

Paper title: Changes in factors influencing doctors' career choices between one and five years after graduation: questionnaire surveys of UK doctors

Short title: Changes in factors influencing doctors' career choices

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MeSH terms: Physicians; career choice; workforce, medical; medical education.

Abstract

Objectives: To study changes in factors influencing doctors' career specialty choices between one and five years after graduation.

Design: Questionnaire survey.

Setting: UK.

Participants: 10 473 doctors who replied to our surveys both one and five years after graduating from all UK medical schools between 1993 and 2008.

Main outcome measures: The importance of each of 12 specified factors in influencing the doctors' choice of future specialty 'a great deal'.

Method: Questionnaires by post and email.

Results: Enthusiasm for and commitment to the specialty was the greatest influence on career choice at year one (66%) and year five (74%). Domestic circumstances increased in importance more than any other factor (from 22.5% to 41.3%); 26% of doctors rated this as important in year 5 but not in year 1. Other factors which increased in importance from year 1 to year 5 included hours/ working conditions, experience of the job so far, and self-appraisal of own skills.

There was an increase in the importance of promotion/ career prospects, self-appraisal of own skills, student experience of subject, and enthusiasm/commitment for more recent cohorts compared with older cohorts. Between years one and five there was a greater increase in the

importance of domestic circumstances, hours/working conditions, and eventual financial prospects for intending General Practitioners than for other doctors.

Conclusions:

Doctors remain committed to their specialty between years 1 and 5, but the influence of domestic circumstances and hours and working conditions grew stronger.

[239 words]

Introduction

Doctors choose their future career paths whilst considering a range of factors. Medical students are highly influenced by other people's perceptions, the opportunity for patient contact, and working hours.^{1, 2} Junior doctors consider human interest, enthusiasm for the job and self-appraisal of skills to be important.^{3, 4} In the UK, doctors who qualified recently place more importance on domestic circumstances and enthusiasm for their chosen specialty than their predecessors.³

Previous research has found that burnout and job satisfaction vary by career stage, with junior doctors reporting the most work-home conflicts, and middle career doctors being most likely to want to leave medicine for reasons other than retirement.⁵ The relative importance of factors which influence career choice may also vary by career stage. In the UK, a study found that doctors who were over 30 when they started medical school rated '*inclination before medical school*', '*wanting a career that fits my domestic situation*' and '*enthusiasm/commitment*' as more important than doctors who had been under 21 on entry.³ A study in which over half of the sample were trainee surgeons found that duration of training, lifestyle during training, and working hours became less influential on career choice once training had finished.⁶ There is, therefore, research evidence that the factors which influence career choice change in their importance as doctors increase in seniority, but these studies have been mainly cross-sectional in design. It is important to know how these factors change from year to year within the same cohort of doctors by using a longitudinal design.

The aim of this paper is to report changes in the strength of factors influencing doctors' choices of career specialty between one and five years after graduation. We also report these factors in relation to gender, ethnicity, age at entry to medical school, and the chosen career specialty.

Methods

The UK Medical Careers Research Group surveyed the UK medical graduates of 1993, 1996, 1999, 2000, 2002 and 2008. We sent postal questionnaires to all graduates in these cohorts one and five years after qualification, making 12 surveys in all. Up to four reminders were sent to non-respondents. Further details of the methodology are available elsewhere.⁷ Each questionnaire contained a range of questions on career choice and employment together with questions on factors affecting career choice. For four surveys (the year one surveys of the cohorts of 1993, 1999, 2002 and the year five survey of the cohort of 2008) a small number of respondents completed a short form questionnaire which did not contain factor questions.

One and five years after graduation, each doctor rated the influence of each of 12 factors on their career choice. These factors were based on an initial set used in our studies in the 1970s, modified when new themes were identified by us, as either arising in comments made to us by doctors, or as recurring themes in the research literature.

