

12: Religio medici: a study of medical students.

"Skilful men, of the medical and chirurgical profession, were of rare occurrence in [Puritan New England]. They seldom, it would appear, partook of the religious zeal that brought other emigrants across the Atlantic. In their researches into the human frame, it may be that the higher and more subtile faculties of such men were materialised, and that they lost the spiritual view of existence amidst the intricacies of that wondrous mechanism, which seemed to involve art enough to comprise all of life within itself."

Nathaniel Hawthorne, The Scarlet Letter.

"Science without religion is lame, religion without science is blind".

Albert Einstein.

Summary.

Religious behaviour has been studied in the St. Mary's and Birmingham studies of medical students. Evidence from a multiple regression suggests that the significant diminution of religious behaviour as students pass through medical school (demonstrated both in transverse and longitudinal studies) is a consequence of maturation or ageing, rather than of the specific effects of medical education per se. The more religious students tended to be female, and to have higher L scores on the Eysenck Personality Questionnaire. There were no significant background predictors of religiosity, and neither was there evidence for cohort changes over the period 1973 - 1981.

Sir Thomas Browne commenced his essay Religio Medici with the comment that "there be several Circumstances that might perswade the World I have [no religion] at all", and includes in these circumstances, "the general scandal of my Profession [and] the natural course of my Studies". The present chapter considers the question of whether medical studies do indeed lead practitioners to an absence of religion. Received opinion certainly suggests that medicine and the absence of religious conviction are related. A Renaissance proverb stated that "Ubi tres medici, duo athei" (Where you find three doctors you will find two atheists), and Robert Southey commented that:

" ... Physicians as they grow
greater in skill, grow less in their religion,
attributing so much to natural causes
that they have little faith in that they cannot
deliver reason for."

In the mid-nineteenth century Cardinal Newman considered the relation between religion and education in general (and medical education specifically). He held two separate views; one pragmatic concerning the actual relationships between religion and education; the other idealistic concerning its possible relations.

That scientific training was perceived as a threat to religion was clear to him, at least on a psychological or sociological level: "The sciences ... are looked upon with anxiety, not altogether ungrounded, by religious men" (Christianity and Scientific Investigation, p.412); "... religious men would not be ... jealous and alarmed about science, did they not feel instinctively, that knowledge is their born enemy ..." (The Idea of a University, p.104).

Medical training in particular had this effect, since the particular experiences of the student might predispose him to a materialistic view of mankind;

"A medical philosopher, who has so simply fixed his intellect on his own science as to have forgotten the existence of any other, will view man, who is the subject of his contemplation, as a being who has little more to do than to be born, to grow, to eat, to drink, to walk, to reproduce his kind, and to die. He sees him born as other animals are born; he sees life leave him, with all those phenomena of annihilation which accompany the death of a brute. He compares his structure, his organs, his functions, with those of other animals, and his own range of science leads to the discovery of no facts which are sufficient to convince him that there is any difference in kind between the human animal and them. His practice, then, is according to his facts and his theory. Such a person will think himself free to give advice, and to insist upon rules, which are quite insufferable to any religious mind, and simply antagonistic to faith and morals."

(Christianity and Medical Science, p.459;
in Newman, 1873).

To summarise, "[the doctor] might in process of time have become simply dead to all religious truths, because such truths were not present to him, and those of his own science were ever present" (ibid, p.458). The final result might be, "the especial temptation and danger to which the medical profession is exposed; it is a certain sophism of the intellect" (ibid, p.456). In essence this "radical sophism" views the only questions of import as being those with medical components or implications.

Thus far, therefore, Newman makes a strong psychological case for the prevalence of atheism amongst doctors, and it is that case which primarily concerns us here. However it is necessary in Newman's defence to emphasise that he did not feel that religion and medicine were necessarily alien, either in practise or in scientific study. "Bodily health is not the only end of man, and the medical science is not the highest science of which he is the subject. Man has a moral and a

religious nature, as well as a physical. ... as the soldier must yield to the statesman, so must the medical man to the priest." (Christianity and Medical Science, p.456). As far as science is concerned he tells us that "Revealed religion furnishes facts to other sciences, which other sciences, left to themselves, would never reach" (On the Scope and Nature of University Education, p.105 in Newman, 1873). Regrettably this last example of the primacy of religion is somewhat marred by Newman's example; "thus in the science of history the preservation of our race in Noah's Ark is a historical fact, which history would never arrive at without Revelation" (ibid, p.105).

