6: Interests, attitudes, personality
and career preferences.

"A knowledge both of books and human kind"

Pope, Essay on Criticism, III, 640.

"Much was believed, but little understood,
And to be dull was constru'd to be good".

Pope, ibid, III, 689.

"Sense of vocation? But in the applicant of,
say, 17, whose interests and personality are not
fully moulded, this is often fleeting. (We are
told that at this age about half the applicants
intend to become surgeons, while the other half
want to be psychiatristsl)."

Lancet editorial (Anon, 1948).

Summary.

Successful and unsuccessful applicants for medical school entry were compared in the St. Mary's study on a wide range of scales assessing personality, hobbies, interests and travel, interests in medicine, and ethical and political attitudes. With one or two minor exceptions, no substantial differences were found between those accepted and those rejected. It is concluded that the particular attitudes and career preferences found in medical students and doctors cannot be ascribed to any substantial extent to the selection system.

A recurrent theme in studies of medical student selection is that by concentrating on academic qualifications medical schools select a certain type of entrant who has a particular set of attitudes, and veers towards certain careers. The implication is that doctors would be produced with different attitudes, if only some of the rejected applicants had been accepted, and that these doctors would inter alia have a more positive approach to the 'Cinderella' specialties of medicine. Concern has also been expressed that emphasis on success in scientific examinations, breeds narrow-minded specialists, lacking the broad interests that contribute to the humanistic base of medicine.

Career preferences of doctors and medical students have been studied for a number of years (see Hutt, 1976, for a review), the earliest large-scale studies being those carried out by ASME (see Martin and Boddy, 1962; Last and Stanley, 1968), much of which was reported to the Royal Commission on Medical Education (1968). Since then Parkhouse in particular has been responsible for a series of annual studies of career preferences in newly qualified doctors (see Parkhouse et al, 1983 for a review). Similar studies have been carried out in America (e.g. Gough, 1975). Such studies of career preference are of limited interest if the preferences are not stable, since they will have limited predictive value (at least in individuals, although they may nonetheless still be useful for large-scale social planning). Parkhouse (1976) and Parkhouse and Howard (1978) carried out follow-up studies after 2 to 4 years and found that about 65% of students and doctors retained their first choice of speciality. Shuval (1980; p.177) found broad stability of preferences over a seven year follow up of medical scchool entrants. Egerton (1983) found a somewhat smaller degree of consistency, and Zimny (1980) claimed to have found predictive validity of a career preference inventory in America. Almost no studies have examined career preferences of entrants

to medical school, the Royal Commission on Medical Education (1968) being an exception; preferences of entrants were very similar to those of finalists. The reasons for choosing particular careers have also been little studied, although there are suggestions of personality effects, particularly in the case of potential psychiatrists (Davies and Mowbray, 1968), although potential physicians have also, for instance, been described as more neurotic and introverted than other students, and different religious groups have been reported to have different career preferences (Kosa, 1969). In an American study, Katz et al (1984) have emphasised the role of negative factors in changing career choice; 84% of students had changed a preference because of a factor they didn't like in a previous choice rather than because of a positive factor in their new choice.

In this chapter the attitudes, interests and career preferences of applicants in the St. Mary's Hospital Medical School survey of Medical Student Selection, who were accepted by St. Mary's or by one of their other choices, are compared with those who were rejected by all their chosen schools.

Method.

1478 applications were received by St. Mary's for admission in October 1981. All of those applicants with UK addresses were sent questionnaire 1 (Q1) (n=1361), and of these questionnaires 1151 (84.5%) were returned. 338 applicants were interviewed and all were invited to complete questionnaire 2 (Q2); all but one did so. A further 13 candidates were made offers without interview having been interviewed the previous year; all were sent Q2 by post, and seven questionnaires were returned. Q1 contained questions concerning attitudes towards careers,

213

interest in particular aspects of medicine, and possible destination if not accepted for medical school; Q1 also contained a syllabus-boundness questionnaire (Lucas et al, 1976), which assessed the degree to which the applicant preferred to work on his own or stick rigidly to a syllabus. Q2 contained detailed questions concerning interests, hobbies, travel, reading habits, and political, ethical and social attitudes, as well as the Eysenck personality questionnaire (EPQ: Eysenck and Eysenck, 1975), and the State-Trait Anxiety Inventory (STAI: Spielberger et al, 1970). It should be noted that respondents to Q2 are not a random sample of the total applicants but are a complete sample of those interviewed at St. Mary's.

