note, Institution A has very high scoring students with a high mean FYGPA and HSGPA. Institution C has students who score high on the SAT and have a high mean HSGPA, but a lower mean FYGPA. Institution B has lower means than the other two institutions across all measures.

Table 1: Descriptive Statistics for Each Institution [Mean (SD)]

	N	FYGPA	HSGPA	SAT ERW Section	SAT Math Section	SAT Total Score
Institution A	52	3.35 (0.43)	3.79 (0.51)	648 (72)	675 (79)	1321 (139)
Institution B	126	2.60 (0.74)	2.84 (0.82)	529 (74)	595 (75)	1118 (132)
Institution C	102	2.72 (0.59)	3.77 (0.37)	696 (46)	660 (63)	1350 (91)

Methods

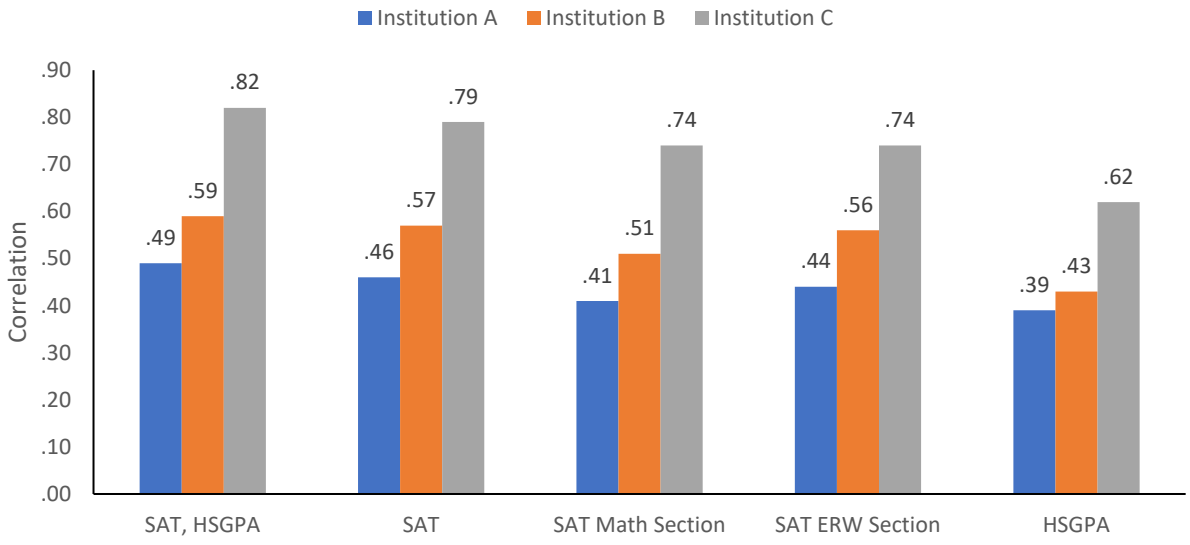
Analyses consisted of calculating correlations between the predictors—SAT scores and HSGPA—with FYGPA. Correlations were also corrected for range restriction. It is a widely accepted practice to statistically correct correlation coefficients in admission validity research for restriction of range because

the raw correlation tends to underestimate the true relationship between the test scores and the higher education outcome (American Educational Research Association, American Psychological Association, and National Council on Measurement in Education, 2014). Without information on how students who were not admitted (in part based on those measures) or those who did not enroll would have performed at an institution, there is only a small glimpse into how the tests work for selection. This restricts the variability or range in test scores available for analysis since the test scores available tend to be the higher scores of students who were admitted, minimizing the test score-criterion relationship. Correlations in this study were corrected for multivariate range restriction (Lawley, 1943) using the 2017 graduating seniors who took the SAT as the reference population.