In the early twentieth century Freud considered the psychological relations between religion and education, his attitude being that education and religion are complementary alternatives. In Civilisation and its Discontents (1930) he quotes Goethe's aphorism:

"He who possesses science and art also has religion;
but he who possesses neither of these two,
let him have religion."

Thus religion, "the universal obsessional neurosis of humanity", is a relatively primitive state whose "doctrines bear the imprint of the times in which they arose, the ignorant times of the childhood of humanity" (New Introductory Lectures, p.204); it had served useful purposes in the evolutionary past, but with the advent of science and the arts had been rendered obsolete. "The more the fruits of knowledge become accessible to men, the more widespread is the decline of religious belief ..." (The Future of an Illusion, 1928). The implication is that the scientific training of the medical student will produce a concomitant decline in his religious beliefs.

The question of the inter-relation between science and religion has continued to be of interest until the present day (see e.g. Eister, 1978), with clear empirical evidence being presented that science graduates are less likely to be religious than are either Arts graduates or the general population (Stark, 1963; Argyle and Beit-Hallahmi, 1975).

A number of empirical studies have found evidence that as students pass through university they become less religious, both in transverse studies (Poppleton and Pilkington, 1963; Hites, 1965; Feldman, 1969; Pilkington et al, 1976; Humsberger, 1978;) and in longitudinal studies (Ferman, 1960; Pilkington et al, 1965), although as Argyle (1958; p.44) and Scobie (1975; p.142) have pointed out, it is difficult in such studies to separate direct effects of education from effects of age or maturation, and Argyle and Beit-Hallahmi (1975; p.66) have argued that historical (i.e cohort) effects may be of the most importance.

Some studies have examined differences in religiosity between different university faculties (see e.g. Argyle, 1958, p.46). Poppleton and Pilkington (1963) and Pilkington et al (1976) have specifically examined medical students, and in both studies found them to be somewhat more religious than other science students. Furlong (1961) has suggested that medical students in particular tend to swing back towards religion in their clinical years.

The present chapter attempts to answer several separate but related questions about the religious behaviour of medical students:-

1. Is there an an increased prevalence of agnosticism and atheism as medical students progress through their medical training?

2. If there is, is this a consequence of medical training per se, or it is perhaps better explained in terms of the concomitant maturation of students as they pass through medical school?
3. Amongst those who consider themselves to be Christians, what are the effects of medical study and of maturation upon their church attendance?
4. Is there any evidence of cohort changes, entrants in recent year being more or less sympathetic to religion?
5. What background factors predict high or low religion in medical school applicants and is there any evidence that those accepted are less religious than those who are accepted? Scobie (1975; p.119-122) has suggested that the religious are more neurotic and less extraverted than non-religious individuals. Argyle (1959) and Scobie (1975) have both described how females are generally more religious than males.

Method.

Data from the St. Mary's and the Birmingham studies have been used:- Statistical analysis was by means of the Statistical Package for the Social Sciences (SPSS) (Nie et al, 1975; Hull and Nie, 1981).

The questionnaire contained two questions to assess religious activity. The first assessed religious self-typing, and asked:

"How would you describe your religious beliefs? Christian/
Jewish/ Agnostic/ Atheist/ Other (please specify)"

The second question assessed church attendance and was only analysed for those who described themselves as Christians, Agnostics or Atheists:

"How often do you attend church: Never/ On festive occasions only/ Between three and ten times per year/ About once a month/ Every week"

Results.

Table 12-1 shows the response to question 1 in the Birmingham and St. Mary's surveys. The proportion of those responding Jewish or Other was sufficiently low to mean that they were omitted from further analysis. Table 12-2 shows for the combined St. Mary's and Birmingham samples the relation between religious self-typing and church attendance. It can be seen that the majority of church attenders are Christians, although the correlation is far from perfect. Subjects in the study were classified into seven religious groups according to their response to questions 1 and 2, the Christians (but not the Atheists or Agnostics) being sub-divided into five groups on the basis of their church attendance, the result being a seven-point scale from Atheist (scale value = 1) through to Christians attending church every week (scale value = 7). Two reduced forms of this scale, Christians versus non-Christians and Church attendance in just those who replied 'Christian' were used to distinguish effects of Christian belief from effects of church attendance.