Applicants were divided into those who were accepted for any British medical school for October 1981, and those who were rejected for medical school.

Personality.

Table 6-1 shows the responses on the personality inventories of those accepted and rejected. There is no evidence that those accepted are different from rejects on the dimensions of the EPQ, the STAI, or the syllabus-boundness scale. Both those accepted and those rejected differed from the approximate age-norms derived from the test manuals: they were more extravert, less neurotic, less psychotic, and had slightly higher lie (or social acquiescence) scores than the age-sex matched population as a whole, judged by their responses to the EPQ and on the STAI they had lower trait anxiety scores than the norm (but higher state anxiety scores since, of course, half of them were just about to be interviewed). The frequency distributions of state anxiety scores of pre- and post-interview candidates are shown in figure 6-1, in which they

are also contrasted with the norms from the manual, and with the scores of second-year St. Mary's undergraduates taking a 2nd MB viva examination. The interviewees are in general about three years younger than the examinees but are otherwise similar in background and qualifications. The mean anxiety scores of <u>viva</u> <u>voce</u> candidates (males 53.6; female 60.7) were slightly higher than for the most stressful manipulation reported on American college students in the manual for the STAI ('the students viewed a stressful movie depicting several accidents in a woodworking shop '; Spielberger <u>et</u> <u>al,</u> 1970) ($t=1.89$, 73 df, $p<0.1$), and were substantially higher than for American college students taking an IQ test ($t=10.35$, 73df, $p<<0.001$). By contrast, the anxiety levels of interviewees were only mildly raised (although the significant difference between pre- and post-interview applicants ($t=4.54$, 325 df, $p<0.001$) confirms the face validity of the method of assessment), and were significantly lower in each case than for pre-viva students ($t=9.29$, $t=12.28$, 325 df, $p<<0.001$, $p<<0.001$ respectively).

Interests in medicine.

Q1 contained a series of questions concerning the candidates' interests in various aspects of medicine, most of which were based on questions used by the Royal Commission on Medical Education (Royal Commission, 1968). Table 6-2 shows the results of a question in which applicants were asked to rank six aspects of medical education in terms of their interest to them. The only difference was that rejected candidates rated interest in learning about the physical aspects of disease more highly ($p<0.001$).

Three separate questions were asked about career preferences. Firstly, a very general question enquired about how certain the candidate was about a particular career choice (Table 6-3). Most candidates had some idea of a career, but were far from committed to it; those accepted were less certain about their eventual career (p<0.001).

The second question (Table 6-4) asked how interested candidates were in various broad areas of medicine, each being rated on a four-point scale. The majority of candidates were most interested in hospital work. There were only minimal differences between acceptances and rejections, with those accepted being slightly more interested in hospital work and slightly less interested in non-clinical work.

The third question gave a list of 24 possible specialties and asked each candidate to rate his interest in each on a five-point scale (Table 6-5). There were only three differences between acceptances and rejects significant at the 5% level; in view of repeated significance testing these results probably represent a type I error, and are thus not truly significant.

Finally, all applicants were asked what they would do if they should be rejected for medical school that year (Table 6-6), seven possible options being rated on a four-point scale, with an eighth option indicating 'other'. The majority of candidates were considering re-applying in the next year, and would probably be re-taking A-levels as well. Three significant differences emerged between acceptances and rejects; accepted candidates were less likely to intend applying for medicine again, less likely to intend retaking A-levels, and less likely to intend applying to study a non-biological science at university.

Interests and Attitudes.

Q2 asked a number of questions about hobbies, interests and attitudes. More detailed accounts may be found in chapters 9 and 11.

Table 6-7 summarises the answers to a number of questions on recreation time; the 'Reading score' is a summary of forty questions concerning particular authors that the candidate might have read. There are probably no significant differences between acceptances and rejects on any of the items of Table 6-7, when repeated significance testing is taken into account. Table 6-8 shows the travel experience of applicants; no significant differences were found between acceptances and rejects. A more detailed multivariate analysis of these data is reported in chapter 11.

