

9: The ethical attitudes of medical students: correlates and changes.

"Medical educators seem, in general, to be relatively disinterested in the attitudes towards medicine which students bring with them to medical school, and in the further evolution of those attitudes during the undergraduate course".

Maddison (1978; p.102)

Summary.

The ethical attitudes of medical students in the St. Mary's study are examined in relation to social, educational and personality background factors. In the Birmingham study the attitudes were examined in relation to age, year in medical school and cohort of entry. Some of the attitudes changed as a consequence of medical schooling per se, while others changed as a function of ageing or maturation. Cohort trends in some attitudes suggested changes over recent years in factors operating prior to medical school entry.

The present chapter asks how the eight ethical attitudes of medical students, which were identified in the previous chapter, relate to background factors, and to personality, and how those ethical attitudes change as students pass through medical school.

Background correlates of ethical attitudes.

Entrants to medical school show a range of attitudes to ethical problems, and it is those attitudes which primarily determine subsequent attitudes; indeed Rezler (1974) has suggested that it is perhaps only those attitudes which determine later attitudes. It is therefore of some interest to ask which factors, in the social and educational background, or in personality, relate to differences in attitudes, both in those applicants who subsequently enter a medical school, and those who are rejected by all their medical school choices.

Method.

Table 9-1 summarises the background variables which were used in the analysis. Statistical analysis was by means of the NEW REGRESSION program of the SPSS package (Hull and Nie, 1981). The effects of background variables were determined by a hierarchical analysis of variance for each dependent variable (the eight orthogonal attitude scales and the two superordinate scales). At each step that independent variable was entered which could best account for the variance remaining after the variables already in the regression equation had been taken into account. It should be noted that factor scores have been normalised so that scores from the the whole reference population (which also included other medical students and prospective medical students) had means of zero and variances of unity.

Results.

Table 9-2 shows the results of the multiple regression analyses. For each of the eight orthogonal scales, with the exception of I:Vital Libertarianism, there was evidence of a predictive effect of some of the background variables. Of the two superordinate dimensions, only II:Tough-mindedness showed any correlation with the background variables; I: Libertarianism had no significant correlates at all.

Table 9-3 shows the correlations of each of the attitude scales with the four personality dimensions of the EPQ. Extraversion and Neuroticism show no important correlations, although there are a few marginally significant relationships. Both P and L scores show highly significant correlations with factor 4, Personal Libertarianism, those most in favour of personal liberty being more psychotic and having lower lie scales (or being less 'socially acquiescent') than other students (see chapter 11 for a more detailed discussion of the nature of the L scale in the EPQ). In addition high L scorers were less liberal and more tough-minded than low L scorers.

Discussion: Background correlates of ethical attitudes.

The most interesting aspect of these results is the different patterns of correlation between attitude scores and background factors. Schooling has an influence on five of the eight orthogonal factors, which is in contrast to its minimal effects on the cultural behaviour of applicants (see chapter 11). Smaller sixth forms produce applicants who have higher scores on 4: Personal Libertarianism and 7: Sex Education, while larger overall school size produces applicants with higher scores on 6: Medical Control. Schools sending a higher proportion of their

sixth form to university produce applicants with higher scores on 2: Social Toughmindedness and 6: Medical Control. Schools from the private sector (i.e 'Public' schools) produce applicants who have higher scores on 5: Economic conservatism. The educational achievements of applicants have little influence upon attitudes, the only exception being that applicants with lower O-level grades score more highly on 4: Personal Libertarianism. The age of applicants relates to several scales, either directly (younger applicants scoring more highly on 2: Social tough-mindedness, 8: General practice, and II: Tough-mindedness) or indirectly, post-A-level applicants scoring more highly on 4: Personal Libertarianism, and 7: Sex Education. Coming from a medical family showed two correlates: scoring higher on 4: Personal Libertarianism and lower on 6: Medical Control. The sex of applicants relates to several scales, women applicants scoring higher on 5: Economic Conservatism, 6: Medical Control, and 7: Sex Education, and lower on 2: Social Toughmindedness, 4: Personal Libertarianism, and II: Tough-mindedness. The correlations of attitudes with age, and with high social status (e.g. public schooling and medical parents) are broadly similar to such correlations reported by Shuval (1980; p.121).