Table 12-3 shows the correlations of the scales of the EPQ and STAI with religious grouping, Christian vs non-Christian and Church attendance. Higher scores on religious grouping correlate significantly with lower scores on the neuroticism scale of the EPQ and the State anxiety score of the STAI, both results being in the opposite direction to that reported by Scobie (1975). The more religious applicants also reported higher scores on the EPQ Lie scale. A broadly similar pattern of correlations

was found for Christian vs. non-Christian, but not for Church attendance, suggesting that belief rather than church attendance was the primary cause of these correlations.

Applicants in the St. Mary's study had information scored on nineteen variables of general interest and of interest to the selection process; sex; social class; the presence of a medical parent; living in the North of England, or Scotland or Northern Ireland; evidence of a private sector education; the overall size of the school; the size of the sixth form, and the number and proportion of the sixth form going to university; maths or biology taken at A-level; application post-A-level; previous university application; the number of university choices on the application form; the number of medical schools and the number of London medical schools on the application form; whether the applicant was aged over 21; the use of bracketing on the application form; and whether or not Oxbridge was included on the application form. The three separate measures of religion were used as dependent variables in a hierarchical multiple regression on all of the nineteen independent variables. For religious grouping the only significant effect was that post A-level applicants were less religious ($F(1,276)=6.21, p<0.05$), a result that is probably a type I error given that the effect of adding in all 19 variables was not significant ($F(19,258)=0.82, NS$). The variable Christians vs non-Christians showed an identical pattern of results as that of religious grouping. Church attendance in Christians showed only one significant relationship, those from smaller schools tending to attend church more often ($F(1,198)=3.98, p<0.05$), and once more this is probably a type I error, given that the joint effect of the the independent variables was not significant ($F(19,180)=0.66, NS$).

Figure 12-1 shows the proportion of individuals in each religious group as a function of year in medical school (the St. Mary's study of applicants being regarded as in year zero for present purposes). It can be seen that there is a highly significant systematic shift as students pass through medical school from the more religious to the less religious groups (Kendall's tau-c = .085, $p < .001$). The trend involves a shift from Christian to non-Christian groups (Kendall's tau-c = .135, $p < .001$), and a decrease in church attendance amongst those describing themselves as Christians (Kendall's tau-c = -.058, $p < .05$). That the transverse results of figure 12-1 are not an artefact of cohort or other effects is shown by analysing the results of the longitudinal part of the study. Table 12-4 shows the data for 153 students who were assessed on two separate occasions, from one to four years apart. 81 individuals (52.9%) showed identical religious groups on the two occasions. 51 individuals (35.3%) had become less religious by the second assessment, and 18 (11.8%) had become more religious, indicating a highly significant diminution in religiosity (Chi-squared = 17.01, 1df, $p < 0.001$). Amongst those who called themselves Christians on both occasions, 25 attended church less on the second occasions and 8 attended it more often (Chi-squared = 7.76, 1 df, $p < .01$). Restricting the analysis to just Christians and non-Christians (Atheists and Agnostics combined), 131 had not changed their status, 18 had moved from the Christian to the non-Christian group, and 4 had made the reverse passage (Chi-squared = 7.68, 1 df, $p < .01$).

It is thus clear, both on the basis of transverse and longitudinal data, that medical students become less religious as they pass through medical school. The important question concerns whether this change is direct consequence of medical schooling per se, or is rather consequence of the concomitant ageing or maturation of the student. Since not all students entering medical school are of identical age it

possible to partition effects into those due to age and those due to medical schooling. In addition the year of entry into the medical school (the cohort) may be examined, in case apparent longitudinal effects in the transverse study are actually cohort effects.

A hierarchical multiple regression of the data from the Birmingham study was used to assess the effects of years in medical school (1 to 5), age in years, and year of entry (1973 to 1981), the significance of each term being assessed after each of the other two had been entered into the regression equation. The dependent variable in the first analysis was the seven-point religious grouping.

Age had a highly significant effect ($F(1,864)=1.79$, $p<.001$; $\beta = -.095$), whereas neither years in medical school ($F(1,864)=0.319$, NS; $\beta = -.031$) nor cohort of entry ($F(1,864)=2.539$, NS; $\beta = -.069$) had significant effects. A similar result was obtained when Christian vs non-Christian was the dependent variable. Considering just those groups who described themselves as Christians, and with church attendance as the dependent variable, there was a highly significant effect of age ($F(1,524)=31.58$, $p<.001$; $\beta = -.272$), the effect of years in medical school also being significant ($F(1,524)=8.62$, $p<.05$; $\beta = .164$), the positive beta coefficient indicating that in this group church attendance increases with years in medical school, after account has been taken of decrease in attendance as a result of increasing age. There was no effect of cohort ($F(1,524)=0.394$, NS; $\beta = -.035$).