A total of 112 questions were asked concerning moral, ethical, social and political attitudes, other aspects of which are considered in chapter 8. Each attitude question asked for a response on a four-point scale, "Definitely Yes", "Probably Yes", "Probably No", or "Definitely No". A factor analysis of the responses of these and other intending or actual medical students, revealed eight specific response dimensions, and two super-ordinate response dimensions. These two dimensions have been labelled 'Libertarianism' and 'Tough-mindedness'; they are superordinate only to factors 1 to 5, while factors 6, 7 and 8 are independent of them. Scores on these factors were standardised so that the entire reference population of over 1500 questionnaires completed by over 1300 medical students (from all pre-clinical and clinical years) and prospective students (including the present ones) gave a mean of zero and a variance of unity for each independent factor. Table 6-9 shows the scores of acceptances and rejects on these scales.

Discriminant analysis of the eight factors and two super-ordinate factors showed that only factor 6 discriminated between those accepted and rejected (p<0.001). Factor 6 has been labelled 'Medical control' since it is primarily concerned with the control of medical practice; those rejected were therefore more in favour of stricter control of barbiturate prescription and ECT, were in favour of euthanasia, would welcome more information about medicine in the newspapers, were in favour of patients being given more information about their illnesses, and were sympathetic to sociological and psychological aspects of medicine. In interpreting this factor it should be noted that during passage through medical school, medical students tend to become more negative on factor 6; it is therefore possible that a high positive score primarily indicates immaturity concerning medical problems, although other more Machiavellian explanations could also be offered.

In view of the inter-relation between ethical and moral views, and religious beliefs, candidates were also asked to describe their religious views, and to indicate how frequently they attended church (Table 6-10). There were no significant differences between those accepted and rejected.

Conclusions.

Most of the findings in this chapter are negative, but important nonetheless. There is little evidence that candidates accepted by the medical school selection system differed systematically from those rejected, at least in terms of the items assessed here. The only exception to this is in the attitudinal dimension described as "Medical control", and the interpretation of that item is not clear. It could also be argued from the greater determination of those eventually

rejected to reapply for medicine and to retake A-levels that those rejected were more highly motivated, but it might also be that they thought that they were less able academically. The study has no information on the attitudes of those who were rejected before interview but there is no reason to suppose that they differed substantially from those invited to interview. It is concluded that the particular attitudes and career preferences found in doctors and medical students cannot be ascribed to any substantial extent to the selection system. Furthermore judged, for instance, from the rank ordering of careers in Table 6-5, which is very similar indeed to that of newly qualified doctors (Parkhouse et al, 1983), these particular preferences are not inculcated at medical school, but are a general attribute of applicants, apparently acquired before selection.

<u>Figure 6-1</u>:

a.) Shows the mean state anxiety scores (adjusted for the sex distribution of the sample) as reported in the test manual for groups of American college students under four conditions.

b.) Shows the distribution of state anxiety scores of 75 medical students before a <u>viva</u> <u>voce</u> examination. The mean is indicated by the short vertical line.

c.) Shows the distribution of state anxiety scores of medical school applicants before ('Pre-') or after ('Post-') their selection interviews, the shaded distribution being for pre-interview assessments. The short vertical lines indicate mean scores.

