

AS LEVEL GRADE, AGE, GENDER AND CENTRE TYPE AS PREDICTORS OF A LEVEL GRADE IN THE SUMMER 2002 EXAMINATIONS

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ABSTRACT

The relationship between AS level grade, age, gender and centre type and A level grades in the June 2002 examination series was studied in seven AQA GCE specifications. The specifications studied were Biology B, Psychology B, English Language and Literature A, ICT, Mathematics A, History and General Studies A.

The relationship between candidate performance at AS and A level was consistent across the specifications. Most candidates were awarded the same grade at AS and A level, but only a slightly smaller proportion did better at AS than at A level and very few did better at A than AS level. The difference in the grades awarded at AS and A level raises doubt over the viability of Dearing's (1996) definition of GCE standards and may have implications for the way in which these qualifications are awarded.

For all specifications together, and each specification in turn, multiple regression was performed with A level grade as the outcome and age, gender, centre type and AS grade as the predictors. Candidates' grade at AS level accounted for the greatest proportion of variance in A level grade. Centre type, age and gender independently predicted small but significant amounts of the variance. These variables had different relationships with A level grade depending on the specification studied. This was particularly the case for centre type. For example, candidates taking the Biology, History and General Studies specifications who were from comprehensive schools tended to be awarded significantly lower A level grades than candidates from other types of centres. The opposite, however, was true for candidates taking the Mathematics specification and there was no relationship between attending a comprehensive school and A level grades for the Psychology, English Language and Literature and ICT specifications. In general, female candidates and candidates aged 18 years or younger were awarded significantly higher A level grades than other candidates.

The accuracy of prediction of A level grade varied across the specifications. Between 55 and 80 per cent of grade variance was accounted for. The inclusion of candidates' mean GCSE grade could improve the predictions, although it is likely that a large proportion of the variance predicted by mean GCSE grade would be common to that predicted by AS grade.

If the relationship between the predictors and A level grade proves reliable across examination series, it may be possible to generate more accurate and valid predictions to inform awarding. This may be of particular value when it is not possible to use mean GCSE grade to predict A level grades, for example when a large proportion of candidates are aged 19 years and older.

1. INTRODUCTION

Seven AQA specifications with high entries were studied to examine the relationship between AS level grade, age, gender and centre type and A level grade. The specifications studied and the number of candidates awarded an A level are reported in Table 1. Candidates were awarded AS level grades in one of three series – June 2001, January 2002 or June 2002. Candidates were awarded A level grades in June 2002.

Table 1. The number of candidates awarded an A level by specification.

Specification	Entry
Biology B	10,873
Psychology B	3,381
English Language and Literature A	2,798
ICT	11,599
Mathematics A	4,436
History	7,658
General Studies A	20,636
Total	61,381

2. RESULTS

The relationship between candidates' AS and A level grades

Candidates' AS and A level grades, across specifications and for each specification in turn, are cross-tabulated in Tables I to VIII (Appendix 1). These cross-tabulations are summarised in Table 2.

The pattern of candidate performance at AS and A level was consistent across specifications. The largest percentage of candidates was awarded the same grade at AS and A level and a slightly smaller proportion of candidates did better at AS than at A level. A relatively small proportion of candidates did better at A than AS level. The percentage of candidates falling into these categories varied across the specifications. For example, 6.6% and 18.0% of candidates were awarded one grade higher at A than AS level in Biology and English Language and Literature respectively.

Table 2. A summary of the relationship between candidates' AS and A level grades by specification.

	All subjects	Biology B	Psychology B	English Language and Literature A	ICT	Mathematics A	History	General Studies A
% better at AS level by 3+ grades	0.3	0.1	0.3	0.1	0.2	0.2	0.2	0.6
% better at AS level by 2 grades	6.2	4.0	4.4	3.8	6.2	4.1	5.8	8.4
% better at AS level by 1 grade	30.6	38.5	30.4	26.5	36.1	24.4	32.7	37.8
% same at AS and A level	46.9	50.2	48.9	45.6	43.4	54.7	47.6	45.1
% better at A level by 1 grade	9.8	6.6	13.4	18.0	12.3	13.5	11.5	7.1
% better at A level by 2 grades	1.4	0.5	2.3	4.7	1.6	2.7	1.9	0.6
% better at A level by 3+ grades	0.2	0.1	0.3	1.0	0.2	0.4	0.2	0.1

Predictors of A level grade

To inform awarding the AQA Standards Unit uses candidates' mean GCSE grade to predict the likely distribution of A level grades. There are however, instances where this is not possible, when a large proportion of candidates is aged 19 years or older, for example. If there is a strong and reliable relationship between known variables (AS grade, age, gender and centre type) and A level grade, an alternative may be to use these variables to generate accurate and valid predictions to inform awarding.

To explore this possibility a forced entry multiple regression was performed with A level grade as the outcome and AS grade, age, gender and centre type as the predictors. Candidates were recorded as falling into one of two age bands – 18 years of age or younger (this group included candidates who were part of the 2002 cohort of year 13 students and younger students from year 12 and below) and older than eighteen. This variable was coded such that the former group scored 1 and the latter scored 2. Gender was coded such that male candidates scored 1 and female candidates scored 2. Centres were classified as falling into one of four groups: 'secondary comprehensives' (secondary comprehensive/middle/modern schools); 'secondary selective' (secondary selective/independent schools); 'colleges' (F.E. establishments/tertiary colleges); and 'other' centres (UK centres not falling into the latter categories/overseas centres). For the purpose of the regression centre type was converted into a set of three dummy variables (comprehensive = 1 vs. non-comprehensive = 0, selective = 1 vs. non-selective = 1, college = 1 vs. non-college = 0). Candidates' grades at A and AS level were quantified in the following manner (A=6) (B=5) (C=4) (D=3) (E=2) (U=1).

