Supplementary 1. Analysis of missing data.

Table S1.1. Distribution of subjects with missing data in study cohorts.

Subgroups	Years								Total
	2016	*2017*	*2018*	*2019*	*2020*	*2021*	*2022*	*2023*	
Complete	313	99	426	64	434	563	428	386	2,713
Missing	7	308	4	432	7	1	3	3	765
Total	320	407	430	496	441	564	389	389	3,478

Abbreviations: *Complete* = candidates with complete dataset; *Missing* = candidates with missing dataset. Data missing exclusively refers to information about prior school of candidates.

Table S1.2. Distribution of socio-demographic variables in study cohorts.

Variables	Years								Total
	2016	*2017*	*2018*	*2019*	*2020*	*2021*	*2022*	*2023*	
Prior schools									
SHS	156	56	232	32	243	322	238	241	1,520
NSHS	88	28	120	15	114	148	114	88	715
TPI	69	15	74	17	77	93	76	57	478
NA	7	308	4	432	7	1	3	3	765
Gender									
Female	169	176	207	218	183	222	188	141	1,504
Male	151	231	223	278	258	342	243	248	1,974
Geographic Origin									
Northern	274	349	372	401	377	479	370	353	2,975
Central	16	14	15	19	24	26	16	5	135
Southern	30	44	43	76	40	59	45	31	368
Age *(median, IQR)*	20 (2)	20 (2)	20 (2)	20 (3)	20 (2)	20 (3)	20 (2)	20 (2)	3,478

Abbreviations: SHS = Scientific High School; NSHS = Non-Scientific High School; TPI = Technical Professional Institute; NA = Not Assigned. Distribution of prior schools does not differ between study cohorts (χ^2 test; p=0.218).

Table S1.3. Sensitivity analysis of multivariate logistic regression model.

Global multivariate model	**p-value <.001**	**R^2 McFadden = 0.04**	**R^2 Nagelkerke =0.05**
	p-value	**Odds Ratio**	**CI 95% (lower-higher)**
High School			
NSHS/SHS	0.005	0.439	0.247-0.780
TPI/SHS	0.002	0.458	0.282-0.744
Gender			
Female/Male	0.062	0.718	0.507-1.016
Interaction gender*high school			
(F/M) * (NSHS/SHS)	0.913	0.958	0.441-2.078
(F/M) * (TPI/SHS)	0.169	0.408	0.114-1.462
Geographic origin			
Central/Northern	0.558	1.207	0.643-2.265
Southern/Northern	0.028	0.543	0.315-0.937
Age at test	0.671	0.990	0.948-1.035
Test type			
B test / A test	0.862	0.946	0.507-1.766
C test / A test	0.700	0.823	0.305-0.2.220
Candidates/places ratio	0.105	1.230	1.075-1.310

Abbreviations: CI = Confidence interval; SHS = Scientific High School; NSHS = Non-Scientific High School; TPI = Technical Professional Institute. Sensitivity analysis of logistic regression model predicting admission after test was built excluding cohorts with higher number of missing data (2017 and 2019).

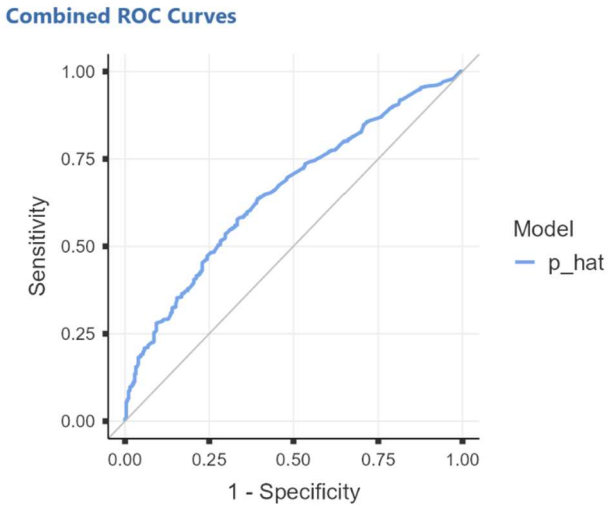
Table S1.4. Sensitivity analysis of multivariate linear regression models

