

# BMAT's predictive validity for medical school performance: a retrospective cohort study

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Supplementary Table S1: A-level grade combinations at Imperial College School of Medicine (ICSM)

Grade Combination	N	Percentage of eligible participants (%)	Score
A*A*A*	304	30	36
A*A*A	196	19.3	34
A*A*C	2	0.2	30
A*AA	266	26.3	32
A*AB	7	0.7	30
AAA	213	21	30
AAB	19	1.9	28
ABB	4	0.4	26
BBB	2	0.2	24
Not eligible	175		

Table S1 shows the combinations of three highest A-level grades (at A2, excluding General Studies, Critical Thinking and repeated A-levels), the number and percentage of participants per year at Imperial College School of Medicine (ICSM) who obtained each grade combination, and the score using in analyses of incremental validity (A\* = 12, A = 10, B = 8, C = 6, D = 4, E = 2).

Supplementary Table S2: Descriptive statistics of performance variables across both institutions

Institution	Variable Type	Variable	Cohort	Mean (SD)	Median (IQR)	Range
ICSM	Assessments	Year 1 Written	1	71.6 (8.3)	72.2 (10.6)	41.5 - 88.6
			2	71.4 (8)	71.4 (9.2)	39.4 - 87.6
			3	76.2 (8.1)	77 (10.3)	51.6 - 94.4
			4	74.7 (8.5)	75.2 (10.6)	50 - 90.6
		Year 2 Written	1	71.4 (8.2)	72.7 (10.9)	46 - 86.7
			2	66.8 (9.2)	67.7 (12.7)	31.7 - 84.3
			3	70.3 (9.8)	71.7 (15)	40.7 - 91.7
			4	69.1 (10.2)	70.7 (14.1)	32.2 - 88.2
		Year 3 Clinical	1	92.1 (9.6)	92 (8)	50 - 100
			2	90.1 (12.4)	92 (17)	33 - 100
			3	89.4 (13.5)	92 (17)	25 - 100
			4	88.1 (4.6)	89 (5.6)	70.2 - 97.1
		Year 3 Written	1	75.8 (7.4)	77 (9)	42 - 92
			2	76.3 (7.1)	77 (9)	52 - 91
			3	82.1 (8.1)	84 (11)	51 - 95
			4	79.6 (8.3)	81 (13)	56 - 96
		Year 5 Written	1	81.7 (6.2)	83 (7)	52 - 93
			2	80 (7)	81 (9)	53 - 92
			3	73.2 (6.5)	74 (9)	52 - 86
			4	73.9 (7.4)	75 (9.4)	46.1 - 88.3
		Year 5 Clinical	1	78.3 (9)	79.2 (9.7)	37.5 - 95.8
			2	76 (10.5)	77.8 (13.2)	39.6 - 95.1
			3	74.7 (10.9)	76.4 (15.3)	25 - 94.4
			4	75.9 (9)	77.6 (12.1)	35.9 - 93.2
		Year 6 Written	1	79.8 (6.3)	80 (9)	60.7 - 93.7
			2	78.8 (6)	79.3 (8)	61.3 - 89.7
			3	74.3 (7.5)	74.7 (10)	54 - 89.3
			4	77.2 (6.9)	78.3 (9.3)	54 - 91.7
	Year 6 Clinical	1	80.6 (7.8)	81.7 (9.2)	43.3 - 98.3	
		2	79.4 (7.4)	80 (9.2)	37.1 - 96.7	
		3	79.7 (7)	80.8 (9.5)	54.6 - 94.2	
	BMAT	BMAT Section 1	1	5.7 (0.8)	5.8 (0.8)	2.8 - 8.1
			2	5.8 (0.8)	5.7 (1.1)	3.8 - 8.6
			3	5.6 (0.8)	5.3 (1)	3.8 - 8.4
			4	5.6 (0.8)	5.4 (0.8)	3.4 - 8.6
		BMAT Section 2	1	5.6 (0.7)	5.4 (0.8)	3.8 - 9
			2	5.7 (0.7)	5.7 (0.9)	3.1 - 8.2
			3	5.4 (0.7)	5.3 (0.9)	3.1 - 8.7
			4	5.5 (0.7)	5.5 (0.9)	3.6 - 7.9
		BMAT Section 3a	1	3.3 (0.7)	3.5 (0.6)	1.5 - 5
			2	3.4 (0.6)	3.5 (1)	2 - 5
			3	3.5 (0.6)	3.5 (1)	2 - 5
			4	3.4 (0.6)	3.5 (1)	2 - 5