This analysis was conducted across all specifications and then for each specification in turn. The results of these analyses are presented in Appendix 2. Tables I to VIII display the correlations between the variables, the unstandardised regression coefficients (B) and intercept, the standardised regression coefficients (β), R^2 and adjusted R^2 . A summary of the relationship

between age, gender, centre type, AS grade and A level grade by specification can be seen below in Table 3.

Table 3. Summary of the relationship between predictors and A level grade by specification.

	All subjects	Biology B	Psychology B	English Language and Literature A	ICT	Mathematics A	History	General Studies A
Comprehensive	-	-	n.s.	n.s.	n.s.	+	-	-
Selective	n.s.	n.s.	-	+	+	n.s.	n.s.	n.s.
Colleges	n.s.	-	n.s.	+	n.s.	n.s.	-	n.s.
Age	-	-	-	n.s.	-	n.s.	-	n.s.
Gender	+	+	+	+	+	n.s.	+	+
AS grade	+	+	+	+	+	+	+	+
R ²	0.71	0.80	0.68	0.55	0.64	0.74	0.68	0.72

- = significant negative coefficient, + = significant positive coefficient, n.s. = non-significant coefficient

Across specifications, centre type, age, gender and AS grade predicted 71% of the variance in A level grade. Candidates who did not attend a comprehensive school, candidates aged 18 or younger and female candidates had significantly higher A level grades than other candidates. The pattern of significant predictors was similar for individual specifications¹. As one would expect AS grade predicted the majority of the variance in A level grade. Gender was a significant predictor of A level grade for all specifications but Mathematics. In each case female candidates outperformed male candidates. Age was a significant predictor of A level grade for all specifications except English Language and Literature, Mathematics and General Studies. Candidates aged 18 or younger were awarded higher A level grades than older candidates. The relationship between centre type and A level grade varied across the specifications. For example, candidates taking the Biology, History and General Studies examinations who were from comprehensive schools tended to be awarded significantly lower A level grades than candidates from other types of centres. The opposite, however, was true for candidates taking the Mathematics specification and there was no relationship between attending a comprehensive school and A level grades in Psychology, English Language and Literature and ICT. There was a tendency for candidates taking the English Language and Literature and ICT specifications who were from selective/independent schools to be awarded significantly higher A level grades than candidates from other types of centres. The opposite, however, was true for candidates taking the Psychology specification.

¹ Examination of the normal probability plots to test the normality of residuals demonstrated extreme deviation from normality for the analyses relating to Biology B, Mathematics A and General Studies A (see Figures 1-3, Appendix 3). These findings should therefore be treated with caution.

3. DISCUSSION

To guide grading in Curriculum 2000, the awarding bodies began with the definition of GCE standards from Dearing (1996). The new AS should be graded on an A-E scale like the full A level:

- Grade A would be the standard attained by a student who, with one year's further study, would be expected to achieve grade A in the full A level.
- The other grades would relate to the A level standard in the same way.

If grades had been awarded in this way, one would expect the majority of candidates to receive the same grade at AS and A level. This was the case for the specifications studied. One would also expect approximately equal sized minorities of candidates to receive higher AS than A level grades or higher A than AS grades. For all the specifications studied, however, a much larger proportion of candidates achieved higher grades at AS than at A level. The GCE standards defined by Dearing did not match the grade distributions of these specifications. This raises doubts over the viability of Dearing's definition of the relationship between AS and A level (see also Pinot de Moira, 2002) and may have implications for the way in which these qualifications are awarded in the future.

There are several possible explanations for the difference between AS and A level grades. The new AS was graded with limited judgmental or statistical information, a year before the full A level was graded. The distribution of A level grades and maintaining the standard set in the legacy A level, not the alignment of AS and A level grades, was the focus of the A level awards. Grading at AS level may have been relatively lenient and grading for A2 units relatively severe, resulting in candidates receiving the appropriate overall A level grades for their ability.

It is also possible that receiving good AS grades led candidates to underestimate the standards expected and work needed to achieve good grades at A2. Nearly a third of candidates choosing to continue to A level accumulated enough uniform marks to merit an A level pass from their AS units (Pinot de Moira, 2002) which may lead to complacency.

Whatever the cause of the difference between AS and A level grades, it has implications for those who interpret and use them. Teachers and students believing that AS performance would be a good indicator of A level performance, might be disappointed by lower than expected A level grades. Further, the difference may necessitate a review of the UCAS Tariff. Currently, an A grade at AS level and a D grade at A level are equivalent to 60 points towards entry into higher education. A grade B at AS level is worth 50 points. A grade C at AS level and a E grade at A level are equivalent to 40 points. This tariff was constructed with Dearing's definition GCE standards in mind. The relative weighting of AS to A level grades may not, however, be appropriate.

The relationship between candidates' AS and A level grades was reassuringly consistent across the specifications studied. This suggests that the procedures governing the awarding of grades were reliably applied across the specifications. There was, however, some variation in the strength of the relationship between AS and A level grades (the correlation varied from 0.89 (Biology B) to 0.74 (English Language and Literature A)). This may reflect variation in the correspondence between the method of assessment and/or skills being assessed at AS and A level.

Before discussing the outcome of the regression analyses it is necessary to focus on the use of A level grade (measured on an ordinal scale) as an outcome in regression analyses which

assume a continuous outcome variable. Breaking this assumption limits the validity of the analysis and the findings should therefore be treated with caution. As one would expect AS grade predicted the greatest proportion of variance in A level grade. Nonetheless centre type, age and gender independently predicted small but statistically significant amounts of the variance. In general, female candidates and candidates aged 18 years or younger were awarded significantly higher A level grades than other candidates. These predictors, however, had different relationships with A level grade depending on the specification studied. This was particularly the case for centre type. The reliability of these relationships needs testing over future examination series.