The details of the candidates' UCCA application showed minimal correlations with attitudes, with the sole exception that those applicants who put fewer London medical schools on their UCCA form tended to have higher scores on 3: Liberalism. The eventual destination of candidates relates to two scales; those rejected by all of their choices of medical school tended to score more highly on 3: Liberalism and 6: Medical control.

The correlations of attitudes with personality are of some interest as Eysenck (1954) has put forward a series of theoretical arguments using the concepts of learning theory to suggest that tough-mindedness should show correlations with extraversion. (Note however that he does not suggest that radicalism should be related to neuroticism; Eysenck, 1954; p.236). It is clear however from table 9-3 that no such correlations (between E and factors 2,3,5 or II) are significant in this study, thus throwing Eysenck's hypothesis into some doubt. The hypothesis cannot even be readily salvaged by arguing that on the EPQ the relevant aspect of extraversion is in fact manifesting within the psychoticism dimension (see McManus and Weeks, 1982; McManus, 1983) since even then the appropriate correlations are not significant.

The development of ethical attitudes in medical students.

A number of studies (Becker et al, 1961; Coombs and Stein, 1971; Merton et al, 1957; Simpson, 1972) have described the development during medical school of a 'medical student ethos', which involves specific sets of assumptions about patients and medical practice, and is necessarily a direct consequence of the medical school sub-culture. However of much broader interest is the effect of medical school in determining ethical, social and political attitudes in areas which are held in common with the general public, which directly affect the relations of doctors and public, and which are naturally the subject of media concern.

Early studies (e.g Eron, 1955) suggested that students were idealistic on entering medical school, but that they became increasingly cynical as they passed through medical school. Becker and Geer (1958), in an influential paper, argued that the cynicism, although real, was strictly demarcated, being applied principally to medical school and to

medical education themselves, and not to medicine per se; "... as school comes to an end the cynicism specific to the the school situation also comes to an end, and their original and more general idealism comes to the fore again, though within a framework of more idealistic alternatives" (p.55). Rezler (1974) reviewed studies of attitude change, and concluded, "it seems that medical school does contribute to the development of cynicism in students and that participation in a liberalised curriculum does not remove this trend ... Medical education certainly does not seem to increase student humanism or benevolence; at best it leaves attitudes intact in those students who exhibit them to a high degree at entrance" (p.1025).

More recent studies have found conflicting results. Feather (1981) concluded that there was "considerable stability in the value priorities and attitude positions of [Australian medical] students", while Leserman (1980) found that American "medical students generally become more conservative on political and economic issues ... during medical training", and Juan et al (1974) found some evidence for decreased dogmatism as students passed through medical school (although they raise the possibility that the result could be an artefact of regression to the mean, although the finding was also reported by Webb and Linn (1977)). Rothman et al (1973) found changes in personality towards increased 'endurance' but decreased 'need for order' and 'understanding' as the course progressed, and Perricone (1974) found in a longitudinal study that students showed increased 'social concern' as they passed through medical school. Bonito and Levine (1975) emphasised that studies of medical student attitudes must distinguish between effects of socialisation, self-selection and specific cohort effects.

The general trend in studies of medical students, towards increasing conservatism as they pass through medical school, is in direct opposition to the general conclusions of studies of non-medical students. "Changes of attitudes observed during college years were, as a rule, in the direction of liberalism", concluded Evans (1965, p.9) after reviewing four such studies, and the longitudinal study of Murphy and Likert (1938) is a fifth study giving a similar result.

The increase in age of medical students as they pass through medical school complicates the interpretation of any changes that may occur, since change may be a non-specific effect of maturation rather than a specific consequence of medical schooling itself. The possible lack of specific effects of training per se upon attitudes is supported by the general lack of effect of specific teaching upon attitudes (e.g. Rezler, 1974; Dornbush et al, 1984). In this section is described a study of medical student attitudes which separates age effects, medical school effects and cohort effects, and shows that different attitudes have different relationships to these effects.

Method.

The Birmingham study used a modified cross-sequential design (Schaie, 1965); see chapter 1 for a more detailed description. A cross-sequential design may be analysed in terms of any two items from cohort, year of study and year of testing. Following the recommendation of Baltes et al (1977) only cohort and year of study effects have been considered, since the primary concern is with ontogenetic effects.