	Prior Educational Attainment	A-level Points	1	33.3 (2.4)	34 (4)	24 - 36	
			2	33.3 (2.4)	34 (4)	28 - 36	
			3	32.7 (2.6)	32 (6)	26 - 36	
			4	33 (2.3)	32 (4)	26 - 36	
LKCMedicine	Assessments	Year 1 Written	1	74.8 (7.4)	76.6 (7)	46 - 85.3	
			2	74.7 (5.7)	75.6 (7.9)	61.9 - 86.7	
			3	72.9 (6.5)	74.1 (9.5)	58.2 - 85.8	
		Year 2 Written	1	70.9 (6.9)	71.8 (8.8)	53 - 83.1	
			2	73.1 (6.6)	73.3 (9.1)	57.3 - 87.5	
			3	70.5 (7.8)	70.2 (12.2)	52.3 - 86	
		Year 2 Clinical	1	88.4 (2.8)	88.5 (3.8)	80 - 93.5	
			2	83.5 (4.2)	83.9 (5.9)	73 - 90.9	
			3	84 (4.7)	84.3 (5.5)	70.7 - 91.9	
		Year 3 Written	1	79 (4.6)	78.9 (5.6)	68.9 - 88.3	
			2	76.2 (6.1)	76.6 (7.9)	57.8 - 87.3	
			3	76.9 (6.8)	77.6 (7.7)	54 - 90.8	
		Year 3 Clinical	1	74.5 (5.6)	74.5 (8.8)	63.2 - 86.1	
			2	72.2 (5.4)	72.6 (7.5)	57.3 - 82.5	
			3	70.2 (7)	71.2 (9.1)	45.9 - 85	
		Year 4 Written	1	78.7 (5.1)	79.2 (5.9)	64.9 - 88.7	
			2	75.5 (5.3)	76.5 (7.6)	61.2 - 85.9	
			3	76.2 (5.3)	76.6 (6.8)	58.9 - 89.1	
		Year 4 Clinical	1	73.3 (5.9)	73.1 (9)	59.6 - 85	
			2	70 (5.8)	69.8 (6.8)	56.5 - 87.3	
			3	67.7 (6.6)	67.8 (7.4)	49.4 - 83.5	
		Year 5 Written	1	82 (4.2)	82.3 (4)	72.4 - 91.1	
			2	79.9 (5.5)	79.7 (7.3)	63.2 - 91.2	
			3	79.2 (5.6)	80.1 (6.8)	63.1 - 90.3	
		Year 5 Clinical	1	68.6 (5.8)	68.9 (7.4)	54.5 - 80.9	
			2	65.9 (6.5)	66.7 (9.2)	47.4 - 78.4	
			3	69.7 (6.1)	70.3 (8.4)	57.1 - 83.9	
		BMAT	BMAT Section 1	1	5.5 (0.6)	5.4 (0.9)	4.1 - 6.7
				2	6 (1)	5.9 (1.1)	4.1 - 9
				3	6.1 (0.9)	6.2 (1)	4.4 - 8.5
			BMAT Section 2	1	6.1 (1.1)	5.9 (1.5)	4 - 8.5
				2	6.6 (1)	6.4 (1.5)	4.9 - 9
				3	6.5 (1)	6.3 (1)	4.6 - 9
			BMAT Section 3a	1	3.8 (0.6)	4 (0.5)	2 - 5
				2	3.8 (0.6)	4 (1)	2.5 - 5
				3	4.1 (0.5)	4 (0.5)	3 - 5

Table S2 shows the descriptive statistics of performance on assessment variables, BMAT and (for ICSM), A-level points (see Table S1 for calculation of points). ICSM = Imperial College School of Medicine. LKCMedicine = Lee Kong Chian School of Medicine.