The accuracy of prediction of A level grade varied substantially from specification to specification. The proportion of variance accounted for by the predictors varied from 55 per cent to 80 per cent. Accuracy might be improved by including candidates' mean GCSE grade in the regression equation. It is likely, however, that a large proportion of the variance predicted by mean GCSE grade would be common to that predicted by AS grade.

If the relationship between the predictors and A level grade proves reliable it may be possible to generate predictions to inform awarding. This may be of particular value when it is not possible to use mean GCSE grade to predict grades, for example where a large proportion of candidates are aged 19 years and older. This would, however, have the disadvantage of not being a practice common to all Awarding Bodies.

Dr. M. L. Meadows, 13-05-03

4. REFERENCES

Dearing, R. (1996). Review of Qualifications for 16-19 year olds (Full Report). SCAA Publications.

Pinot de Moira, A. (2002). Preliminary Analysis of the Summer 2002 A Level Results. A paper presented to the AQA Research Committee, 19th November. (RC/188).

APPENDIX 1 - CROSS-TABULATIONS OF CANDIDATES' AS AND A LEVEL GRADES BY SPECIFICATION

Table I. Crosstabulation of AS level grade by A level grade - all subjects

		AS level grade						Total	
		A	B	C	D	E	U		
A level grade	A	Count	9219	1250	188	29	4	5	10695
		% within A level grade	86.2%	11.7%	1.8%	.3%	.0%	.0%	100.0%
		% within AS level grade	66.4%	9.7%	1.4%	.2%	.1%	.3%	17.4%
		% of Total	15.0%	2.0%	.3%	.0%	.0%	.0%	17.4%
B		Count	3824	5285	1605	247	36	12	11009
		% within A level grade	34.7%	48.0%	14.6%	2.2%	.3%	.1%	100.0%
		% within AS level grade	27.5%	41.2%	11.6%	2.1%	.5%	.6%	17.9%
		% of Total	6.2%	8.6%	2.6%	.4%	.1%	.0%	17.9%
C		Count	767	4988	5283	1611	253	35	12937
		% within A level grade	5.9%	38.6%	40.8%	12.5%	2.0%	.3%	100.0%
		% within AS level grade	5.5%	38.9%	38.3%	13.8%	3.5%	1.8%	21.1%
		% of Total	1.2%	8.1%	8.6%	2.6%	.4%	.1%	21.1%
D		Count	46	1178	5522	4612	1104	146	12608
		% within A level grade	.4%	9.3%	43.8%	36.6%	8.8%	1.2%	100.0%
		% within AS level grade	.3%	9.2%	40.0%	39.5%	15.3%	7.4%	20.5%
		% of Total	.1%	1.9%	9.0%	7.5%	1.8%	.2%	20.5%
E		Count	29	63	1106	4468	3099	470	9235
		% within A level grade	.3%	.7%	12.0%	48.4%	33.6%	5.1%	100.0%
		% within AS level grade	.2%	.5%	8.0%	38.2%	42.9%	23.8%	15.0%
		% of Total	.0%	.1%	1.8%	7.3%	5.0%	.8%	15.0%
U		Count		58	89	722	2721	1307	4897
		% within A level grade		1.2%	1.8%	14.7%	55.6%	26.7%	100.0%
		% within AS level grade		.5%	.6%	6.2%	37.7%	66.2%	8.0%
		% of Total		.1%	.1%	1.2%	4.4%	2.1%	8.0%
Total		Count	13885	12822	13793	11689	7217	1975	61381
		% within A level grade	22.6%	20.9%	22.5%	19.0%	11.8%	3.2%	100.0%
		% within AS level grade	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	22.6%	20.9%	22.5%	19.0%	11.8%	3.2%	100.0%

Table II. Crosstabulation of AS level grade by A level grade - Biology B specification

		AS level grade						Total	
		A	B	C	D	E	U		
A level grade	A	Count	2245	262	14	2		3	2526
		% within A level grade	88.9%	10.4%	.6%	.1%		.1%	100.0%
		% within AS level grade	77.0%	10.5%	.6%	.1%		1.6%	23.2%
		% of Total	20.6%	2.4%	.1%	.0%		.0%	23.2%
	B	Count	614	1083	197	19	3	1	1917
		% within A level grade	32.0%	56.5%	10.3%	1.0%	.2%	.1%	100.0%
		% within AS level grade	21.1%	43.4%	8.3%	1.1%	.3%	.5%	17.6%
		% of Total	5.6%	10.0%	1.8%	.2%	.0%	.0%	17.6%
	C	Count	55	1006	858	144	11	3	2077
		% within A level grade	2.6%	48.4%	41.3%	6.9%	.5%	.1%	100.0%
		% within AS level grade	1.9%	40.4%	36.3%	8.1%	1.0%	1.6%	19.1%
		% of Total	.5%	9.3%	7.9%	1.3%	.1%	.0%	19.1%
D	Count	1	138	1120	671	95	6	2031	
	% within A level grade	.0%	6.8%	55.1%	33.0%	4.7%	.3%	100.0%	
	% within AS level grade	.0%	5.5%	47.4%	37.5%	8.4%	3.2%	18.7%	
	% of Total	.0%	1.3%	10.3%	6.2%	.9%	.1%	18.7%	
E	Count		2	168	874	451	23	1518	
	% within A level grade		.1%	11.1%	57.6%	29.7%	1.5%	100.0%	
	% within AS level grade		.1%	7.1%	48.9%	39.9%	12.3%	14.0%	
	% of Total		.0%	1.5%	8.0%	4.1%	.2%	14.0%	
U	Count		2	4	77	570	151	804	
	% within A level grade		.2%	.5%	9.6%	70.9%	18.8%	100.0%	
	% within AS level grade		.1%	.2%	4.3%	50.4%	80.7%	7.4%	
	% of Total		.0%	.0%	.7%	5.2%	1.4%	7.4%	
Total	Count	2915	2493	2361	1787	1130	187	10873	
	% within A level grade	26.8%	22.9%	21.7%	16.4%	10.4%	1.7%	100.0%	
	% within AS level grade	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
	% of Total	26.8%	22.9%	21.7%	16.4%	10.4%	1.7%	100.0%	