Results

Figure 1 shows the correlation, or predictive strength, of each predictor and combination of predictors with FYGPA. For all institutions, the combination of SAT scores and HSGPA is the strongest predictor of FYGPA. This is also true in the full validity study sample, where the correlation for the combination of SAT scores and HSGPA with FYGPA was .61 (Westrick et al., 2019). For single predictors, SAT ERW section score is the strongest at each institution with the SAT Math section slightly behind that. For reference, the correlations with FYGPA in the full validity study sample were .49 for SAT ERW section score and .47 for SAT Math section score (Westrick et. al, 2019). HSGPA does well as a predictor, but is the least predictive measure across all institutions. This is unlike the full national sample where the correlation of HSGPA with FYGPA was .53, which was stronger than that of either SAT section score alone with FYGPA. Table A 1 in the appendix shows the same corrected correlations and also raw correlations for each institution.

Figure 1: Corrected Correlations of Predictors with FYGPA



Note: SAT alone indicates the multiple correlation of both sections of the SAT (Math and ERW).

The incremental validity of the SAT above HSGPA alone to predict FYGPA is depicted in Figure 2. Incremental validity values for the three institutions ranged from .10 to .20, all of which are larger than what was seen in the full validity study sample (.08) (Westrick et al., 2019). The predictive utility boost from the SAT above HSGPA for each of the three institutions is shown in Figure 3 and ranges from 26% to 37%, which is much higher than the boost of 15% seen in the full sample (Westrick et al., 2019). For international students attending U.S. institutions, we observed an SAT incremental validity value of .16 and a corresponding 44% predictive utility boost from the SAT above HSGPA, which is in line with the findings from the three institutions in the current study (Marini et al., in press).

Figure 2: Incremental Validity of the SAT above HSGPA for Predicting FYGPA

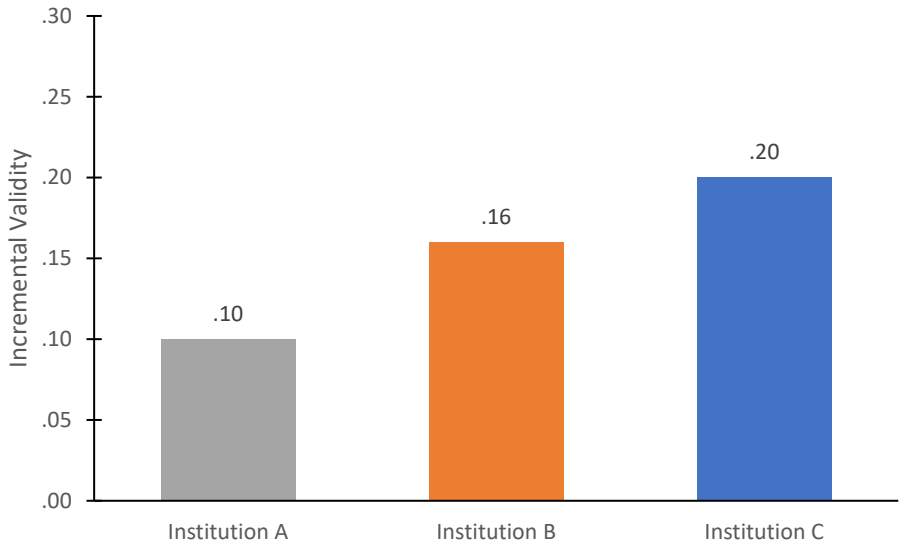
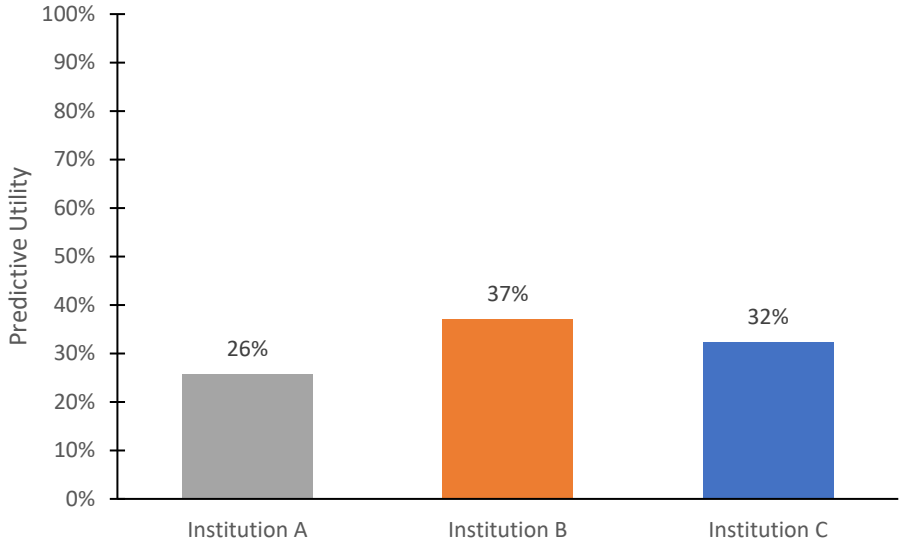