Supplementary Table S3: Univariable analyses: associations between performance on individual BMAT sections and assessment outcomes across both institutions

Institution	Predictor (BMAT Performance)	Outcome (Assessment Performance)	Standardized Regression Coefficient (95% Bootstrap CI)	P-value	Effect Size Interpretation	N
ICSM	BMAT Section 1	Year 1 Written	0.09 (0.02 - 0.16)	0.009**	<0.1	1078
		Year 2 Written	0.05 (-0.02 - 0.12)	0.141		1046
		Year 3 Clinical	-0.01 (-0.06 - 0.05)	0.796		1066
		Year 3 Written	0.04 (-0.02 - 0.11)	0.206		1066
		Year 5 Written	0.08 (0.02 - 0.14)	0.012*	<0.1	1039
		Year 5 Clinical	0.03 (-0.03 - 0.1)	0.335		1037
		Year 6 Written	0.14 (0.08 - 0.21)	<0.001***	Small	1022
		Year 6 Clinical	-0.03 (-0.11 - 0.04)	0.386		757
	BMAT Section 2	Year 1 Written	0.17 (0.11 - 0.24)	<0.001***	Small	1078
		Year 2 Written	0.15 (0.08 - 0.22)	<0.001***	Small	1046
		Year 3 Clinical	-0.05 (-0.1 - 0)	0.073		1066
		Year 3 Written	0.15 (0.08 - 0.21)	<0.001***	Small	1066
		Year 5 Written	0.08 (0.02 - 0.15)	0.011*	<0.1	1039
		Year 5 Clinical	0 (-0.07 - 0.06)	0.883		1037
		Year 6 Written	0.19 (0.12 - 0.26)	<0.001***	Small	1022
		Year 6 Clinical	-0.02 (-0.09 - 0.05)	0.546		757
	BMAT Section 3a	Year 1 Written	0.05 (-0.01 - 0.12)	0.091		1062
		Year 2 Written	0.03 (-0.03 - 0.1)	0.302		1030
		Year 3 Clinical	-0.01 (-0.05 - 0.04)	0.817		1049
		Year 3 Written	0.04 (-0.03 - 0.1)	0.255		1049
		Year 5 Written	0.05 (-0.01 - 0.11)	0.13		1022
		Year 5 Clinical	0.09 (0.03 - 0.15)	0.003**	<0.1	1020
		Year 6 Written	0.03 (-0.04 - 0.1)	0.38		1005
		Year 6 Clinical	0.04 (-0.03 - 0.11)	0.216		740
LKC Medicine	BMAT Section 1	Year 1 Written	0.08 (-0.03 - 0.2)	0.157		223
		Year 2 Written	0.08 (-0.05 - 0.21)	0.205		222
		Year 2 Clinical	-0.08 (-0.21 - 0.05)	0.224		222
		Year 3 Written	0.11 (-0.01 - 0.22)	0.062		221
		Year 3 Clinical	0.01 (-0.14 - 0.15)	0.922		221
		Year 4 Written	0.12 (-0.02 - 0.25)	0.102		220
		Year 4 Clinical	-0.1 (-0.23 - 0.03)	0.141		220
		Year 5 Written	0.08 (-0.05 - 0.2)	0.226		218
		Year 5 Clinical	0.07 (-0.06 - 0.2)	0.275		218
	BMAT Section 2	Year 1 Written	0.36 (0.24 - 0.48)	<0.001***	Moderate	223
		Year 2 Written	0.31 (0.18 - 0.45)	<0.001***	Moderate	222
		Year 2 Clinical	-0.19 (-0.3 - -0.07)	0.002**	Small	222
		Year 3 Written	0.23 (0.11 - 0.35)	<0.001***	Small	221
		Year 3 Clinical	0.04 (-0.07 - 0.15)	0.488		221
		Year 4 Written	0.22 (0.1 - 0.35)	0.001***	Small	220