Table III. Crosstabulation of AS level grade by A level grade - Psychology B specification

		AS level grade						Total	
		A	B	C	D	E	U		
A level grade	A	Count	471	73	16	3	1	1	565
		% within A level grade	83.4%	12.9%	2.8%	.5%	.2%	.2%	100.0%
		% within AS level grade	66.2%	10.7%	2.1%	.4%	.2%	.8%	16.7%
		% of Total	13.9%	2.2%	.5%	.1%	.0%	.0%	16.7%
	B	Count	209	310	131	23	2	1	676
		% within A level grade	30.9%	45.9%	19.4%	3.4%	.3%	.1%	100.0%
		% within AS level grade	29.4%	45.5%	17.4%	3.4%	.5%	.8%	20.0%
		% of Total	6.2%	9.2%	3.9%	.7%	.1%	.0%	20.0%
	C	Count	28	243	317	127	27	2	744
	% within A level grade	3.8%	32.7%	42.6%	17.1%	3.6%	.3%	100.0%	
	% within AS level grade	3.9%	35.7%	42.1%	18.5%	6.5%	1.5%	22.0%	
	% of Total	.8%	7.2%	9.4%	3.8%	.8%	.1%	22.0%	
D	Count	1	48	244	297	95	12	697	
	% within A level grade	.1%	6.9%	35.0%	42.6%	13.6%	1.7%	100.0%	
	% within AS level grade	.1%	7.0%	32.4%	43.3%	22.8%	9.0%	20.6%	
	% of Total	.0%	1.4%	7.2%	8.8%	2.8%	.4%	20.6%	
E	Count	3	4	45	209	170	28	459	
	% within A level grade	.7%	.9%	9.8%	45.5%	37.0%	6.1%	100.0%	
	% within AS level grade	.4%	.6%	6.0%	30.5%	40.9%	21.1%	13.6%	
	% of Total	.1%	.1%	1.3%	6.2%	5.0%	.8%	13.6%	
U	Count		3		27	121	89	240	
	% within A level grade		1.3%		11.3%	50.4%	37.1%	100.0%	
	% within AS level grade		.4%		3.9%	29.1%	66.9%	7.1%	
	% of Total		.1%		.8%	3.6%	2.6%	7.1%	
Total	Count	712	681	753	686	416	133	3381	
	% within A level grade	21.1%	20.1%	22.3%	20.3%	12.3%	3.9%	100.0%	
	% within AS level grade	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
	% of Total	21.1%	20.1%	22.3%	20.3%	12.3%	3.9%	100.0%	

Table IV. Crosstabulation of AS level grade by A level grade - English Literature A specification

		AS level grade						Total	
		A	B	C	D	E	U		
A level grade	A	Count	296	92	33	8		429	
		% within A level grade	69.0%	21.4%	7.7%	1.9%		100.0%	
		% within AS level grade	58.0%	16.1%	4.9%	1.4%		15.3%	
		% of Total	10.6%	3.3%	1.2%	.3%		15.3%	
B		Count	176	244	119	30	12	1	582
		% within A level grade	30.2%	41.9%	20.4%	5.2%	2.1%	.2%	100.0%
		% within AS level grade	34.5%	42.7%	17.6%	5.2%	3.4%	1.0%	20.8%
		% of Total	6.3%	8.7%	4.3%	1.1%	.4%	.0%	20.8%
C		Count	37	194	289	153	52	6	731
		% within A level grade	5.1%	26.5%	39.5%	20.9%	7.1%	.8%	100.0%
		% within AS level grade	7.3%	33.9%	42.6%	26.3%	14.7%	5.9%	26.1%
		% of Total	1.3%	6.9%	10.3%	5.5%	1.9%	.2%	26.1%
D		Count		39	211	257	103	16	626
		% within A level grade		6.2%	33.7%	41.1%	16.5%	2.6%	100.0%
		% within AS level grade		6.8%	31.1%	44.2%	29.1%	15.7%	22.4%
		% of Total		1.4%	7.5%	9.2%	3.7%	.6%	22.4%
E		Count	1	1	19	122	148	36	327
		% within A level grade	.3%	.3%	5.8%	37.3%	45.3%	11.0%	100.0%
		% within AS level grade	.2%	.2%	2.8%	21.0%	41.8%	35.3%	11.7%
		% of Total	.0%	.0%	.7%	4.4%	5.3%	1.3%	11.7%
U		Count		2	7	12	39	43	103
		% within A level grade		1.9%	6.8%	11.7%	37.9%	41.7%	100.0%
		% within AS level grade		.3%	1.0%	2.1%	11.0%	42.2%	3.7%
		% of Total		.1%	.3%	.4%	1.4%	1.5%	3.7%
Total		Count	510	572	678	582	354	102	2798
		% within A level grade	18.2%	20.4%	24.2%	20.8%	12.7%	3.6%	100.0%
		% within AS level grade	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	18.2%	20.4%	24.2%	20.8%	12.7%	3.6%	100.0%