Statistical analysis for significance of effects was by means of the SPSS ANOVA program (Nie et al, 1975). Effects of age (A), years in medical school (M), and cohort of entry (C) were examined. In order to test the effect of A a main-effects model involving M and C was fitted as the first stage of the analysis. At the next stage the linear component of A was added to the model and its significance assessed by the improvement in the variance accounted for. Similar procedures were used to test the independent effects of M and C.

A, M and C are necessarily highly correlated, since students in the clinical years are also the older students in the study. In view of this multicollinearity of A, M and C, estimates of effect sizes were obtained by the method of ridge regression (Price, 1977), using a main effects model of A, M and C in which each level of each explanatory variable was represented by a dummy variable. Empirically it was found that a value of K of 0.345 reduced the mean variance inflation factor to unity, and this value was used in computing the ridge regression estimates for each of the dummy variables. It should be noted that the use of ridge regression only affects the estimation of effects; the significance of effects was assessed in the standard way.

Results.

Figures 9-1 and 9-2 show the fitted estimates for each of the eight simple factors and the two super-ordinate factors, as a function of the age of the student, the number of years they had been in medical school, and their cohort of entry into medical school. Significance levels for the independent linear trends for each variable (i.e. after taking account of the other two variables) are indicated by the asterisks alongside each graph.

Age. Older students show significantly higher scores on factors 1: Vital libertarianism, 3: Liberalism; and I: Libertarianism, and lower scores on factors 2: Social tough-mindedness, 5: Economic conservatism, and II: Tough-mindedness. There were no significant effects of age upon factors 4, 6, 7 or 8.

Year of study in medical school. Students who had been at medical school for a greater length of time showed higher scores on factors 3: Liberalism and 8: General practice, and lower scores on factor 6: Medical control and II: Tough-mindedness. There were no significant correlations with factors 1, 2, 4, 5, 7, or I.

Cohort of entry to medical school. More recent entrants to medical school tended to have higher scores on factor 8: General practice, and lower scores on factors 1: Vital libertarianism, 2: Social tough-mindedness; 5: Economic conservatism; I: Libertarianism, and II: Tough-mindedness. There were no significant linear cohort trends on factors 3, 4, 6, or 7.

Discussion: the development of attitudes.

Of particular interest in these results is that the two related factors of age and year of study in medical school show different patterns of correlation with attitudes, after the effects of the other two explanatory variables have been taken into consideration. Such patterns of correlation allow one to make inferences about causation (Kenny, 1979). Thus students become more in favour of general practice and less in favour of medical control not because they are growing older but because they have studied longer at medical school; conversely students become more sympathetic to abortion etc., less socially tough-minded, less economically conservative and more libertarian because

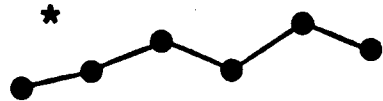
they are growing older, and not because they are passing through medical school. The effects of the medical school ethos in modifying attitudes are therefore strictly demarcated. Two factors, becoming more liberal (3) and less tough-minded (II), show separate and independent effects of both age and year of study, implying independent causal mechanisms for the two effects.

The study also shows that there are trends in the attitudes of students over the nine-year period 1973-1981, those entering at the end of that time differing on some but not all of the sets of attitudes. Presumably such changes either reflect changes in background, schooling, society, or selection, and are not a consequence of medical schooling, per se.

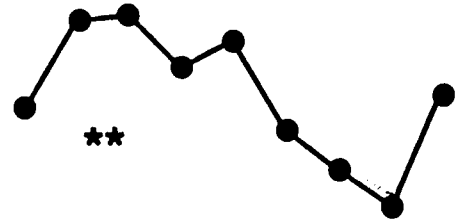
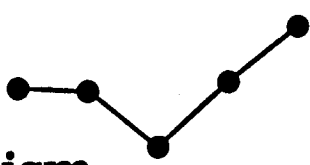
The different patterns of correlations between attitudes and age, year of study and cohort of entry provide support for the factor analytic differentiation of the attitudes into separate clusters, the implication being that each has its own separate causal influences. The reasons for individuals differing in attitudes, or for changing their attitudes, are complex (Insko, 1967) and in the particular case of medical students will require further study. That some changes are a consequence of medical schooling is not, of course, to suggest that attitudes are taught directly. As Merton (1957) has put it, "not all which is taught in medical school is actually learned by students and ... not all which is learned is taught there...".