The doctors were asked to indicate whether each factor had influenced their choice of specialty 'not at all', 'a little', or 'a great deal'. The 12 factors were: *'Wanting a career that fits my domestic situation'*, *'Wanting a career with acceptable hours/working conditions'*, *'Eventual financial prospects'*, *'Promotion/career prospects'*, *'Self-appraisal of own skills/aptitudes'*, *'Advice from others'*, *'Experience of chosen subject as student'*, *'A particular teacher/department'*, *'Inclinations before medical school'*, *'Experience of jobs so far'*, *'Enthusiasm/commitment: what I really want to do'*, and *'Other reasons'*.

We report standard summary statistics. To test statistical significance we used McNemar's test for changes and χ^2 statistics. Each response was classified according to the year of graduation (cohort) to which the doctor belonged (1993, 1996, 1999, 2000, 2002 or 2008), the number of years after graduation at which the response was collected (one or five); gender; ethnic group (grouped by us into Asian, white and other); age at entry to medical school (under 21 years, 21 to

30 years, and over 30 years); and actual specialty of work of the doctor in year 5 (grouped by us for analysis into 4 classes: Hospital medical specialties, Surgical specialties, general practice (GP), Other hospital-based specialties).

Results

Response rates

There were 27403 UK medical graduates in the six cohorts. In year one 17332 doctors replied and in year five 15533 doctors replied, respectively 64.5% and 65.7% of the contactable populations, after excluding doctors who declined to participate, were known to have died, or were untraceable. In all, 12785 doctors replied on both occasions. However, 2312 of these doctors were excluded from our analysis because they completed short form questionnaires which excluded factor questions (see Method), reducing the number of useable responses to 10473. Appendix 1 shows the demographics of the cohorts.

Factors influencing career choice in years 1 and 5

Table 1 shows the importance of each factor at year one and year five. The factors are listed in declining order of importance at year one. The most important factor which influenced doctors' choice of specialty 'a great deal' at year one was 'Enthusiasm/commitment': 65.8% of doctors said that this had a great deal of influence on career choice. Other important factors, so rated by over 40% of respondents, were: 'Experience of jobs so far', 'Self-appraisal of own skills/aptitudes', 'Student experience of subject', and 'Hours/ working conditions'.

In year 5, 'Enthusiasm/commitment' was still the most important factor and the percentage rating it as important had risen to 74%, followed by 'Experience of jobs so far' (increased from 49% to 64%) and 'Self-appraisal of own skills/aptitudes' (increased from 48% to 58%). 'Domestic circumstances' increased in importance more than any other factor (from 22.5% to 41.3%); Hours/

working conditions' also increased in importance from 42% to 57%. 'Student experience of subject' went down in importance (Table 1).

Changes in factors influencing career choice between years 1 and 5

Figure 1 summarises the percentages of doctors who held the same view from year 1 to year 5, and who rated each factor as more, or less, important in year 5 than in year 1. Numbers and statistical tests are given in Appendix 2, for which the categories 'not entered', 'a little' and 'not at all' have been combined as the category 'unimportant', and 'a great deal' has been described as 'important'.

All factors changed significantly in importance from year 1 to year 5, with the exception of 'Eventual financial prospects', but some generated larger test statistics (Appendix 2) reflecting larger percentage changes from year 1 to year 5. Of the factors, 'Domestic circumstances' gained in importance most notably in year 5: 25.5% of doctors rated this as important in year 5 but not in year 1, and only 6.6% rated this factor as important in year 1 but not in year 5. 'Student experience of subject' decreased considerably in importance in year 5. 'Hours/ working conditions', 'Experience of the job so far', 'Self-appraisal of own skills', and 'Enthusiasm/ commitment' also increased in importance from year 1 to year 5. Changes in the importance of other factors were more modest.

Characteristics of doctors whose views of each factor changed between year 1 and year 5

The views of many doctors stayed the same in both years one and five (Figure 1). We decided to focus on doctors whose views of each factor changed between year 1 and year 5, and to investigate how, for those whose views changed, the likelihood of a positive rather than negative change of view varied by gender, cohort, ethnicity, age, and specialty (in year 5).