Table V. Crosstabulation of AS level grade by A level grade - Information and Communication Technology specification

		AS level grade						Total	
		A	B	C	D	E	U		
A level grade	A	Count	509	178	37	3	1	728	
		% within A level grade	69.9%	24.5%	5.1%	.4%	.1%	100.0%	
		% within AS level grade	55.5%	9.3%	1.2%	.1%	.1%	6.3%	
		% of Total	4.4%	1.5%	.3%	.0%	.0%	6.3%	
B		Count	324	797	348	51	6	3	1529
		% within A level grade	21.2%	52.1%	22.8%	3.3%	.4%	.2%	100.0%
		% within AS level grade	35.3%	41.5%	11.2%	1.6%	.3%	.6%	13.2%
		% of Total	2.8%	6.9%	3.0%	.4%	.1%	.0%	13.2%
C		Count	80	740	1212	422	52	9	2515
		% within A level grade	3.2%	29.4%	48.2%	16.8%	2.1%	.4%	100.0%
		% within AS level grade	8.7%	38.6%	39.0%	13.4%	2.6%	1.7%	21.7%
		% of Total	.7%	6.4%	10.4%	3.6%	.4%	.1%	21.7%
D		Count	3	184	1252	1288	341	41	3109
		% within A level grade	.1%	5.9%	40.3%	41.4%	11.0%	1.3%	100.0%
		% within AS level grade	.3%	9.6%	40.2%	40.8%	17.2%	7.9%	26.8%
		% of Total	.0%	1.6%	10.8%	11.1%	2.9%	.4%	26.8%
E		Count	1	12	241	1180	888	134	2456
		% within A level grade	.0%	.5%	9.8%	48.0%	36.2%	5.5%	100.0%
		% within AS level grade	.1%	.6%	7.7%	37.4%	44.9%	25.7%	21.2%
		% of Total	.0%	.1%	2.1%	10.2%	7.7%	1.2%	21.2%
U		Count		8	21	209	689	335	1262
		% within A level grade		.6%	1.7%	16.6%	54.6%	26.5%	100.0%
		% within AS level grade		.4%	.7%	6.6%	34.9%	64.2%	10.9%
		% of Total		.1%	.2%	1.8%	5.9%	2.9%	10.9%
Total		Count	917	1919	3111	3153	1977	522	11599
		% within A level grade	7.9%	16.5%	26.8%	27.2%	17.0%	4.5%	100.0%
		% within AS level grade	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	7.9%	16.5%	26.8%	27.2%	17.0%	4.5%	100.0%

Table VI. Crosstabulation of AS level grade by A level grade - Mathematics A specification

		AS level grade						Total	
		A	B	C	D	E	U		
A level grade	A	Count	1247	170	30	4	1	1452	
		% within A level grade	85.9%	11.7%	2.1%	.3%	.1%	100.0%	
		% within AS level grade	80.2%	21.1%	3.9%	.6%	.2%	32.7%	
		% of Total	28.1%	3.8%	.7%	.1%	.0%	32.7%	
B		Count	265	348	161	38	5	818	
		% within A level grade	32.4%	42.5%	19.7%	4.6%	.6%	.1%	100.0%
		% within AS level grade	17.0%	43.1%	20.7%	5.3%	1.1%	.7%	18.4%
		% of Total	6.0%	7.8%	3.6%	.9%	.1%	.0%	18.4%
C		Count	42	232	325	167	35	806	
		% within A level grade	5.2%	28.8%	40.3%	20.7%	4.3%	.6%	100.0%
		% within AS level grade	2.7%	28.7%	41.8%	23.4%	8.0%	3.4%	18.2%
		% of Total	.9%	5.2%	7.3%	3.8%	.8%	.1%	18.2%
D		Count	1	50	217	249	74	608	
		% within A level grade	.2%	8.2%	35.7%	41.0%	12.2%	2.8%	100.0%
		% within AS level grade	.1%	6.2%	27.9%	34.9%	16.9%	11.6%	13.7%
		% of Total	.0%	1.1%	4.9%	5.6%	1.7%	.4%	13.7%
E		Count		7	42	207	161	443	
		% within A level grade		1.6%	9.5%	46.7%	36.3%	5.9%	100.0%
		% within AS level grade		.9%	5.4%	29.0%	36.8%	17.8%	10.0%
		% of Total		.2%	.9%	4.7%	3.6%	.6%	10.0%
U		Count			2	48	162	309	
		% within A level grade			.6%	15.5%	52.4%	31.4%	100.0%
		% within AS level grade			.3%	6.7%	37.0%	66.4%	7.0%
		% of Total			.0%	1.1%	3.7%	2.2%	7.0%
Total		Count	1555	807	777	713	438	4436	
		% within A level grade	35.1%	18.2%	17.5%	16.1%	9.9%	3.3%	100.0%
		% within AS level grade	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	35.1%	18.2%	17.5%	16.1%	9.9%	3.3%	100.0%

Table VII. Crosstabulation of AS level grade by A level grade - History specification