	Total score			LR sub-score			SK sub-score		
Global multivariate model	**R**	**R²**	**p-value**	**R**	**R²**	**p-value**	**R**	**R²**	**p-value**
	0.372	0.139	<.001	0.458	0.210	<.001	0.369	0.136	<.001
	β	**F**	**p-value**	**β**	**F**	**p-value**	**β**	**F**	**p-value**
High School		*45.96*	*<.001*		*1.40*	*0.246*		*41.29*	*<.001*
NSHS/SHS	-7.51		<.001	1.60		0.120	-8.34		<.001
TPI/SHS	-9.65		<.001	0.84		0.348	-9.05		<.001
Gender		*4.81*	*0.028*		*1.98*	*0.160*		*2.09*	*0.272*
Female/Male	-2.06		0.028	1.38		0.160	-0.08		0.148
Interaction gender*high school		*11.40*	*<.001*		*0.89*	0.413		*10.72*	*<.001*
(F/M) * (NSHS/SHS)	-2.63		0.118	-1.71		0.208	-1.91		0.278
(F/M) * (TPI/SHS)	-9.23		<.001	0.13		0.937	-9.37		<.001
Geographic origin		*21.79*	*<.001*		*0.33*	*0.722*		*11.14*	*<.001*
Central/Northern	-1.33		0.437	1.04		0.463	-0.02		0.845
Southern/Northern	-7.41		<.001	0.35		0.700	-0.31		<.001
Age at test	-0.14	*2.12*	*0.145*	0.02	*0.08*	0.780	-0.184	*3.10*	*0.078*
Test type		*8.16*	*<.001*		*84.19*	<.001		*22.47*	*<.001*
B test / A test	-0.99		0.506	-13.32		<.001	7.95		<.001
C test / A test	3.20		0.197	-13.10		<.001	16.32		<.001
Candidates/places ratio	-0.05	*0.02*	*0.896*	-0.07	*14.32*	<.001	-0.36	*78.65*	*<.001*

Abbreviations: LR = Logical Reasoning; SK = Scientific Knowledge; SHS = Scientific High School; NSHS = Non-Scientific High School; TPI = Technical Professional Institute. Sensitivity analyses of linear regression models predicting total test score and LR and SK sub-scores were built excluding cohorts with higher number of missing data (2017 and 2019).

Supplementary 2. Discrimination, calibration and collinearity checks of multivariate logistic regression model

Figure S2.1. Discrimination reports (ROC and AUC)

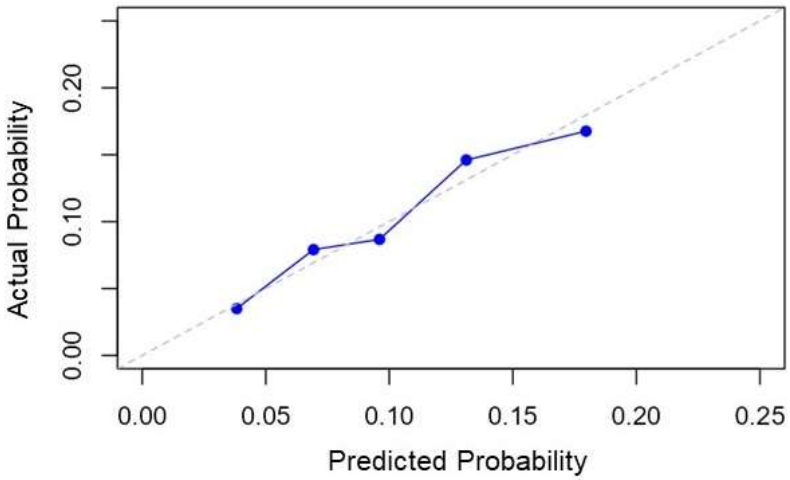


ROC Curve Summary

	AUC	Std. Error	95% Confidence Interval Lower	95% Confidence Interval Upper	p
p_hat	0.654	0.0163	0.622	0.686	< .001

[6]