A binary variable for changes in factors influencing career choice between years 1 and 5 was created by omitting cases where there had been no change between years 1 and 5. Each factor had either 'increased in importance' or 'decreased in importance' by year 5. Therefore the following analysis, undertaken separately for each factor in turn, only includes doctors whose ratings of the factor changed between years 1 and 5.

Table 2 summarises the change for each factor. There were no significant ($p < 0.001$) differences between men and women doctors or between doctors from different ethnic groups for all factors, and gender and ethnicity have been omitted from the table. In the table, emboldened percentages in the columns for age and specialty indicate significant variation within a factor for different subsets of doctors ($p < 0.001$ using chi-square tests). Numbers on which the percentages are based are given in Appendix 3.

Cohort

'Promotion/ career prospects', 'self-appraisal of own skills', 'student experience of subject', and 'enthusiasm/commitment' became more important between years 1 and 5 for the later cohorts (i.e. those qualifying between 2000 to 2008) than for the earlier cohorts (i.e. those qualifying between 1993 to 1999). 'Domestic circumstances', 'experience of jobs so far', and 'a particular teacher/department' became more important between years 1 and 5 for the early cohorts than for the later cohorts.

Specialty chosen

For 8 of the 12 factors there were differences by specialty group (Table 2). 'Domestic circumstances', 'hours/working conditions', and 'eventual financial prospects' grew in importance more for GPs than for other doctors. 'Experience of jobs so far' and 'enthusiasm/commitment' became less important for GPs than for other doctors. 'Particular teacher/ department' became

more important between years 1 and 5 for doctors working in the hospital medical specialties (54.6%) compared with other specialties.

Age

'Domestic circumstances' increased in importance between years 1 and 5 more for doctors who had started medical school aged under 21 years than for doctors who started aged 21-30 years or those who started over 30 years. Similarly, 'Enthusiasm/ commitment' became more important for doctors who had started medical school aged less than 21 years than for doctors who started at an older age.

Multivariable modelling

For each factor, multivariable modelling was undertaken using only those characteristics (from cohort, age, and specialty) which were shown as significant in Table 2. The results are shown in Appendix 4. In the multivariable models, all characteristics which were found to be significant in the univariable analysis in Table 2 remained significant. Odds ratios and 95% confidence intervals are shown in Appendix 4.

Discussion

Main findings

Enthusiasm/commitment had the greatest influence on doctors' career choice in year one. Other important factors included experience of jobs so far, self-appraisal of own skills/ aptitudes, student experience of subject, and hours/ working conditions. Enthusiasm/ commitment was still the most important influence in year five. Domestic circumstances and working hours increased in importance between years one and five more than any other factor.

Concentrating only on those doctors whose view changed between years one and five, domestic circumstances was rated as important in year five but not in year one by one quarter of doctors.

Other factors which increased in importance included hours/ working conditions, experience of the job so far, self-appraisal of own skills, and enthusiasm/ commitment.

Between years one and five there was a rise in the importance of promotion/ career prospects, self-appraisal of own skills, student experience of subject, and enthusiasm/commitment among later cohorts (those who qualified in the 2000s) compared with earlier cohorts (those who qualified in the 1990s). GPs, when compared with other doctors, attached more importance to domestic circumstances, hours/working conditions, and eventual financial prospects by year five, and less importance to experience of jobs so far and enthusiasm/commitment.

Strengths and weaknesses of the study

Other studies which have researched factors affecting career choice have been mainly cross-sectional. This study's key strength is its longitudinal design. This enables us to understand how factors change from year to year at the level of the individual. Alongside data on perceptions, we also collected data on doctors' actual jobs. We could therefore compare doctors by specialty group five years after graduation. This is a large study which covers all of the United Kingdom's medical schools, and spans a wide breadth of cohorts from 1993 to 2008. Response rates were good. As with all surveys, there is the possibility of responder bias.