		Year 4 Clinical	-0.11 (-0.24 - 0.03)	0.124		220
		Year 5 Written	0.23 (0.11 - 0.36)	<0.001***	Small	218
		Year 5 Clinical	0.09 (-0.03 - 0.22)	0.153		218
	BMAT Section 3a	Year 1 Written	-0.04 (-0.2 - 0.12)	0.599		223
		Year 2 Written	0.03 (-0.12 - 0.18)	0.7		222
		Year 2 Clinical	0.02 (-0.12 - 0.17)	0.754		222
		Year 3 Written	0.05 (-0.08 - 0.18)	0.435		221
		Year 3 Clinical	-0.02 (-0.15 - 0.11)	0.792		221
		Year 4 Written	0.04 (-0.09 - 0.18)	0.53		220
		Year 4 Clinical	0 (-0.13 - 0.13)	0.991		220
		Year 5 Written	-0.01 (-0.14 - 0.13)	0.919		218
		Year 5 Clinical	0.01 (-0.13 - 0.14)	0.928		218

Supplementary Table S3 shows the results of univariable robust regressions investigating associations between performance on assessments ('Outcome: Assessment Performance') and performance on individual BMAT sections ('Predictor: BMAT Performance'). Standardized regression coefficients (betas) and their 95% bootstrap confidence intervals are displayed as tests of significance. P-values were calculated based on a normal approximation to the distribution of the ratio of the beta to standard error (using the summary.lmrob function in R package 'robustbase' (\*\*\*) =  $p < 0.001$ , \*\* =  $p < 0.01$ , \* =  $p < 0.05$ ). 'N' shows the number of observations used in each calculation. ICSM = Imperial College School of Medicine. LKCMedicine = Lee Kong Chian School of Medicine. Effect sizes were interpreted according to Cohen's heuristics ('Effect Size Interpretation'): 'small' = 0.1 - 0.29, 'moderate' = 0.3 - 0.49; 'large' = 0.5 - 1. At ICSM, performance on BMAT Section 1 ('Thinking Skills') showed a small association with year 6 written assessment performance at ICSM and significant associations with effect sizes  $< 0.1$  with performance on written assessments in years 1 and 5. There were no associations between BMAT Section 1 and assessment performance at LKCMedicine. Performance on BMAT Section 2 ('Scientific Knowledge and Applications') showed significant associations with performance on all five written assessments at both institutions. At ICSM, four of five effect sizes were small and one  $< 0.1$ . At LKCMedicine, the associations with written performance in years 1 and 2 were moderate, with the rest being of small effect sizes. At LKCMedicine, there was a small negative association between performance on BMAT Section 2 and year 2 clinical assessments. Performance on BMAT Section 3a (writing quality of the 'Writing Task') showed a significant association of effect size  $< 0.1$  with year 5 clinical assessment performance at ICSM and no associations with assessment performance at LKCMedicine.

Supplementary Table S4: Multivariable analyses: associations between performance on all BMAT sections considered simultaneously and assessment outcomes across both institutions