Figure 9-1. Shows estimates of independent effects of age, year of study and cohort of entry to medical school for each of the first five orthogonal attitudes. Each individual graph shows the effect size as estimated from ridge regression coefficients (see text). Points are only plotted if at least 50 individuals contributed to the point. Sample sizes in the total sample are shown across the top of the columns. Significance levels for linear trends are indicated alongside data sets (*: $p < 0.05$; **: $p < 0.01$; ***: $p < 0.001$; No indication: Not significant). The ordinate is in standard deviation units with respect to the entire reference population (see text). Since points within individual graphs are only plotted relative to one another the absolute position of individual graphs is arbitrary, and has been adjusted for display purposes.

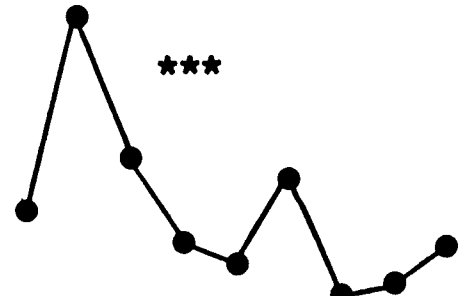
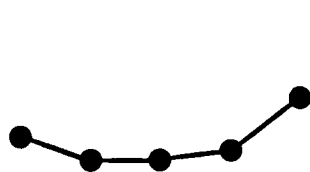
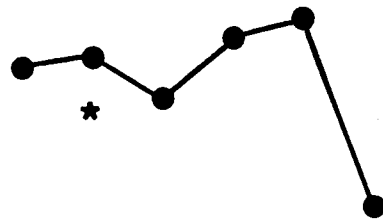
230	120	144	132	56	82	162	172			
253	137	103	474	118	95	53	59	146	141	92



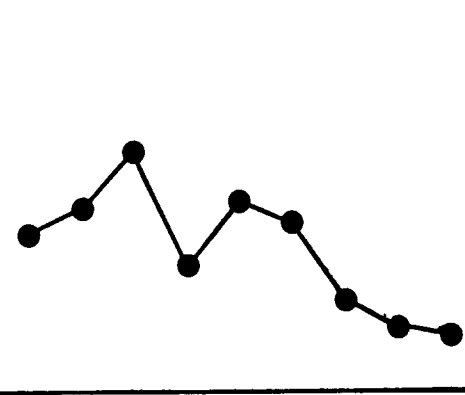
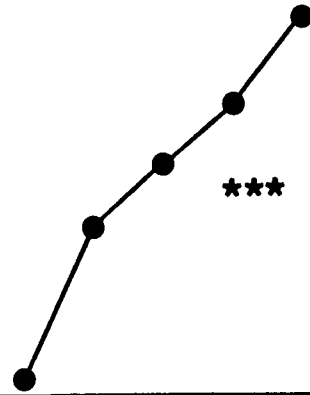
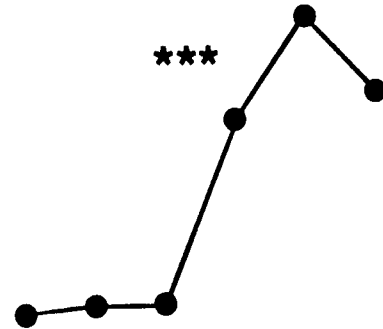
1 Vital libertarianism



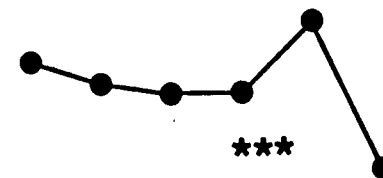
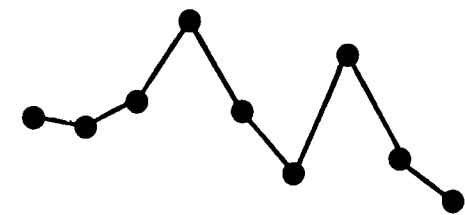
2 Social toughmindedness