a. ⌐Relaxation
  ⌐Normal
   ⌐IQ test
     ⌐Accident film

b.   ⌐Pre-viva

14
12
10
8
6
4
2
0

c. ⌐Post-⎤interview
   ⌐Pre -⎦

30

20

10

0

20- 26- 31- 36- 41- 46- 51- 56- 61- 66- 71- 76-80
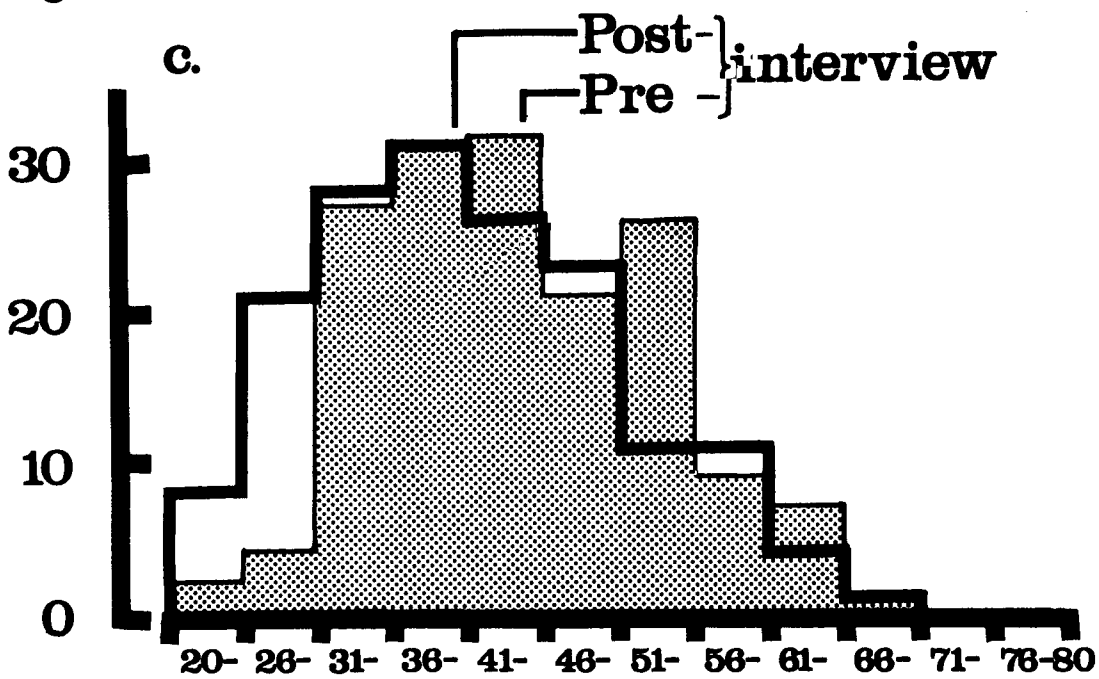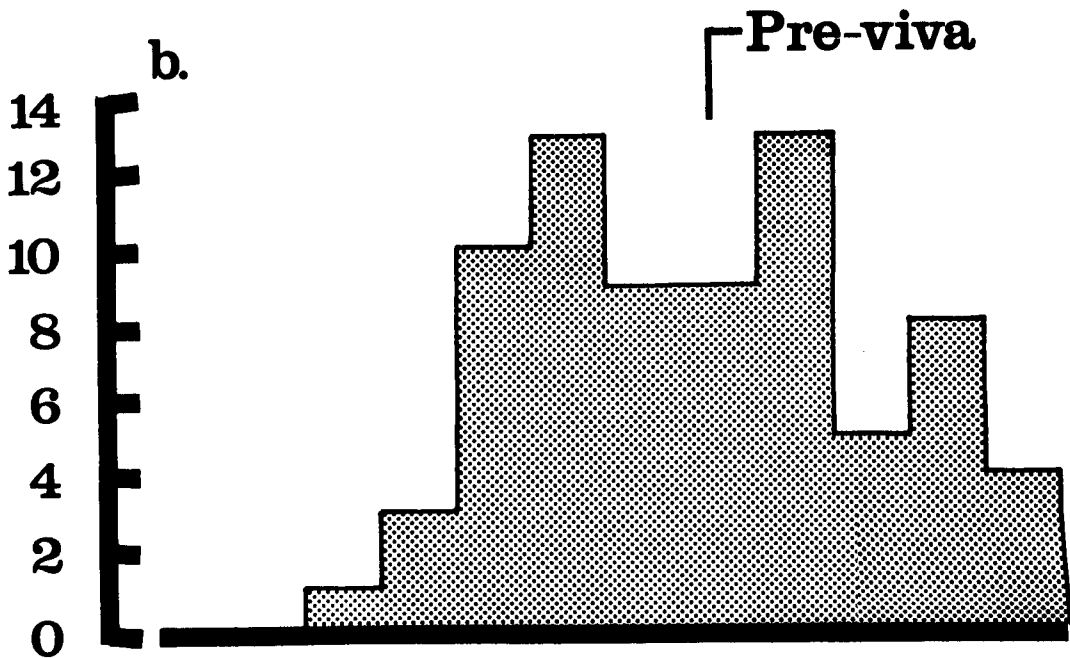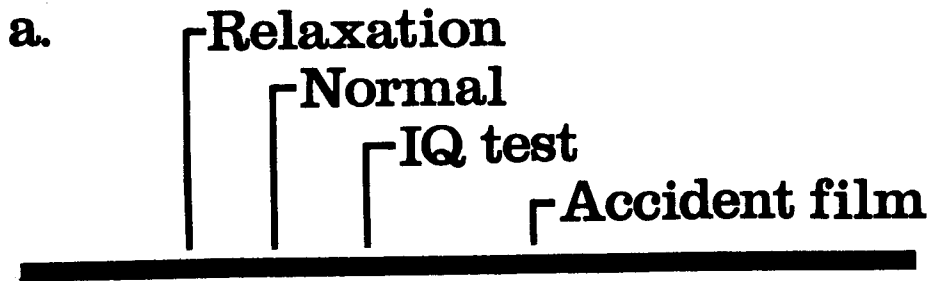
State anxiety