Comparison with existing literature

Our finding that enthusiasm for the job is the greatest influence upon career choice at both years one and five is consistent with other studies.^{3, 4} We found that domestic circumstances and working hours increased in importance during the early postgraduate years. This fits with other findings that junior doctors report the most work-home conflicts, and middle career doctors are most likely to want to leave medicine: junior doctors, unhappy with their work-life balance, are surely more likely to increase the importance they place on domestic factors.⁵ Other research found lifestyle and working hours to become less important to doctors with more than four years of

clinical experience.⁶ However, over three quarters of the study's participants had decided upon a surgical career, and 64% were men doctors and so the samples were quite different.

We found that GPs increase the importance they place on domestic circumstances, hours/working conditions, and eventual financial prospects between years one and five. In Switzerland, a study which looked at interventions to promote primary care found that primary care physicians indicated the highest acceptance with an increase in reimbursement.⁸

Implications

Alongside a welcome increase in commitment to a specialty between years one and five, domestic circumstances and hours and working conditions grew in importance. This was particularly true for general practitioners. Enabling doctors to maintain work-life balance as they gain in seniority is an important factor in retention.

[2212 words]

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Table 1: Factor changes from year 1 to 5 - percentage of respondents for which each factor had a great deal of influence on career choice

Factor affecting career choice	Years after graduation	Level of influence on career choice (% of respondents)				Total
		A great deal	A little	Not at all	Not Entered	
Enthusiasm/ commitment	1	65.8	27.7	3.2	3.4	100
	5	73.7	22.8	2.6	0.9	100
Experience of jobs so far	1	49.4	37.3	10.5	2.7	100
	5	64.2	28.7	6.4	0.8	100
Self-appraisal of own skills	1	47.7	41.2	8.1	3.1	100
	5	57.8	35.9	5.4	1.0	100
Student experience of subject	1	42.8	39.1	15.3	2.8	100
	5	24.3	36.7	38.1	0.9	100
Hours/ working conditions	1	42.3	36.5	18.4	2.8	100
	5	56.5	30.6	12.1	0.7	100
Particular teacher/department	1	25.0	39.0	33.0	3.0	100
	5*	20.9	38.4	39.7	1.0	100
Domestic circumstances	1	22.5	35.7	38.8	3.0	100
	5	41.3	38.7	19.1	0.8	100
Promotion/ career prospects	1	20.5	50.1	26.4	3.0	100
	5	22.4	49.6	27.0	1.0	100
Advice from others	1	14.9	59.8	22.2	3.1	100
	5	13.3	56.4	29.3	1.0	100
Inclinations before medical school	1	14.3	28.4	54.5	2.8	100
	5	11.8	26.2	61.1	0.9	100
Eventual financial prospects	1	11.2	41.7	44.2	2.8	100
	5	11.0	44.9	43.3	0.8	100
Other reasons	1	5.8	2.7	9.6	81.9	100
	5	8.3	3.3	12.7	75.8	100

*Percentages are all based on 10473 respondents, except for 'Particular teacher/department' in Year 5, which was not asked of the 1993 cohort, reducing the total to 8296.

Table 2: Percentages of doctors whose views changed between years one and five, for whom each factor became more important