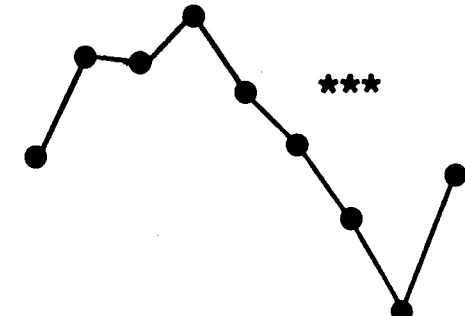
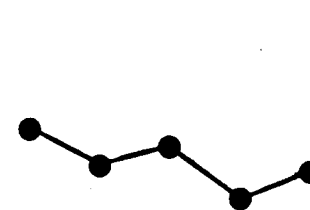
3 Liberalism



4 Personal libertarianism



5 Economic conservatism



18 19 20 21 22 23

Age

1 2 3 4 5

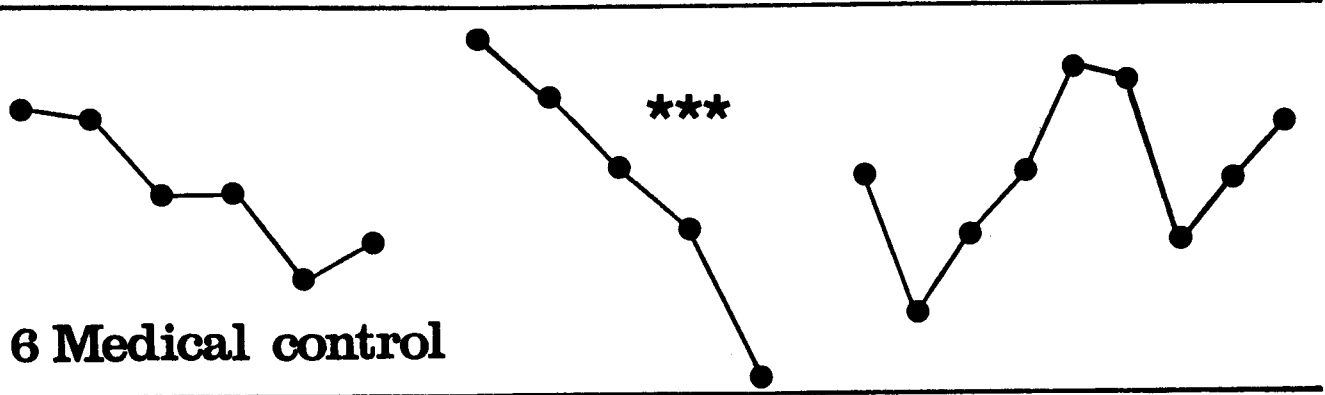
Year

73 75 77 79 81

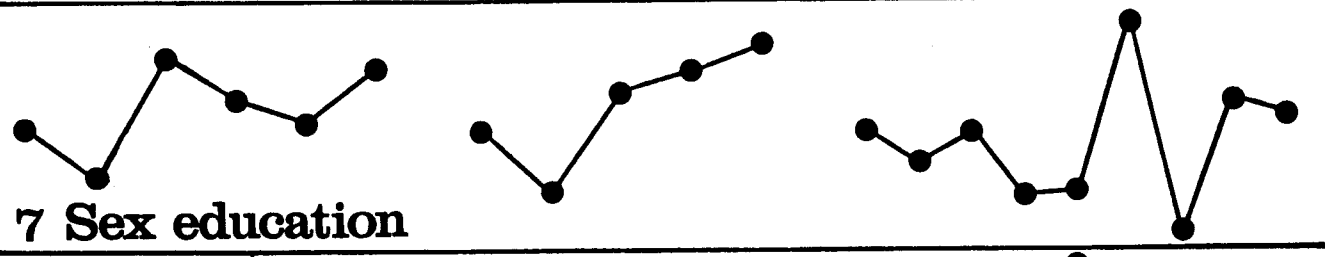
Cohort

Figure 9-2. As for figure 9-1, but for the last three orthogonal factors and the two super-ordinate factors.