able 6-1: Shows mean (SD) scores of accepted and rejected
pplicants on personality assessment scales.

	Rejected N=99	Accepted N=225	Sig	Approx. age norms
senck Personality Questionnaire				
traversion	15.68 (3.55)	15.13 (3.66)	NS	14.0 (4.4)
uroticism	9.34 (4.25)	9.35 (4.74)	NS	11.7 (5.1)
ychoticism	2.24 (2.06)	2.36 (2.22)	NS	4.0 (3.0)
e scale ocial acquiescence)	7.41 (3.92)	6.89 (3.98)	NS	6.3 (3.8)
ate-Trait Anxiety Inventory				
ate anxiety	42.19 (9.67) n=105	41.65 (9.96) n=232	NS	37.2 (10.1)
ait anxiety	35.51 (5.97) n=79	36.32 (5.94) n=171	NS	40.2 (10.1)
llabus-boundness	23.72 (3.35) n=592	23.92 (3.23) n=400	NS	—

.e 6-2: Shows the mean (SD) ranks allocated to six aspects of medical
:ation by accepted and rejected applicants.

	Rejected N=558	Accepted N=416	Sig.
ìing about the physical :ts of disease	1.98 (1.03)	2.28 (1.31)	<0.001
ìing how to take)nsibility for patients	2.97 (1.48)	2.94 (1.49)	NS
ìing about the psychological :ts of disease	3.42 (1.52)	3.29 (1.50)	NS
ìing how to carry out .ex operations on patients	3.63 (1.79)	3.80 (1.72)	NS
ìing about the social :ts of disease	4.24 (1.46)	4.28 (1.52)	NS
ìing about research	4.39 (164)	4.36 (1.64)	NS

Table 6-3: Responses of accepted and rejected candidates to the question, 'Have you decided on the nature of an eventual career in medicine?'

	Rejected N=569	Accepted N=429
Yes, definitely	8.8 %	5.1 %
Yes, I have inclinations towards a certain field, but have not finally decided.	64.3 %	55.2 %
No, but I have firmly decided against some kinds of work	10.7 %	16.1 %
No, I am quite undecided	16.2 %	23.5 %

$$X^2_3 = 20.16, \; p < 0.001$$

Table 6-4: Shows the mean (SD) degree of interest expressed by accepted and rejected applicants in six broad areas of medical work. Scores of 1, 2, 3 and 4 indicate responses of 'Very interested', 'Fairly interested', 'Not very interested', and 'Uninterested'.