Institution	Outcome (Assessment Performance)	Predictor (BMAT Performance)	Standardized Regression Coefficient (95% Bootstrap CI)	P-value	Effect Size Interpretation	N
ICSM	Year 1 Written	BMAT Section 1	0.04 (-0.03 - 0.11)	0.242		1062
		BMAT Section 2	0.16 (0.09 - 0.22)	<0.001***	Small	1062
		BMAT Section 3a	0.03 (-0.04 - 0.09)	0.4		1062
	Year 2 Written	BMAT Section 1	0.02 (-0.05 - 0.09)	0.633		1030
		BMAT Section 2	0.14 (0.06 - 0.21)	<0.001***	Small	1030
		BMAT Section 3a	0.01 (-0.06 - 0.07)	0.806		1030
	Year 3 Clinical	BMAT Section 1	0.01 (-0.05 - 0.06)	0.838		1049
		BMAT Section 2	-0.05 (-0.1 - 0.01)	0.082		1049
		BMAT Section 3a	0 (-0.05 - 0.05)	0.992		1049
	Year 3 Written	BMAT Section 1	0 (-0.06 - 0.07)	0.984		1049
		BMAT Section 2	0.15 (0.08 - 0.22)	<0.001***	Small	1049
		BMAT Section 3a	0.02 (-0.05 - 0.08)	0.625		1049
	Year 5 Written	BMAT Section 1	0.06 (0 - 0.12)	0.062		1022
		BMAT Section 2	0.07 (0 - 0.13)	0.046*	<0.1	1022
		BMAT Section 3a	0.03 (-0.03 - 0.09)	0.352		1022
	Year 5 Clinical	BMAT Section 1	0.03 (-0.04 - 0.1)	0.362		1020
		BMAT Section 2	-0.02 (-0.09 - 0.04)	0.501		1020
		BMAT Section 3a	0.09 (0.03 - 0.15)	0.004**	<0.1	1020
	Year 6 Written	BMAT Section 1	0.11 (0.05 - 0.17)	0.001***	Small	1005
		BMAT Section 2	0.16 (0.09 - 0.23)	<0.001***	Small	1005
		BMAT Section 3a	0 (-0.07 - 0.06)	0.918		1005
Year 6 Clinical	BMAT Section 1	-0.03 (-0.11 - 0.05)	0.432		740	
	BMAT Section 2	-0.02 (-0.09 - 0.06)	0.647		740	
	BMAT Section 3a	0.05 (-0.02 - 0.12)	0.163		740	
LKC Medicine	Year 1 Written	BMAT Section 1	-0.04 (-0.16 - 0.08)	0.531		223
		BMAT Section 2	0.37 (0.24 - 0.5)	<0.001***	Moderate	223
		BMAT Section 3a	-0.03 (-0.17 - 0.1)	0.642		223
	Year 2 Written	BMAT Section 1	-0.03 (-0.16 - 0.11)	0.693		222
		BMAT Section 2	0.33 (0.19 - 0.46)	<0.001***	Moderate	222
		BMAT Section 3a	0.04 (-0.09 - 0.17)	0.522		222
	Year 2 Clinical	BMAT Section 1	-0.01 (-0.15 - 0.13)	0.852		222
		BMAT Section 2	-0.18 (-0.31 - -0.05)	0.006**	Small	222
		BMAT Section 3a	0.01 (-0.14 - 0.16)	0.893		222
	Year 3 Written	BMAT Section 1	0.04 (-0.08 - 0.15)	0.558		221
		BMAT Section 2	0.22 (0.1 - 0.35)	<0.001***	Small	221
		BMAT Section 3a	0.07 (-0.06 - 0.19)	0.291		221
Year 3 Clinical	BMAT Section 1	-0.01 (-0.16 - 0.14)	0.924		221	
	BMAT Section 2	0.04 (-0.08 - 0.16)	0.499		221	
	BMAT Section 3a	-0.01 (-0.15 - 0.12)	0.826		221	