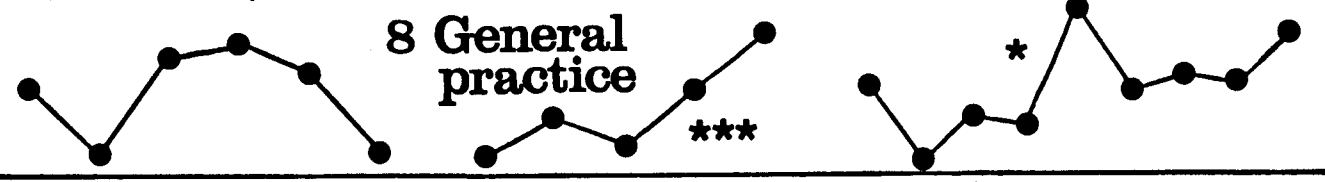
6 Medical control



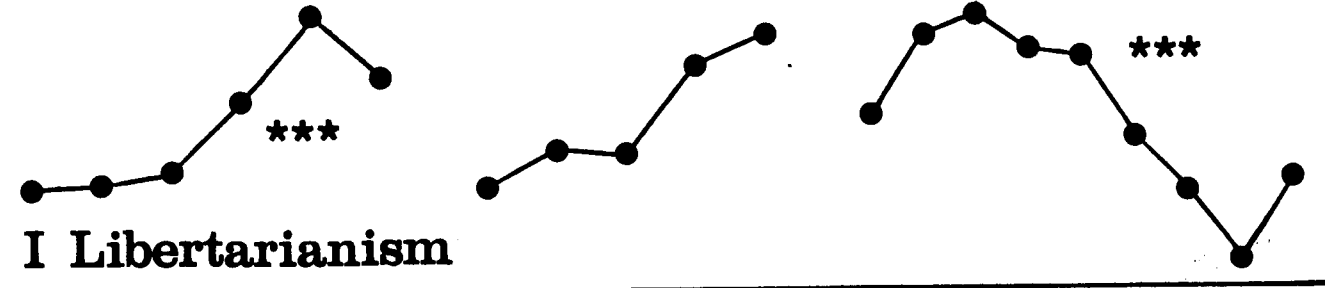
7 Sex education



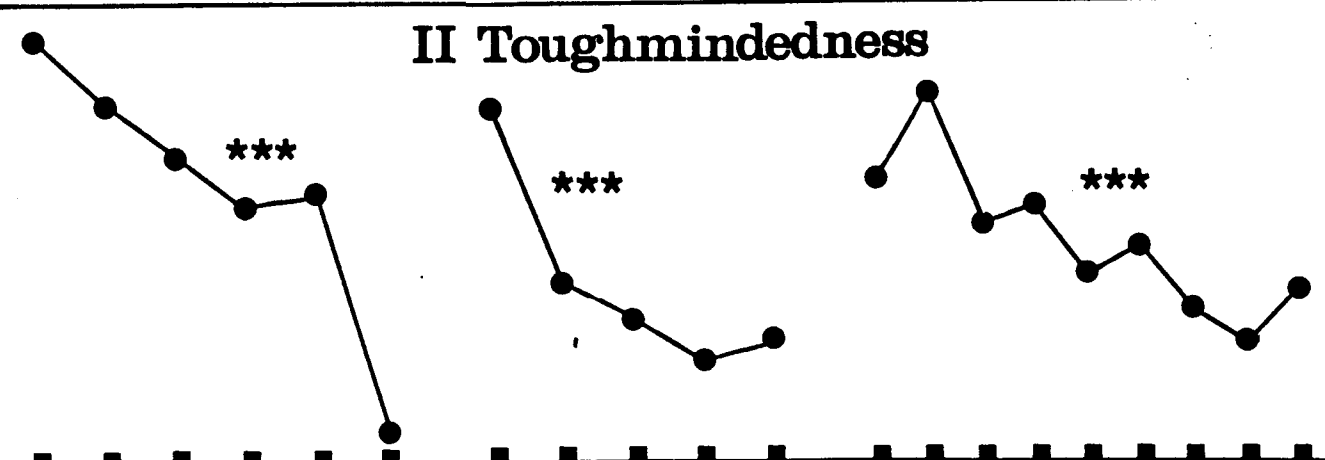
8 General practice



I Libertarianism



II Toughmindedness



18 19 20 21 22 23

Age

1 2 3 4 5

Year

73 75 77 79 81

Cohort

Table 9-1: Shows the 25 background variables which were included in the hierarchical analyses reported in tables 9-2 and 11-1.