		AS level grade						Total	
		A	B	C	D	E	U		
A level grade	A	Count	1218	162	36	6	1	1	1424
		% within A level grade	85.5%	11.4%	2.5%	.4%	.1%	.1%	100.0%
		% within AS level grade	65.6%	9.2%	2.0%	.4%	.1%	.5%	18.6%
		% of Total	15.9%	2.1%	.5%	.1%	.0%	.0%	18.6%
B		Count	539	762	261	44	6	4	1616
		% within A level grade	33.4%	47.2%	16.2%	2.7%	.4%	.2%	100.0%
		% within AS level grade	29.0%	43.1%	14.8%	3.2%	.8%	1.9%	21.1%
		% of Total	7.0%	10.0%	3.4%	.6%	.1%	.1%	21.1%
C		Count	98	688	702	249	48	3	1788
		% within A level grade	5.5%	38.5%	39.3%	13.9%	2.7%	.2%	100.0%
		% within AS level grade	5.3%	38.9%	39.9%	18.4%	6.8%	1.4%	23.3%
		% of Total	1.3%	9.0%	9.2%	3.3%	.6%	.0%	23.3%
D		Count	2	141	627	537	139	19	1465
		% within A level grade	.1%	9.6%	42.8%	36.7%	9.5%	1.3%	100.0%
		% within AS level grade	.1%	8.0%	35.7%	39.6%	19.6%	9.0%	19.1%
		% of Total	.0%	1.8%	8.2%	7.0%	1.8%	.2%	19.1%
E		Count	1	11	130	445	310	68	965
		% within A level grade	.1%	1.1%	13.5%	46.1%	32.1%	7.0%	100.0%
		% within AS level grade	.1%	.6%	7.4%	32.8%	43.7%	32.4%	12.6%
		% of Total	.0%	.1%	1.7%	5.8%	4.0%	.9%	12.6%
U		Count		4	2	74	205	115	400
		% within A level grade		1.0%	.5%	18.5%	51.3%	28.8%	100.0%
		% within AS level grade		.2%	.1%	5.5%	28.9%	54.8%	5.2%
		% of Total		.1%	.0%	1.0%	2.7%	1.5%	5.2%
Total		Count	1858	1768	1758	1355	709	210	7658
		% within A level grade	24.3%	23.1%	23.0%	17.7%	9.3%	2.7%	100.0%
		% within AS level grade	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	24.3%	23.1%	23.0%	17.7%	9.3%	2.7%	100.0%

Table VIII. Crosstabulation of AS level grade by A level grade - General Studies A specification

		AS level grade						Total	
		A	B	C	D	E	U		
A level grade	A	Count	3233	313	22	3			3571
		% within A level grade	90.5%	8.8%	.6%	.1%			100.0%
		% within AS level grade	59.7%	6.8%	.5%	.1%			17.3%
		% of Total	15.7%	1.5%	.1%	.0%			17.3%
	B	Count	1697	1741	388	42	2	1	3871
		% within A level grade	43.8%	45.0%	10.0%	1.1%	.1%	.0%	100.0%
		% within AS level grade	31.3%	38.0%	8.9%	1.2%	.1%	.1%	18.8%
		% of Total	8.2%	8.4%	1.9%	.2%	.0%	.0%	18.8%
	C	Count	427	1885	1580	349	28	7	4276
		% within A level grade	10.0%	44.1%	37.0%	8.2%	.7%	.2%	100.0%
		% within AS level grade	7.9%	41.1%	36.3%	10.2%	1.3%	1.0%	20.7%
		% of Total	2.1%	9.1%	7.7%	1.7%	.1%	.0%	20.7%
D	Count	38	578	1851	1313	257	35	4072	
	% within A level grade	.9%	14.2%	45.5%	32.2%	6.3%	.9%	100.0%	
	% within AS level grade	.7%	12.6%	42.5%	38.5%	11.7%	5.2%	19.7%	
	% of Total	.2%	2.8%	9.0%	6.4%	1.2%	.2%	19.7%	
E	Count	23	26	461	1431	971	155	3067	
	% within A level grade	.7%	.8%	15.0%	46.7%	31.7%	5.1%	100.0%	
	% within AS level grade	.4%	.6%	10.6%	41.9%	44.3%	23.0%	14.9%	
	% of Total	.1%	.1%	2.2%	6.9%	4.7%	.8%	14.9%	
U	Count		39	53	275	935	477	1779	
	% within A level grade		2.2%	3.0%	15.5%	52.6%	26.8%	100.0%	
	% within AS level grade		.9%	1.2%	8.1%	42.6%	70.7%	8.6%	
	% of Total		.2%	.3%	1.3%	4.5%	2.3%	8.6%	
Total	Count	5418	4582	4355	3413	2193	675	20636	
	% within A level grade	26.3%	22.2%	21.1%	16.5%	10.6%	3.3%	100.0%	
	% within AS level grade	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
	% of Total	26.3%	22.2%	21.1%	16.5%	10.6%	3.3%	100.0%	

APPENDIX 2 - FORCED ENTRY MULTIPLE REGRESSION OD AGE, GENDER, CENTRE TYPE AND as GRADE ON A LEVEL GRADE BY SPECIFICATION

Table I. Forced entry multiple regression of age, gender, centre type and AS grade on A level grade for **all subjects**.

Variables	A level grade	Comprehen -sive	Selective	Colleges	Age	Gender	AS grade	B	β	
Comprehen- sive	-.08***							-.06***	-.02	R ² =.71 Adj. R ² =.71 R = .84***
Selective	.07***	-.21***						.01	.00	
Colleges	-.03***	-.06***	-.01***					-.06	-.00	
Age	-.09***	-.08***	-.02***	.01*				-.10***	-.01	
Gender	.10***	.01**	-.01**	.01*	-.02***			.17***	.06	
AS grade	.84***	-.07***	.07***	-.04***	-.09***	.06***		.89***	.83	
Descriptive statistics	X=3.22 S.D.=.45	N=9350 50.0%	N=6343 33.9%	N=2975 15.9%	≤18 N=14003 97.4% 19+ N=372 2.6%	M N=7328 F N=7047 M 51.0% F 49.0%	X=2.90 S.D.=1.42			

*p<.05, **p<.01, ***p<.001, M = male, F = female

Table II. Forced entry multiple regression of age, gender, centre type and AS grade on A level grade for **Biology B**.