Figure S2.2. Calibration curve and coefficients



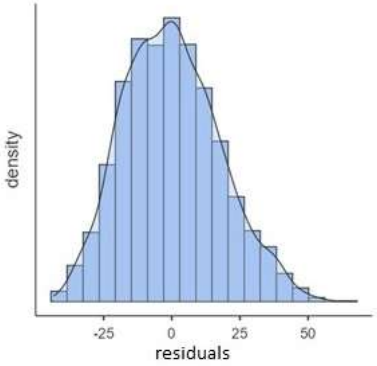
Coefficients	Estimate Slope	Std Error	Z value
(Intercept)	-2.30 e-08	2.61 e-01	0.00
Logit_p	1.00 e+00	1.24 e-01	8.07

Figure S2.3. Collinearity checks

Collinearity Checks	VIF	Tolerance
Prior School	1.34	0.748
Gender	1.23	0.810
Gender*Prior School	1.41	0.710
Geographic Origin	1.00	0.997
Age	1.02	0.985
Test type	1.52	0.659
Candidates / places ratio	2.29	0.436
Average	1.4	/

Supplementary 3. Residuals diagnostics of multivariate linear regression models

Figure S3.1. Statistics of residuals



Descriptives	Residuals
Mean	-5.97e-16
Mean Standard Error	0.338
Asimmetry	0.300
Asimmetry Standard Error	0.0470
Kurtosis	-0.229
Kurtosis standard Error	0.0940
Shapiro-Wilk W	0.992
Shapiro-Wilk p	<.001

Figure S3.2. Q-Q Plot

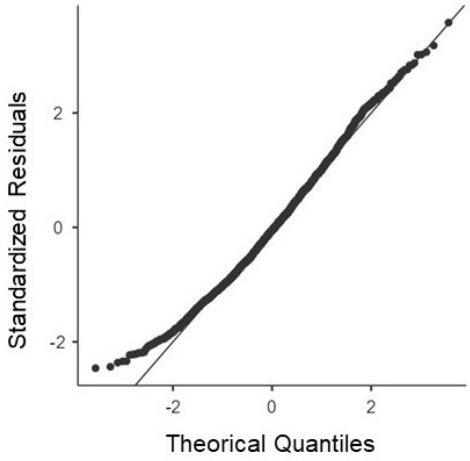
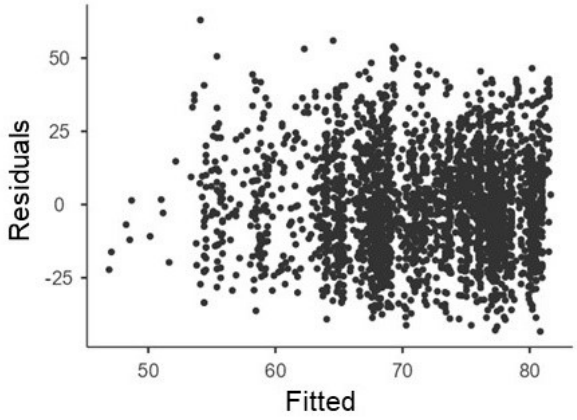


Figure S3.4. Residual versus Fitted Plot (Homoscedasticity)



Supplementary 4. Effects of different proportions of LR/SK questions on admission test results

Table S4.1. Multivariate logistic regression model

Global multivariate model	p-value <.001	R^2McFadden = 0.04	R^2 Nagelkerke = 0.05
	p-value	**Odds Ratio**	**CI 95% (lower-higher)**
Test type			
A Test / B Test	0.902	1.025	0.695-1.511
C Test / B Test	0.548	1.147	0.733-1.796
Gender			
Female/Male	0.019	0.630	0.428-0.927
High school			
NSHS / SHS	0.008	0.528	0.329-0.848
TPI / SHS	0.002	0.418	0.242-0.720
Interaction test type * gender			
(A / B test) * (Female / Male)	0.929	0.971	0.512-1.842
(C / B test) * (Female /Male)	0.396	1.403	0.642-3.065
Interaction test type * high school			
(A / B test) * (NSHS / SHS)	0.815	1.096	0.507-2.369
(C / B test) * (NSHS / SHS)	0.127	0.360	0.097-1.336
(A / B test) * (TPI / SHS)	0.133	0.409	0.127-1.312
(C / B test) * (TPI / SHS)	0.292	1.730	0.624-4.796