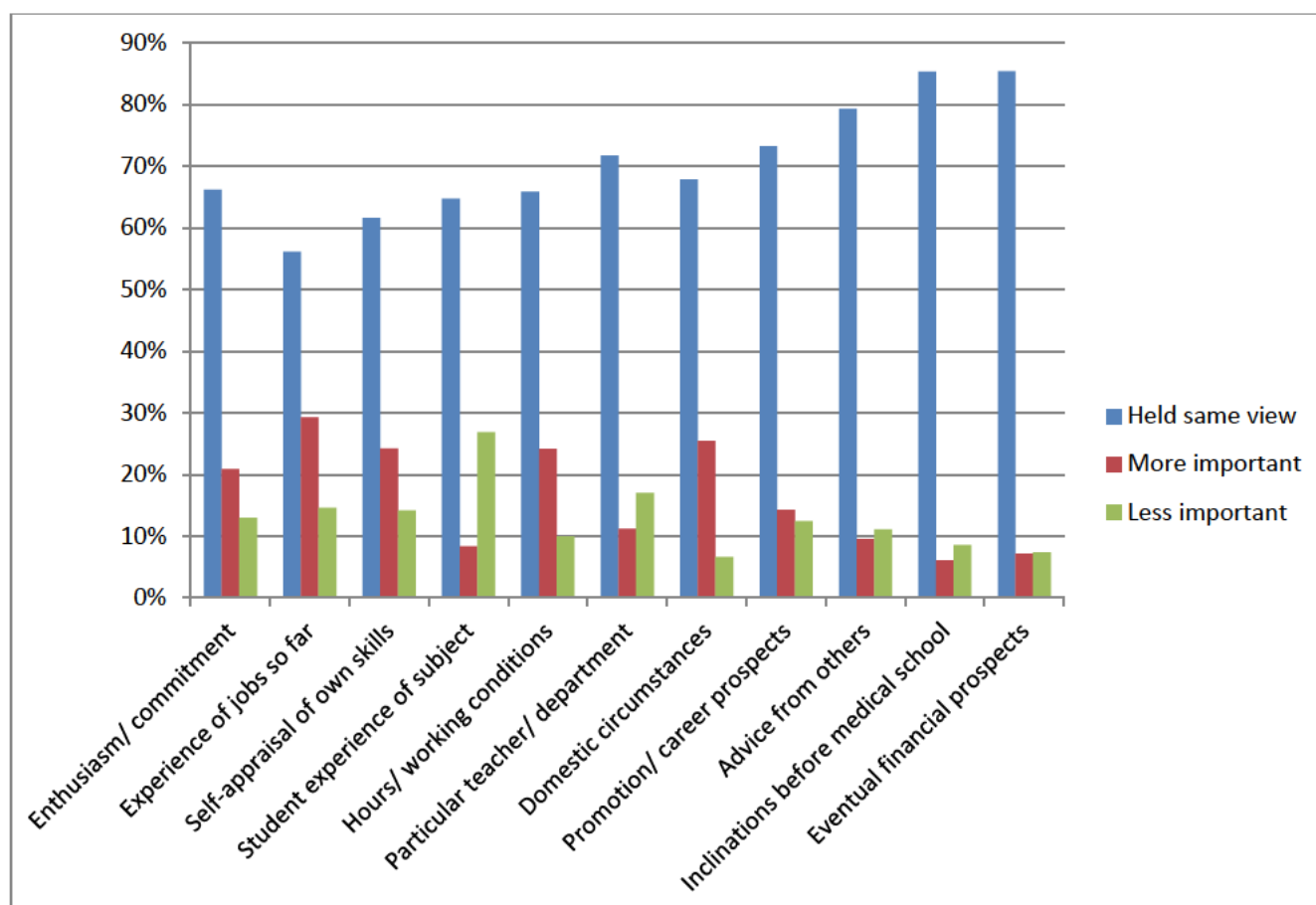
Factor affecting career choice	Cohort*		Specialty**				Age on entry		
	Early	Late	GP	SU	OT	ME	<21	21-30	>30
Domestic circumstances	82	76	84	78	74	76	80	74	55
Hours/ working conditions	72	69	83	66	64	64	70	69	59
Eventual financial prospects	50	48	60	44	39	43	47	58	60
Promotion/ career prospects	48	63	55	50	54	54	53	53	54
Self-appraisal of own skills	59	69	60	62	67	64	63	60	61
Advice from others	48	43	41	48	48	53	46	44	40
Student experience of subject	21	29	30	27	20	24	22	29	39
Particular teacher/ department*	44	36	24	46	40	55	39	42	25
Inclinations before medical school	40	43	49	41	40	35	41	40	37
Experience of jobs so far	70	62	59	76	72	71	66	65	55
Enthusiasm/ commitment	59	67	54	62	68	68	62	51	41
Other reasons	60	63	68	42	59	58	61	60	61

Interpretation: For example, 48% of those in the early cohorts who changed their view of the importance of promotion/career prospects between years one and five viewed the factor as increasing in importance, compared with 63% of those in the later cohorts whose views changed.