Variables	A level grade	Comprehen -sive	Selective	Colleges	Age	Gender	AS grade	B	β	
Comprehen- sive	-.16***							-.11***	-.04	R ² =.80 Adj. R ² =.80 R=.90***
Selective	.08***	-.22***						.00	.00	
Colleges	-.05***	-.04***	-.01					-.46*	-.01	
Age	-.07***	-.07***	-.02**	-.01				-.16***	-.02	
Gender	.07***	.01	.00	0.1	-.02*			.07***	.02	
AS grade	.89***	-.14***	.08***	-.05***	-.06***	.06***		1.01***	.89	
Descriptive statistics	X=3.06 S.D.=1.58	N=5814 55.7%	N=2376 22.8%	N=2196 21.1%	≤18 N=9307 95.1% 19+ N=480 4.9%	M N=3831 39.1% F N=5956 60.9%	X=2.69 S.D.=1.39			

*p<.05, **p<.01, ***p<.001, M = male, F = female

Table III. Forced entry multiple regression of age, gender, centre type and AS grade on A level grade for **Psychology B**.

Variables	A level grade	Comprehen-sive	Selective	Colleges	Age	Gender	AS grade	B	β	
Comprehen-sive	-.07***							.00	.00	R ² =.68 Adj. R ² =.68 R =.82***
Selective	-.02	.12***						-.24*	-.02	
Colleges	-.05**	.06***	.01					-.19	-.01	
Age	-.08***	.12***	.02	.00				-.21***	-.04	
Gender	.19***	.05**	.02	-.01	.04*			.23***	.07	
AS grade	.82***	-.10***	.01	-.05**	-.05**	.15***		.83***	.81	
Descriptive statistics	X=3.01 S.D.=1.47	N=1617 49.0%	N=480 14.5%	N=1192 36.1%	≤18 N=2716 92.7% 19+ N=213 7.3%	M N=696 23.8% F N=2233 76.2%	X=2.92 S.D.=1.43			

*p<.05, **p<.01, ***p<.001, M = male, F = female

Table IV. Forced entry multiple regression of age, gender, centre type and AS grade on A level grade for **English Language and Literature A**.

Variables	A level grade	Comprehen-sive	Selective	Colleges	Age	Gender	AS grade	B	β	
Comprehen-sive	.05*							.07	.02	R ² =.55 Adj. R ² =.55 R =.74***
Selective	.06**	.09***						.70***	.07	
Colleges	.01	.04*	.01					.54*	.03	
Age	-.06**	.14***	-.03	.02				-.04	-.01	
Gender	.07***	.06**	.03*	-.04*	.01			.13***	.05	
AS grade	.74***	.05*	-.01	-.03	-.07***	.04*		.70***	.74	
Descriptive statistics	X=2.99 S.D.=1.30	N=916 33.6%	N=127 4.7%	N=1557 57.1%	≤18 N=2162 92.0% 19+ N=188 8.0%	M N=679 28.9% F N=1671 71.1%	X=3.01 S.D.=1.37			

*p<.05, **p<.01, ***p<.001, M = male, F = female

Table V. Forced entry multiple regression of age, gender, centre type and AS grade on A level grade for **ICT**.

Variables	A level grade	Comprehen- -sive	Selective	Colleges	Age	Gender	AS grade	B	β	
Comprehen- sive	-.03***							-.01	.00	R ² = .64 Adj. R ² =.64 R = .80***
Selective	.13***	.14***						.42***	.06	
Colleges	-.02**	.07***	.02*					-.10	-.01	
Age	-.10***	.08***	-.02*	-.01				-.09**	-.02	
Gender	.10***	.04***	-.09***	-.02	.01			.22***	.08	
AS grade	.79***	-.03**	.09***	-.02*	-.10***	.02		.83***	.78	
Descriptive statistics	X=3.74 S.D.=1.37	N=4985 44.8%	N=1370 12.3%	N=4578 41.2%	≤18 N=9278 91.2% 19+ N=899 8.8%	M N=6465 63.5% F N=3712 36.5%	X=3.44 S.D.=1.29			

*p<.05, **p<.01, ***p<.001, M = male, F = female

Table VI. Forced entry multiple regression of age, gender, centre type and AS grade on A level grade for **Mathematics A**.

Variables	A level grade	Comprehen- -sive	Selective	Colleges	Age	Gender	AS grade	B	β	
Comprehen- sive	-.08***							.08**	.02	R ² = .74 Adj. R ² =.74 R = .86***
Selective	.01	.09***						.02	.00	
Colleges	-.04**	.08***	.01					.24	.01	
Age	-.08***	.05***	.01	-.03*				-.06	-.01	
Gender	.09***	.06***	-.11***	-.03*	.03*			.04	.01	
AS grade	.86***	-.12***	.02	-.06***	-.08***	.09***		.92***	.86	
Descriptive statistics	X=2.71 S.D.=1.60	N=2458 57.1%	N=131 3.0%	N=1663 38.7%	≤18 N=3794 95.1% 19+ N=197 4.9%	M N=2402 60.2% F N=1589 39.8%	X=2.63 S.D.=1.50			

*p<.05, **p<.01, ***p<.001, M = male, F = female

Table VII. Forced entry multiple regression of age, gender, centre type and AS grade on A level grade for **History**.