Female students were significantly more religious than male students in the Birmingham study, after account had been taken of year of study, cohort and age ($F(1,862)=20.25$, $p<.001$). There was however no evidence for interactions between sex and year of study, cohort or age ($F(3,859)=.216$, NS). Similar results were found for Christians vs. non-Christians

and for church attendance amongst the Christians (effect of sex, $p < .0001$ and $p < .05$ respectively). The St. Mary's study of applicants showed no significant differences in religious grouping, or in any of the other scores, between the sexes ($F(1,307) = 1.54$, $p = .215$ for sex), although the trend was in the predicted direction, females being more religious than males.

Discussion.

The results of this study have confirmed the result of many other studies (Argyle and Beit-Hallahmi, 1975; pp.71-79) that women are more religious than men, both in their self-description and in church attendance. The study fails however to replicate previous suggestions that the religious are more neurotic and introverted than the non-religious; indeed the religious appeared to be more stable than the non-religious. The religious also had significantly higher Lie scores, a result which is perhaps best interpreted in terms of the suggestions of Crookes and Buckley (1976), Kirton (1977), Massey (1980) and Eysenck and Eysenck (1976: pp 160 - 170) that the Lie scale is more interesting than being simply a measure of intention to deceive, and rather individuals with high L scores are "lacking insight or self-awareness", "inaccurate, un insightful but honest self-assessers", or "conformists". Certainly any of these views would be compatible with the positive correlations with religious beliefs.

The present study shows clearly, both on a transverse and a longitudinal basis, that medical students decrease in their religious views as they pass through medical school, both in terms of whether they describe themselves as Christians, and if so, whether they attend church regularly. Multiple regression analyses suggest that the overall decline

in religious views is not a direct consequence of medical schooling per se but is rather a consequence of the concomitant ageing or maturation of the students. Indeed while there is a decline in church attendance among Christians with increasing age, there is also an increase associated specifically with years in medical school.

It therefore seems, despite conventional suppositions, that religious views of medical students do not change as a consequence of the necessarily materialistic nature of their studies. Neither incidentally is there any suggestion that medical schools tend to select those who are least religious from amongst those who apply to them (although it is conceivable that applicants as a group may be more religious than non-applicants).

What factors in the maturation of these students might be leading to decreased religiosity? Argyle (1958) has summarised a number of theories of religious involvement.

Social learning theory suggests that parental attitudes and modelling of social leaders are important determinants of religious attitudes. Carrier (1965; p.253) has argued that the loss of religion in young adults is mainly a result of a loss of reference groups, in particular parents and church. Brown (1962; p.259) has "concluded that religious belief is a relatively isolated cognitive system requiring strong social support for its maintenance". Clearly such explanations have great potential for explaining change in student attitudes; students have left the parental home and are exposed to an environment which on aggregate is less religious than are the new entrants. In addition actual opportunities for worship may be disrupted or diminished as a result of migration to a different geographical area; Wuthnow and Christiano (1979) have shown how regional mobility decreases church

attendance in America. That church attendance among Christians increases as students pass through medical school, as a direct result of years of medical schooling, might be interpreted as an increasing social cohesion among students, facilitating church-going amongst those who are Christians.

A second group of theories emphasises religious behaviour as a response to frustration or deprivation, either instinctual (and particularly sexual, as in Freudian theory) or social (as in Marxist theory). Although medical students might well show less deprivation in economic, status, social need or sexual terms than they did prior to having entered medical school, such an effect would be non-specific and primarily related to age or maturation. However as a specific result of their medical training, medical students are more exposed to illness and death, which might increase their fear of these events (and medical student hypochondriasis is a well-recognised phenomenon (Woods *et al*, 1966), and hence should increase their religiosity. From the results of Figure 12-1 however it is clear that there is no evidence for any particular change associated with the transition from pre-clinical to clinical studies (i.e. between those tested at the beginnings of years 3 and 4), suggesting that this factor is of little importance, particularly given that Howells and Field (1982) found that medical students did not have a particularly increased fear of death and dying, as compared with a control group of social science students.