	Year 4 Written	BMAT Section 1	0.05 (-0.11 - 0.2)	0.558		220
		BMAT Section 2	0.21 (0.08 - 0.35)	0.002**	Small	220
		BMAT Section 3a	0.06 (-0.07 - 0.19)	0.35		220
	Year 4 Clinical	BMAT Section 1	-0.07 (-0.21 - 0.07)	0.304		220
		BMAT Section 2	-0.08 (-0.22 - 0.06)	0.259		220
		BMAT Section 3a	-0.01 (-0.13 - 0.12)	0.937		220
	Year 5 Written	BMAT Section 1	-0.01 (-0.14 - 0.12)	0.901		218
		BMAT Section 2	0.24 (0.1 - 0.38)	0.001***	Small	218
		BMAT Section 3a	0.01 (-0.12 - 0.14)	0.872		218
Year 5 Clinical	BMAT Section 1	0.04 (-0.1 - 0.19)	0.541		218	
	BMAT Section 2	0.08 (-0.06 - 0.22)	0.277		218	
	BMAT Section 3a	0.01 (-0.12 - 0.15)	0.852		218	

Supplementary Table S4 shows the results of multivariable robust regressions investigating associations between performance on assessments ('Outcome: Assessment Performance') and performance on BMAT sections ('Predictor: BMAT Performance') considered simultaneously. Shaded areas indicate grouped results from the same regression analysis. Standardized regression coefficients (betas) and their 95% bootstrap confidence intervals are displayed. P-values were calculated based on a normal approximation to the distribution of the ratio of the beta to standard error (using the summary.lmrob function in R package 'robustbase' (\*\*\*) =  $p < 0.001$ , \*\* =  $p < 0.01$ , \* =  $p < 0.05$ ). 'N' shows the number of observations used in each calculation. ICSM = Imperial College School of Medicine. LKCMedicine = Lee Kong Chian School of Medicine. Effect sizes were interpreted according to Cohen's heuristics ('Effect Size Interpretation'): 'small' = 0.1 - 0.29, 'moderate' = 0.3 - 0.49; 'large' = 0.5 - 1. At ICSM, performance on BMAT Section 2 ('Scientific Knowledge and Applications') showed small associations with written assessment performance in years 1, 2, 3 and 6, with a significant association of effect size  $< 0.1$  with written performance in year 5. Performance on BMAT Section 1 ('Thinking Skills') showed a small association with performance on year 6 written assessments. At LKCMedicine, performance on BMAT Section 2 showed moderate associations with written assessment performance in years 1 and 2, and small associations with written assessment performance in years 3-5. Performance on BMAT Section 2 also showed a small negative association with performance on year 2 clinical assessments. BMAT Section 3a (writing quality of the 'Writing Task') showed no associations with any assessment outcomes in multivariable analyses.

Supplementary Table S5: Associations between A-level performance and assessment performance at Imperial College School of Medicine

Outcome (Assessment Performance)	Standardized Regression Coefficient (95% Bootstrap CI)	P-value	Effect Size Interpretation	N
Year 1 Written	0.43 (0.37 - 0.49)	<0.001***	Moderate	953
Year 2 Written	0.39 (0.32 - 0.45)	<0.001***	Moderate	922
Year 3 Clinical	0.1 (0.04 - 0.15)	<0.001***	Small	959
Year 3 Written	0.34 (0.28 - 0.4)	<0.001***	Moderate	959
Year 5 Written	0.26 (0.2 - 0.32)	<0.001***	Small	937
Year 5 Clinical	0.15 (0.09 - 0.21)	<0.001***	Small	935
Year 6 Written	0.36 (0.29 - 0.42)	<0.001***	Moderate	922
Year 6 Clinical	0.2 (0.13 - 0.28)	<0.001***	Small	685

Supplementary Table S5 shows the results of univariable robust regressions investigating associations between performance on assessments ('Outcome: Assessment Performance') and the score derived from participants' three highest A-level grades (see Table S1). Standardized regression coefficients (betas) and their 95% bootstrap confidence intervals are displayed. P-values were calculated based on a normal approximation to the distribution of the ratio of the beta to standard error (using the summary.lmrob function in R package 'robustbase' (\*\*\*) =  $p < 0.001$ , \*\* =  $p < 0.01$ , \* =  $p < 0.05$ ). 'N' shows the number of observations used in each calculation. Effect sizes were interpreted according to Cohen's heuristics ('Effect Size Interpretation'): 'small' = 0.1 - 0.29, 'moderate' = 0.3 - 0.49; 'large' = 0.5 - 1. A-level performance showed moderate associations with performance on written assessments in years 1, 2, 3 and 6 and a small association with written performance in year 5. A-level performance showed small associations with performance on all clinical assessments.