	Rejected N=570	Accepted N=430	Sig.
Hospital or specialist work with continuing responsibility for patients	1.45 (.59)	1.39 (.58)	p<0.05
Clinical practice outside hospital e.g. general practice	2.00 (.83)	1.95 (.80)	NS
Basic medical sciences or original research	2.27 (.81)	2.32 (.78)	NS
Hospital or specialist work of a laboratory nature e.g pathology, microbiology, biochemistry.	2.49 (.90)	2.48 (.76)	NS
Hospital or specialist work without continuing clinical responsibility e.g. radiology, anaesthetics.	2.60 (.76)	2.61 (.71)	NS
Non-clinical work e.g. public health, medical administration.	3.39 (.70)	3.48 (.63)	p<0.05

Table 6-5: Shows the mean (SD) degree of interest in various
specific careers shown by accepted and rejected applicants.
Scores of 1,2,3,4, and 5 correspond to replies of 'Definite
intention to go into this', 'Very attractive', 'Moderately
attractive', 'Not very attractive', and 'Definite intention
not to go into this'.

	Rejected N=511	Accepted N=384	Sig.
Medicine in hospital (including cardiology, neurology, etc.)	2.45 (.69)	2.47 (.65)	NS
Surgery (including neurosurgery, thoracic surgery, etc.)	2.51 (.84)	2.56 (.81)	NS
Paediatrics	2.70 (.83)	2.66 (.77)	NS
General Practice (small partnership)	2.72 (.90)	2.74 (.81)	NS
Obstetrics & Gynaecology	2.79 (.83)	2.79 (.72)	NS
Traumatic and orthopaedic surgery	2.90 (.82)	2.89 (.76)	NS
Medical research	2.95 (.90)	3.02 (.81)	NS
General practice (large group or health centre)	3.07 (.86)	3.05 (.80)	NS
Pathology	3.01 (.77)	3.07 (.72)	$p<0.1$
Ear, Nose & Throat surgery	3.13 (.75)	3.07 (.71)	$p<0.1$
Psychiatry	2.98 (.85)	3.07 (.82)	NS
General practice (single-handed)	3.12 (.85)	3.20 (.79)	NS
Forensic medicine	3.07 (.81)	3.21 (.75)	$p<0.05$
Basic medical sciences	3.27 (.75)	3.23 (.75)	NS
Laboratory medicine (e.g. Microbiology, Chemical Pathology, Haematology)	3.15 (.79)	3.27 (.74)	NS
Armed forces	3.10 (.86)	3.26 (.78)	$p<0.05$
Ophthalmology	3.32 (.68)	3.30 (.63)	NS
Dermatology	3.35 (.67)	3.38 (.62)	NS
Anaesthetics	3.36 (.73)	3.49 (.62)	$p<0.05$
Public Health, Social Medicine	3.45 (.68)	3.50 (.66)	NS
Radiology/ Radiotherapy	3.52 (.62)	3.53 (.58)	NS
Industrial medicine	3.48 (.69)	3.59 (.62)	NS
Pharmaceutical industry	3.57 (.66)	3.59 (.62)	NS
Medical administration	3.66 (.59)	3.7?	

Table 6-6: Shows the mean (SD) score of accepted and rejected applicants for possible alternatives if they are not accepted for medical school in the coming year. Scores of 1,2,3 and 4 correspond to responses of 'Definitely Yes', 'Probably Yes', 'Probably No', and 'Definitely No'.

	Rejected N=542	Accepted N=393	Sig.
Apply to medical school again next year	1.68 (.80)	1.79 (.82)	p<0.01
Retake your A-levels in order to obtain better grades	1.84 (.79)	1.96 (.78)	p<0.01
Apply to university to read another biological science	2.42 (.65)	2.48 (.64)	NS
Apply to university to study a non-biological science	2.65 (.54)	2.57 (.58)	p<0.01
Apply to university to study a non-science subject	2.75 (.48)	2.61 (.59)	NS
Apply to study a para-medical subject e.g. nursing, phyiotherapy	2.63 (.59)	2.68 (.55)	NS
Apply to university to study dentistry	2.76 (.48)	2.71 (.53)	NS

Table 6-7: Shows the mean (SD) activity of accepted and rejected applicants on a number of recreational activities.