*Early cohorts included 1993 to 1999, late cohorts included 2000 to 2008.

** GP = general practice, SU = surgical specialties, OT = other medical specialties, ME=hospital medical specialties.

Figure 1: Percentages of doctors by factor ratings at 1 year and 5 years



Appendix 1: Demographics of responding doctors in the study

Characteristic	Subgroup	Male		Female		Total	
All respondents	-	4297	(41.0%)	6176	(59.0%)	10473	(100.0%)
Cohort	1993	1036	(47.6%)	1141	(52.4%)	2177	(100.0%)
	1996	921	(44.3%)	1156	(55.7%)	2077	(100.0%)
	1999	813	(41.2%)	1160	(58.8%)	1973	(100.0%)
	2000	215	(41.7%)	301	(58.3%)	516	(100.0%)
	2002	676	(35.6%)	1223	(64.4%)	1899	(100.0%)
	2008	636	(34.7%)	1195	(65.3%)	1831	(100.0%)
Ethnic group	White	3172	(38.7%)	5034	(61.3%)	8206	(100.0%)
	Asian	806	(51.7%)	753	(48.3%)	1559	(100.0%)
	Other	187	(41.2%)	267	(58.8%)	454	(100.0%)
Age when started medical school	<21 years	3681	(40.5%)	5414	(59.5%)	9095	(100.0%)
	21-30 years	497	(44.5%)	619	(55.5%)	1116	(100.0%)
	>30 years	44	(38.3%)	71	(61.7%)	115	(100.0%)
Specialty	GP	855	(30.5%)	1944	(69.5%)	2799	(100.0%)
	Surgery	832	(68.8%)	378	(31.2%)	1210	(100.0%)
	Other hospital	1391	(40.5%)	2046	(59.5%)	3437	(100.0%)
	Hospital medical specialties	704	(44.5%)	878	(55.5%)	1582	(100.0%)

Appendix 2: Numbers and percentages rating each factor 'a great deal' in years one and five

Factor affecting career choice		Important in both years	Unimportant in both years	Important in year 1 but not in year 5	Important in year 5 but not in year 1	Total	McNemar's test statistic	P value
Enthusiasm/ commitment	Number %	5530 52.8%	1402 13.4%	1356 12.9%	2185 20.9%	10473 100.0%	194.1	<0.001
Experience of jobs so far	Number %	3652 34.9%	2228 21.3%	1524 14.6%	3069 29.3%	10473 100.0%	519.7	<0.001
Self-appraisal of own skills	Number %	3517 33.6%	2938 28.1%	1481 14.1%	2537 24.2%	10473 100.0%	277.5	<0.001
Student experience of subject	Number %	1671 16.0%	5111 48.8%	2812 26.8%	879 8.4%	10473 100.0%	1012.3	<0.001
Hours/ working conditions	Number %	3389 32.4%	3508 33.5%	1044 10.0%	2532 24.2%	10473 100.0%	619.2	<0.001
Particular teacher/ department*	Number %	801 9.7%	5154 62.1%	1410 17.0%	931 11.2%	8296 100.0%	98.0	<0.001
Domestic circumstances	Number %	1659 15.8%	5453 52.1%	693 6.6%	2668 25.5%	10473 100.0%	1160.6	<0.001
Promotion/ career prospects	Number %	845 8.1%	6827 65.2%	1305 12.5%	1496 14.3%	10473 100.0%	13.0	<0.001
Advice from others	Number %	393 3.8%	7918 75.6%	1164 11.1%	998 9.5%	10473 100.0%	12.7	<0.001
Inclinations before medical school	Number %	596 5.7%	8344 79.7%	897 8.6%	636 6.1%	10473 100.0%	44.4	<0.001
Eventual financial prospects	Number %	398 3.8%	8549 81.6%	776 7.4%	750 7.2%	10473 100.0%	0.4	p=0.52

*This factor was not asked of the 1993 cohort.