Variables	A level grade	Comprehen -sive	Selective	Colleges	Age	Gender	AS grade	B	β	
Comprehen- sive	-.11***							-.14***	-.05	R ² =.68
Selective	.07***	.24***						.06	.01	Adj. R ² =.68
Colleges	-.04***	.05***	.01					-.44*	-.02	
Age	-.09***	.06***	.04***	-.01				-.28***	-.04	R = .82***
Gender	.07***	-.04***	-.08***	-.03**	.02			.14***	.05	
AS grade	.82***	-.08***	.05***	-.04***	-.07***	.03**		.84***	.81	
Descriptive statistics	X=3.02 S.D.=1.45	N=4196 57.4%	N=1555 21.3%	N=1494 20.5%	≤18 N=6310 96.2% 19+ N=251 3.8%	M N=3141 47.9% F N=3420 52.1%	X=2.79 S.D.=1.39			

*p<.05, **p<.01, ***p<.001, M = male, F = female

Table VIII. Forced entry multiple regression of age, gender, centre type and AS grade on A level grade for **General Studies A**.

Variables	A level grade	Comprehen -sive	Selective	Colleges	Age	Gender	AS grade	B	β	
Comprehen- sive	-.13***							-.04**	-.01	R ² =.72
Selective	.06***	.31***						-.01	.00	Adj. R ² =.72
Colleges	.00	.01	.00					.32	.00	
Age	-.07***	.03***	.01	.00				-.08	-.01	R = .85***
Gender	.07***	-.05***	.09***	-.01	.03***			.21***	.07	
AS grade	.85***	-.14***	.08***	.00	-.07***	.00		.90***	.85	
Descriptive statistics	X=3.24 S.D.=1.53	N=9350 50.0%	N=6343 33.9%	N=2975 15.9%	≤18 N=14003 97.4% 19+ N=372 2.6%	M N=7328 51.0% F N=7047 49.0%	X=2.80 S.D.=1.44			

*p<.05, **p<.01, ***p<.001, M = male, F = female

APPENDIX 3 - NORMAL PROBABILITY PLOTS FOR SPECIFICATIONS WHERE THERE IS SEVERE DEVIATION FROM NORMALITY

Figure 1.

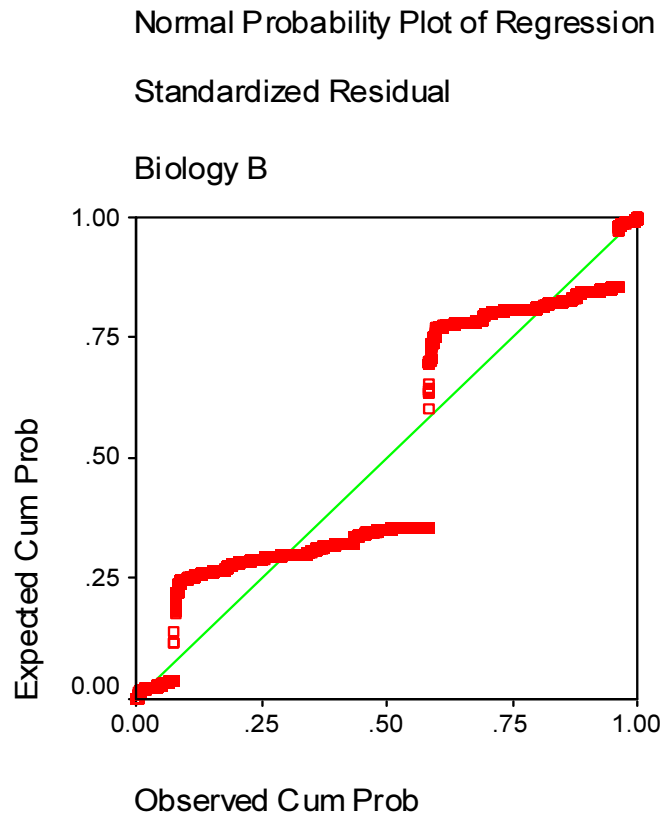


Figure 2.

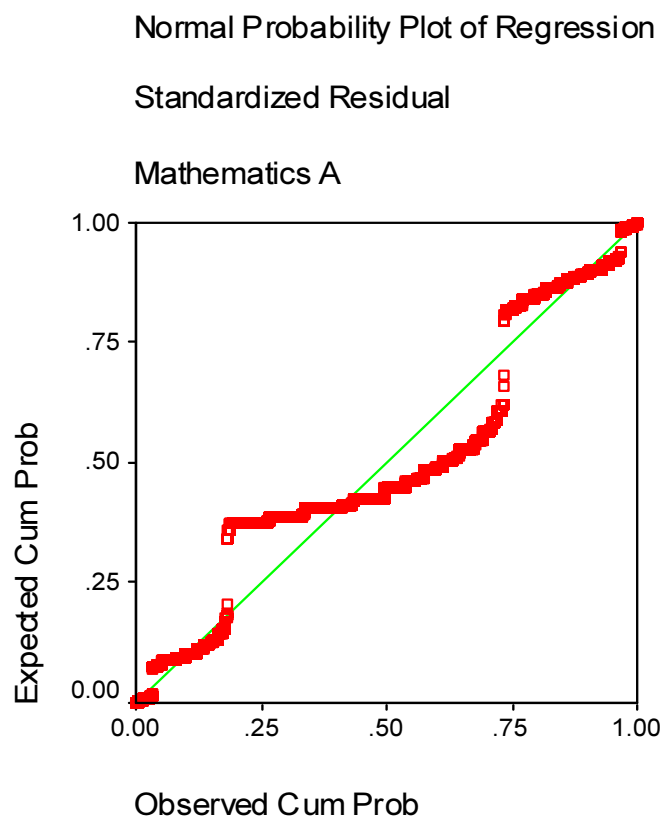


Figure 3.