	Rejected N=94	Accepted N=228	Sig.
Hours per week:			
Watching television	5.06 (3.33)	5.76 (3.92)	p<0.1
Playing sport	5.59 (4.75)	4.83 (4.14)	NS
In a pub	1.19 (1.32)	1.63 (2.60)	NS
On hobbies	5.85 (3.93)	5.33 (3.72)	NS
Per cent who:			
Play for a team	64.7 %	59.8 %	NS
Play a musical instrument	54.3 %	47.8 %	NS
Occasions per year:			
Theatre	3.24 (3.15)	3.32 (3.41)	NS
Opera	0.74 (1.94)	0.60 (1.30)	NS
Ballet	0.43 (1.64)	0.56 (1.38)	p<0.1
Pop concerts	1.86 (2.13)	2.19 (3.01)	NS
Classical concerts	2.51 (3.22)	2.10 (3.40)	p<0.1
Art galleries	1.78 (2.17)	1.89 (2.20)	NS
Museums	3.03 (3.04)	2.63 (2.08)	NS
Cinema	5.91 (3.83)	6.17 (4.57)	NS
Football matches	2.12 (4.14)	1.66 (3.54)	NS
Cricket matches	1.50 (2.72)	1.62 (3.22)	NS
Parties	8.73 (4.96)	8.46 (5.03)	NS
Reading habits:	N=92	N=225	
Books per year:			
Fiction	15.16 (15.39)	17.27 (17.64)	NS
Non-fiction	10.68 (9.29)	9.87 (12.81)	p<0.05
Reading score (range 0 - 80)	11.84 (14.18)	9.95 (13.69)	NS

ole 6-8: Shows the percentages of accepted and rejected applicants
> have travelled to various areas of the world.

	Rejected N=95	Accepted N=230
France	80.0 %	73.9 %
Germany	52.6 %	36.1 %
Italy	40.0 %	42.6 %
Switzerland	35.8 %	28.7 %
Holland	21.6 %	23.5 %
Belgium	30.5 %	24.8 %
Spain	29.5 %	34.3 %
Portugal	9.5 %	7.0 %
Greece	13.7 %	17.4 %
Scandinavia	11.6 %	8.3 %
Eastern Europe	14.7 %	9.1 %
Middle East/ N. Africa	13.7 %	12.2 %
Central-Southern Africa	6.3 %	4.3 %
India & Far East	9.5 %	7.8 %
Russia/ China	2.1 %	2.2 %
Australasia	4.2 %	3.9 %
North America	17.9 %	17.8 %
South America	2.1 %	1.7 %

Table 6-9: Shows the mean (SD) scores of accepted and rejected interviewees on the eight attitudinal factors and the two super-ordinate attitudinal factors.

Factor:		Rejected N=103	Accepted N=236	Sig
L	"Vital libertarianism"	-.226 (.921)	-.060 (.857)	NS
2	"Social tough-mindedness"	-.028 (.837)	-.109 (.714)	NS
3	"Liberalism"	-.342 (.648)	-.535 (.638)	p<0.05
4	"Personal libertarianism"	-.188 (.806)	-.087 (.824)	NS
5	"Economic conservatism"	-.062 (.678)	-.218 (.706)	p<.10
6	"Medical control"	.468 (.650)	.181 (.642)	p<0.001
7	"Sex education"	-.006 (.882)	-.123 (.718)	NS

Supra-ordinate factors:

I	"Libertarianism"	-.366 (.866)	-.284 (.803)	NS
II	"Tough-mindedness"	.046 (.769)	.055 (.695)	NS

able 6-10: a). Shows the stated religious belief of accepted and
ejected applicants. b). Shows the stated number of times that
andidates went to church each year.

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	Rejected N=93	Accepted N=222
Christian	65.6 %	66.2 %
Jewish	3.2 %	1.8 %
Agnostic	17.2 %	18.0 %
Atheist	12.9 %	9.5 %
Other	1.1 %	4.6 %

$$X^2_4 = 3.82, \text{ NS}$$

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	Rejected N=94	Accepted N=226
Every week	30.9 %	34.5 %
Once per month	14.9 %	12.8 %
3 - 10 times per year	20.2 %	11.9 %
Festive occasions only	23.4 %	20.8 %
Never	10.6 %	19.9 %

$$X^2_4 = 7.16, \text{ NS}$$