Appendix 3: Numbers of doctors whose views changed between years one and five, who became more positive about each factor

	Gender		Ethnicity			Cohort			Specialty			Age on entry		
Factor	Women	Men	White	Asian	Other	Early	Late	GP	Surgical	Other	Medical	<21	21-30	>30
Domestic circumstances	1717	951	2056	419	103	1570	1098	989	184	721	344	2310	279	18
Hours/ working conditions	1576	956	1953	363	92	1556	976	780	211	796	371	2175	253	17
Eventual financial prospects	351	399	489	195	29	478	272	303	102	149	76	627	93	6
Promotion/ career prospects	753	743	1040	324	70	872	624	371	182	533	221	1291	154	13
Self-appraisal of own skills	1465	1072	1944	363	116	1348	1189	646	274	860	406	2196	245	27
Advice from others	555	443	762	172	36	628	370	215	136	335	192	884	94	4
Student experience of subject	520	359	667	116	36	448	431	286	120	245	135	706	119	12
Particular teacher/ department*	524	407	666	183	37	497	434	102	149	323	254	799	97	4
Inclinations before medical school	374	262	486	101	30	353	283	217	85	193	63	511	96	14
Experience of jobs so far	1782	1287	2359	438	133	1965	1104	757	357	1114	438	2655	301	22
Enthusiasm/ commitment	1238	947	1615	314	96	1285	900	541	191	762	386	1878	177	11
Other reasons	402	322	544	118	42	423	301	221	57	215	105	608	94	14

*This factor was not asked of the 1993 cohort.

Appendix 4: Logistic regression models for the factors: odds ratios with 95% confidence intervals

Factor	Cohort (late:early)	Specialty			Age at entry to medical school	
		Surgical specialties: GP	Other hospital: GP	Medical specialties: GP	21-30: <21	>30: <21
Domestic circumstances ¹	0.7 (0.6,0.8)	0.6 (0.5,0.9)	0.6 (0.4,0.7)	0.6 (0.5,0.8)	0.7 (0.6,0.9)	0.4 (0.2,0.8)
Hours/ working conditions ¹		0.4 (0.3,0.5)	0.4 (0.3,0.5)	0.4 (0.3,0.5)		
Eventual financial prospects ¹		0.5 (0.4,0.7)	0.4 (0.3,0.6)	0.5 (0.4,0.7)		
Promotion/ career prospects ¹	1.8 (1.6,2.1)					
Self-appraisal of own skills ¹	1.5 (1.3,1.7)					
Student experience of subject ¹	1.7 (1.4,2.0)	0.9 (0.7,1.1)	0.6 (0.5,0.7)	0.8 (0.6,1.0)	1.3 (1.0,1.7)	1.3 (0.6,2.9)
Particular teacher/ department ²	0.8 (0.7,0.9)	2.6 (1.9,3.5)	2.0 (1.5,2.6)	3.7 (2.8,5.0)		
Experience of jobs so far ¹	0.8 (0.7,0.9)	2.1 (1.6,2.7)	1.8 (1.5,2.1)	1.6 (1.3,2.0)		
Enthusiasm/ commitment ¹	1.7 (1.4,2.0)	1.4 (1.1,1.8)	1.8 (1.5,2.2)	1.9 (1.5,2.3)	0.6 (0.5,0.7)	0.4 (0.2,0.8)

¹'Advice from others' and 'inclinations before medical school' were not significant for any predictor and have been omitted.

Odds Ratios (ORs) greater than 1 indicate that the first group were x times more likely than the second group to say that the factor was important, where 'x' is the OR. We excluded cases where one or more predictor was missing. 1 N = 10473 total; all cohorts included; 2 N = 8296 total; all cohorts except 1993. Only variables which were significant at univariate analysis (p<0.001) were entered into the model (hence some cells are blank).