Supplementary Table S6: Incremental validity: associations between performance on individual BMAT sections and assessment performance at Imperial College School of Medicine, controlling for A-level performance

Predictor (BMAT Performance)	Outcome (Assessment Performance)	Beta (95% Bootstrap CI)	P-value	Effect Size Interpretation	N
BMAT Section 1	Year 1 Written	-0.01 (-0.08 - 0.05)	0.727		950
	Year 2 Written	-0.06 (-0.13 - 0.01)	0.102		919
	Year 3 Clinical	-0.05 (-0.11 - 0.01)	0.136		938
	Year 3 Written	-0.05 (-0.11 - 0.02)	0.133		938
	Year 5 Written	0.02 (-0.05 - 0.08)	0.629		915
	Year 5 Clinical	0.01 (-0.06 - 0.08)	0.883		913
	Year 6 Written	0.05 (-0.02 - 0.11)	0.15		901
	Year 6 Clinical	-0.08 (-0.16 - 0)	0.058		664
BMAT Section 2	Year 1 Written	0.03 (-0.03 - 0.1)	0.272		950
	Year 2 Written	0.02 (-0.05 - 0.09)	0.578		919
	Year 3 Clinical	-0.08 (-0.14 - -0.02)	0.007**	<0.1	938
	Year 3 Written	0.04 (-0.03 - 0.1)	0.277		938
	Year 5 Written	0.01 (-0.06 - 0.08)	0.831		915
	Year 5 Clinical	-0.05 (-0.12 - 0.02)	0.175		913
	Year 6 Written	0.09 (0.01 - 0.16)	0.021*	<0.1	901
	Year 6 Clinical	-0.1 (-0.17 - -0.02)	0.012*	Small	664
BMAT Section 3a	Year 1 Written	0.02 (-0.04 - 0.08)	0.479		938
	Year 2 Written	-0.01 (-0.08 - 0.05)	0.738		907
	Year 3 Clinical	-0.02 (-0.07 - 0.03)	0.495		925
	Year 3 Written	0 (-0.06 - 0.06)	0.966		925
	Year 5 Written	0.02 (-0.04 - 0.08)	0.526		902
	Year 5 Clinical	0.08 (0.01 - 0.14)	0.017*	<0.1	900
	Year 6 Written	0 (-0.07 - 0.07)	0.947		888
	Year 6 Clinical	0.03 (-0.05 - 0.11)	0.488		651

Supplementary Table S6 shows the results of robust regressions investigating associations between performance on assessments ('Outcome: Assessment Performance') and individual BMAT sections ('Predictor: BMAT Performance'), controlling for the score derived from participants' three highest A-level grades (see Table S1). Standardized regression coefficients (betas) and their 95% bootstrap confidence intervals are displayed. P-values were calculated based on a normal approximation to the distribution of the ratio of the beta to standard error (using the summary.lmrob function in R package 'robustbase' (\*\*\*) =  $p < 0.001$ , \*\* =  $p < 0.01$ , \* =  $p < 0.05$ ). 'N observations' shows the number of observations used in each calculation. Effect sizes were interpreted according to Cohen's heuristics ('Effect Size Interpretation'): 'small' = 0.1 - 0.29, 'moderate' = 0.3 - 0.49; 'large' = 0.5 - 1. After controlling for A-level performance, the only association of at least a small effect size was a negative association between BMAT Section 2 ('Scientific Knowledge and Applications') and year 6 clinical assessment performance. We therefore found no clear evidence of incremental validity of the BMAT over obtained A-level grades.