Figure 3: Increase in Predictive Utility of the SAT above HSGPA to Predict FYGPA for International Students



Discussion and Conclusion

The results from these three institutions provide evidence that the SAT is a highly valuable predictor of college performance at institutions outside of the U.S. These results are also similar to the results for international students studying at U.S. institutions. As with international students studying in the U.S., both the SAT and HSGPA had positive relationships with FYGPA. For each institution, the strength of the relationship for SAT and FYGPA was similar to or stronger (range of .46 to .79) than what was observed for international students studying in the U.S. (.47). This was also true for the combined SAT and HSGPA relationship with FYGPA (range of .49 to .82 compared to .52). The HSGPA relationships with FYPGA (range .39 to .62) tended to be stronger at these three international institutions than for international students studying in the U.S. (.36) (Marini et al., in press) but were still mostly lower than that observed among the full national sample in the U.S. (Westrick et al., 2019).

Compared to international students studying in the U.S., the incremental validity of the SAT above HSGPA for predicting FYGPA was higher for one of the three institutions in this report (.20 compared to .16) and one was the same (.16). However, the institution with less incremental validity, still saw notable added SAT value (.10) above what was observed in the full national validity sample (.08; Westrick et al., 2019). In terms of the predictive boost provided by the SAT over HSGPA alone, international students studying in the U.S. saw a 44% predictive boost in utility, while the three institutions in this study saw either that same level of increased predictive utility or somewhat less (ranged from 26% to 37%). However, all institutions experienced a boost higher than what was seen in the full national sample in the U.S. (15%).

The results from each of these institutions, taken together, show that the SAT seems to be quite valuable for predicting first-year academic performance for students outside of the U.S. and, as was observed for international students studying in the U.S., adds a tremendous value beyond HSGPA alone for these students. This is important evidence about the validity of the SAT for predicting first-year performance at institutions outside of the U.S., and confirms the utility of SAT scores in their admission and enrollment processes. For international institutions that are interested in conducting their own SAT validity studies to better understand SAT and HSGPA relationships with higher education performance, this can be accomplished using the College Board's free online service for higher education institutions and systems (Admitted Class Evaluation Service, ACES).

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Appendix

Table A 1: Corrected (Raw) Correlations of Predictors with FYGPA

Predictor(s)	Institution A	Institution B	Institution C
SAT, HSGPA	.49 (.35)	.59 (.51)	.82 (.52)
SAT	.46 (.30)	.57 (.45)	.79 (.46)
SAT ERW Section	.44 (.28)	.56 (.41)	.74 (.36)
SAT Math Section	.41 (.27)	.51 (.37)	.74 (.39)
HSGPA	.39 (.23)	.43 (.39)	.62 (.27)

Note: SAT alone indicates the multiple correlation of both sections of the SAT (Math and ERW).