<u>Variable</u>	<u>Description.</u>
SEX	Sex of applicant
CLASS	Social class of applicant
MEDFAMIL	Applicant from a medical family (at least one parent a doctor)
NORTH	Applicant from the north of England, Scotland or Northern Ireland.
SECTOR	Applicant educated in a private sector school (i.e. a 'public' school).
SCHFULL	Overall size of applicant's school
SCHSIXTH	Number of students in sixth form of applicant's school
SCHUNIV	Number of students from applicant's school going to university each year
SCHPROP	Proportion of applicant's sixth form going to university each year
TOTOLV	Total number of O-levels taken
TOTOLVM	Mean O-level grade attained
TOTCLV	Total number of A-levels taken
TOTCLVM	Mean A-level grade attained
MATHS	Maths taken at A-level
BIOLOGY	Biology taken at A-levels
POSTALEV	Applicant applying to UCCA after taking A-levels
PREVAPP	Applicant has made a previous UCCA application
NLONDON	Number of London medical schools on UCCA form.
NMEDIC	Number of Medical schools on UCCA form
NCHOICE	Number of Choices of university on UCCA form
AGE	Age of candidate on 30th September 1981.
MATURE	Mature applicant (i.e. aged 21 or over on 30-9-1981)
ORDERS	Amount of bracketing used on UCCA form.
JCCADATE	Date of receipt of UCCA form at UCCA.
OXBRIDGE	Oxford or Cambridge included on UCCA form.
ACCEPT	Applicant entered a medical school in October 1981.

Table 9-2: Shows hierarchical multiple regressions of the eight orthogonal attitude factors and of the two superordinate attitude factors. Descriptions of variables have been modified so that all beta coefficients are positive.

Order of Entry	Variable	Beta	p
Dependent variable = 1: Vital Libertarianism			
No significant correlates.			
Dependent variable = 2: Social Toughmindedness Multiple R = .249			
1	Higher proportion of sixth form going to university	.174	.002
2	Male applicant	.124	.027
3	Younger applicant	.123	.026
Dependent variable = 3: Liberalism Multiple R = .211			
1	Rejected for medical school	.163	.012
2	Less London medical schools on UCCA form	.157	.005
Dependent variable = 4: Personal Libertarianism Multiple R = .275			
1	From a medical family	.123	.013
2	Smaller school sixth form	.141	.026
3	Male applicant	.150	.028
4	Lower average O-level grades	.115	.037
5	Applying post-A-level	.110	.046
Dependent variable = 5: Economic conservatism Multiple R = .276			
1	Female applicant	.171	.001
2	Private sector schooling	.144	.006
3	Less A-levels taken	.142	.010
Dependent variable = 6: Medical Control Multiple R = .321			
1	Rejected for medical school	.210	<.001
2	Not from a medical family	.125	.032
3	Higher proportion of sixth form going to university	.176	.012
4	Larger overall school size	.131	.038
5	Female applicant	.125	.022
Dependent variable = 7: Sex Education Multiple R = .243			
1	Female applicant	.156	.002
2	Post-A-level applicant	.125	.024
3	Smaller school sixth form	.115	.041
Dependent variable = 8: General Practice Multiple R = .161			
1	Younger applicant	.161	.004
Dependent variable = I: Libertarianism			
No significant correlates			
Dependent variable = II: Tough-mindedness Multiple R = .214			
1	Male applicant	.176	.002
2	Younger applicant	.122	.028

Table 9-3: Shows Pearsonian correlations between the four dimensions of the Eysencks' Personality Questionnaire and the eight orthogonal measures of ethical attitudes, and the two superordinate measures of attitudes.

NS: Not significant; +: p<0.10; *: p<0.05; **:p<0.01; ***:p<0.001.

	E		N		P		L	
1: Vital Libertarianism	.070	NS	.041	NS	-.113	*	.042	NS
2: Social Tough-mindedness	.009	NS	-.020	NS	.032	NS	.117	*
3: Liberalism	-.042	NS	.042	NS	.139	*	-.218	***
4: Personal libertarianism	.109	+	.130	*	.262	***	-.261	***
5: Economic conservatism	.086	NS	-.035	NS	-.087	NS	-.027	NS
6: Medical Control	.031	NS	.131	*	.037	NS	-.012	NS
7: Sex Education	.024	NS	-.043	NS	-.077	NS	.002	NS
8: General Practice	.031	NS	-.073	NS	-.128	*	.059	NS
I: Libertarianism	.111	*	.105	+	.051	NS	-.135	*
II: Tough-Mindedness	.056	NS	-.057	*	-.118	*	.204	***