A third theory suggests that religion arises because of conflict between the super-ego of the individual and his instincts, the conflict being reduced by projection of the super-ego as God. Religion therefore assuages guilt. It is thus possible that medical students might feel less conflict as a result of understanding the origin of instinctual

needs.

Freud (1907), in his paper on 'Obsessive acts and religious practices', noted the similarity between the ritualistic acts of religion and the rituals of the obsessive-compulsive. In so far as medicine involves many quasi-rituals (the learning of anatomy; the 'catechism' of clinical examination; the 'grand round'), coupled with the inevitable discipline of professional life, it may be felt that the medical rituals could replace those of the church.

Cognitive need theories speculate that the major mechanism of religious belief is a cognitive striving to understand. In so far as medicine provides answers to many questions concerning the nature of existence (and in particular Darwinian biology can be regarded as providing a potentially complete explanation, at least of biological existence) it might be felt that medical students would have less 'need to understand'.

The previous four theories (fear or illness or death; conflict reduction; obsessive rituals; and cognitive need) could all provide explanations of specific effects of medical education upon religious behaviour. However medical education per se has no specific effects upon religion and thus these explanations are unacceptable. Any explanation of the loss of religion in medical students must be a general one related to effects of age or maturation.

In summary it would seem that whilst medical students do become less religious as they pass through medical school, this is not a consequence of medical schooling. That individuals become less religious as they mature is a frequent survey finding, for instance when adult religion is compared with family religious background (e.g. Roof and Hadaway, 1979);

similarly Vetter and Green (1932) found that the majority of atheists became 'converted' during the ages of 15 - 24. The age of 30 would seem to be the nadir of religious activity (Argyle, 1958; p.67), although this result is generally based on potentially deceptive transverse studies, and Nelson's (1956) longitudinal study found opposite trends. In conclusion there is no specific effect of medical school to be explained, only the more general problem of what Argyle (1958) has called "the important and little-known phenomenon ... [of] the decline in religious activity between 18 and 30".

Figure 12-1. Shows the proportion of individuals in each of the seven religious groupings. Years 1 to 5 represent individuals at the beginnings of the first pre-clinical through to the third clinical year in the Birmingham sample. Year zero presents applicants to medical school in the St. Mary's survey (approximately one year before medical school entry).

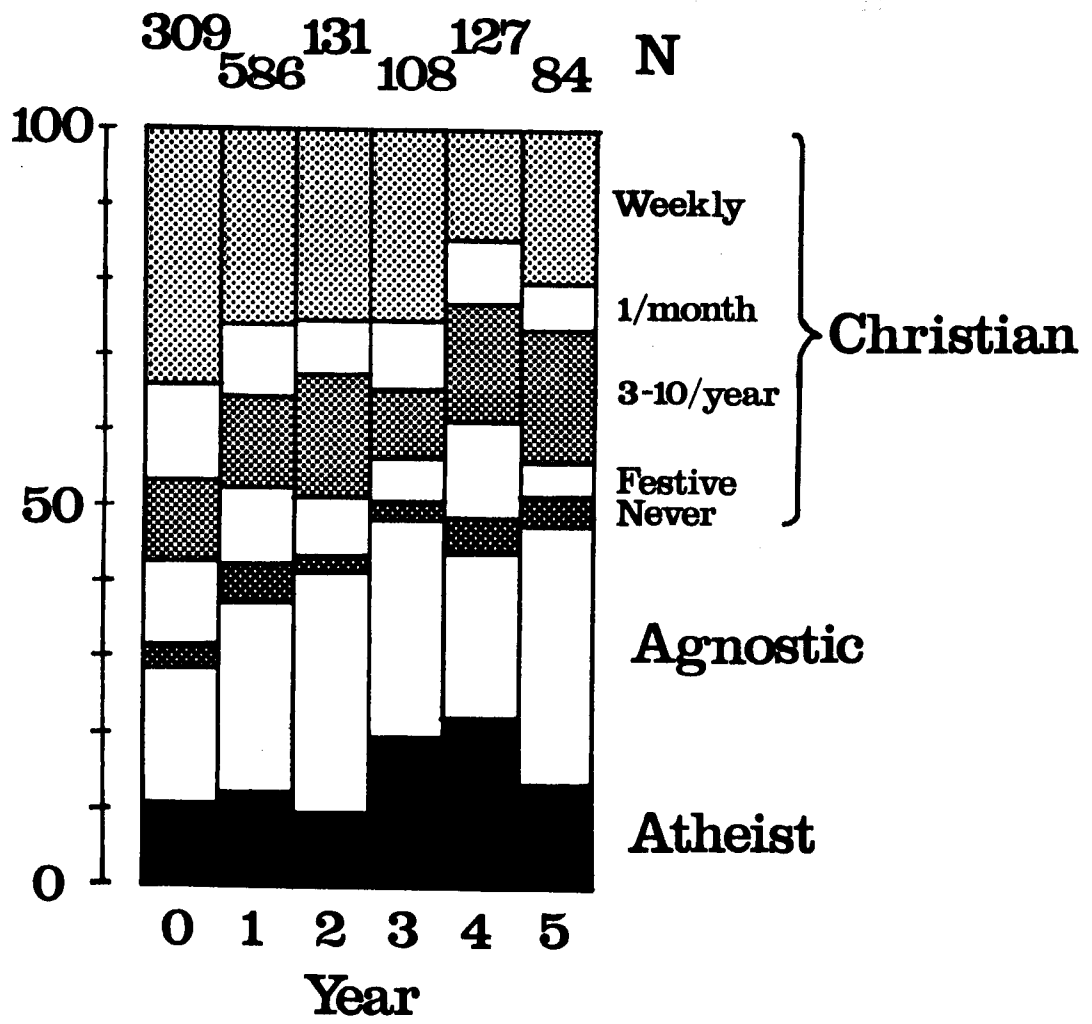


Table 12-1: Responses to question 1 concerning religious beliefs. Figures in brackets are percentages of column totals, excluding those who did not give an answer at all.

	St. Mary's Study	Birmingham study
Christian	220 (65.9)	553 (57.0)
Agnostic	56 (16.8)	234 (24.1)
Atheist	34 (10.2)	126 (13.0)
Jewish	7 (2.1)	14 (1.4)
Other	17 (5.1)	37 (4.5)
Not answered	10 -	37 -
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Total (excluding Not answered)	334 (100.0)	964 (100.0)

Table 12-2: Shows church attendance as a function of religious self-typing for the combined Birmingham and St. Mary's data sets. Figures in brackets are percentages of column totals.
 Kendall's tau-c = $-.458$, $p < 0.001$.

		Religious self-typing		
		Atheist	Agnostic	Christian
Church attendance	Never	118 (75.2)	135 (47.9)	49 (6.4)
	Festive occasions only	30 (19.1)	97 (34.4)	120 (15.7)
	3 - 10x per year	6 (3.8)	38 (13.5)	157 (20.5)
	Once per month	0 (0.0)	6 (2.1)	122 (16.0)
	Every week	3 (1.9)	6 (2.1)	316 (41.4)

Table 12-3: Shows the correlations between the three measures of Religion and the four dimensions of the Eysenck Personality Questionnaire and the Two measures of the State-Trait Anxiety Inventory. (NS: Not significant; + p<.10; * p<.05; ** p<.01; *** p<.001)

	Religious grouping	Christian vs Non-Christian	Church attendance
EPQ-E	-0.0296 NS	0.0484 NS	-0.0064 NS
EPQ-N	-0.1141 +	0.0948 NS	-0.0724 NS
EPQ-P	-0.0851 NS	0.0831 NS	-0.0052 NS
EPQ-L	0.1961 ***	-0.1917 ***	0.0515 NS
STAI State	-0.1090 +	0.1056 +	0.0090 NS
STAI Trait	-0.0831 NS	0.1188 +	0.0472 NS

Table 12-4: Shows the religious group of 153 Birmingham students who were assessed on two separate occasions between one and four years apart, the group on the first assessment being shown on the top of the matrix, and on the second assessment on the side of of the matrix. Underlined values indicate identical responses on the two occasions.

	Atheist	Agnostic	First assessment				
			Never	Festive	Christian 3-10/year	Monthly	Weekly
Atheist	<u>12</u>	11	1	0	4	2	0
Agnostic	6	<u>25</u>	1	4	2	2	2
Christian: Never	0	0	<u>2</u>	1	0	0	0
Christian: Festive	0	0	0	<u>3</u>	5	2	1
Christian: 3-10/year	0	2	0	2	<u>8</u>	8	3
Christian: Monthly	0	1	0	1	2	<u>3</u>	5
Christian: Weekly	0	1	0	1	0	2	<u>28</u>