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Primary personality trait correlates of religious practice and orientation

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Abstract

The aim of the study was to examine the relationships between Eysenck's primary personality factors and various aspects of religious orientation and practice. Some 400 UK undergraduates completed questionnaires constructed from the Batson and Schoenrade Religious Life Inventory (Batson & Schoenrade, 1991) and the Eysenck Personality Profiler (Eysenck, Barrett, Wilson, & Jackson, 1992). As is generally found, all the religious variables correlated negatively with the higher order personality factor of psychoticism. In contrast, among the primary factors, those associated with neuroticism appeared to be the strongest indicators of religiosity. In particular, all the primary traits classically linked to neuroticism correlate positively with the quest orientation. However, fewer primary traits predict religious behaviour in regression and of these, a sense of guilt is the greatest and a common predictor of extrinsic, intrinsic and quest religiosities. Upon factor analysis of the significant personality predictors together with the three religious orientations, the orientations formed a single discrete factor, which implies that extrinsic, intrinsic and quest religiosities have more in common with one another than with any of the personality traits included in the study. This suggests that religious awareness may itself be an important individual difference that is distinct from those generally associated with models of personality.

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1. Introduction

Religion has long been a subject of psychological interest; Galton's (1872) empirical study of the efficacy of public petitionary prayer even predates the emergence of psychology as a formal

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scientific discipline. Later views have been coloured by the work of Freud and Jung who both published extensively in the earlier part of the twentieth century on the origins, nature and effects of religion. Based on his Oedipal theory, Freud viewed God as a projected father figure who was needed for protection, but was also a source of fear and guilt. Freud was openly hostile towards religion (Meng & Freud, 1963) and from his personal observations concluded that not only was religious ritual associated with mental illness, it was a “universal obsessional neurosis of humanity” (Freud, 1907). He believed that religion was an illusion based on myth, evolved by society to moderate the fundamentally aggressive and destructive aspects of human nature (Freud, 1927). Jung at first followed the Freudian analysis of religion (Hostie, 1955), but later came to accept that religion was a factor of positive psychological value (Jung, 1952). Religious systems allow individuals to cope with the paradoxes and uncertainties of life and may encourage self-development. Based on his personal observations, Jung (1933) concluded that a spiritual attitude was an essential of human life and that the development or recovery of a religious outlook was the prime determinant of psychological health.

Two other early works have been influential in shaping later views on religious behaviour. From an examination of the personal writings of famous individuals ranging from St Augustine to Walt Whitman, James (1902) distinguished two kinds of religious experience, which depended on individuals’ temperamental predispositions. At one extreme was the religion of the “healthy-minded”, who were congenitally happy, minimised the evils of existence, and whose religious experiences originated from a sense of gratitude to God. At the other extreme were “sick souls”, who were morbidly inclined, deeply conscious of worldly evil and for whom suffering had an immortal religious significance. Their faith was based upon a strongly felt conviction of personal guilt and often developed in response to conversion following some psychological crisis. James observed the high incidence of abnormal psychological manifestations among great religious leaders and suggested that the pathological aspects of their personalities contributed much to their prestige and authority. However, the experiences of the majority of religious people fell between these two extremes.

James’ ideas were developed by Pratt (1920), who drew attention to a milder type of religious experience that was neither ecstatic nor extreme and was more characteristic of ordinarily religious people. These experiences were often vague and difficult to articulate and he proposed that they originated from a region of consciousness that he described as “the feeling background”. He also proposed that “mild mystics” were not mentally disturbed and were happier than those who had not undergone such experiences:

The two classes. . . [of religious experience]. . . might be called the mild and extreme type. The former is commonplace and easily overlooked, and is never carried to extremes. The other type is usually so striking in its intensity and in its effects that it attracts notice and is regularly regarded as a sign either of supernatural visitation or of a pathological condition. (p. 339)

These early ideas were largely reached by introspection and were not supported empirically other than by the retrospective observation of isolated and extreme individuals. Nevertheless, they have several important personality implications. According to Freud, religious people were suffering from a collective obsessional neurosis, whereas James considered that religious belief could be a source of intense well-being or, for some, at least before religious conversion, a response to psychological distress, morbid inclinations and a deep sense of personal guilt. Pratt also con-

sidered that mild religious experiences could be a source of happiness, although recognising that intense religious experiences could be interpreted as evidence of a pathological psychology.

In the latter half of the twentieth century, the psychology of religion became a more prominent field of study that developed hand-in-hand with empirical evaluation. One key idea was that individuals could be religious in different ways. Allport (1959) proposed two forms of religious behaviour that paralleled theological distinctions between false and true religion. One was utilitarian and instrumental in that it provided comfort, social recognition and status, and endorsement for a chosen way of life. The other was the product of a personally experienced belief that filled the whole of life with motivation and meaning. At first, Allport (1950) called these two types of religion “immature” and “mature”, but subsequently adopted the less value-laden terms “extrinsic” and “intrinsic” (Allport, 1959). For extrinsically oriented individuals, religion functions as a means of achieving some self-serving end, whereas for the intrinsically inclined religion itself is the ultimate end: extrinsics use their religion, intrinsics live it. A measure of intrinsic/extrinsic orientation, later known as the Religious Orientation Scale (Allport & Ross, 1967), was developed to allow the empirical examination of the two dimensions.

There is another aspect of personal religion that is not tapped by the extrinsic and intrinsic dimensions: that of the progressive and interactive search for enlightenment, truth or some transcendent reality. This is particularly noticeable in Buddhist and some Christian mystical writings. This dimension was formally identified by Batson as “religion as quest”, the intellectual search for religious answers to existential problems: “the degree to which an individual’s religion involves an open-ended, responsive dialogue with existential questions raised by the contradictions and tragedies of life” (Batson, Schoenrade, & Ventis, 1993, p. 169). Quest oriented individuals are also conceived as being prepared to entertain religious doubts and to cope with them in a mature and self-critical manner. The dimension of quest, along with the extrinsic and intrinsic orientations, have been incorporated in the Religious Life Inventory (Batson & Schoenrade, 1991). Doubts have been expressed about whether quest can properly be related to religion; it has been suggested that the quest scale might better be regarded as a measure of agnosticism (Donahue, 1985). Quest might also represent a transitory phase experienced by younger individuals who have not yet reached religious maturity (Acklin, 1985; Hood & Morris, 1985). Nevertheless, examination of the quest dimension has accounted for much recent research, perhaps because it seeks to measure an intellectual, rather than a dogmatic approach to religion, and is the dimension most in tune with a liberal religious outlook.

The extrinsic, intrinsic and quest dimensions were originally conceived as different ways of being religious: “The dimensions are independent, unrelated, and not interchangeable” (Batson et al., 1993, p. 189). Yet overlaps between the RLI sub-scales have been noted, and several items appear to load more or less equally on different dimensions (Batson & Schoenrade, 1991; Hove-my, 1994). Significant inter-correlations among the dimensions have also been reported (Francis & Orchard, 1999; Hills & Francis, in press; Hove-my, 1996). Nevertheless, the RLI has been widely used in studies examining the religious dimensions as moderator variables on social attitudes and behaviours. For example, Hunsburger (1995) found that differences in quest were the best predictors of the prevalence of discriminatory attitudes and authoritarianism; Patock-Peckham, Hutchinson, Cheong, and Nagoshi (1998) found that intrinsics exhibited greater control over their drinking behaviours; Haerich (1992) found that intrinsic scores were negatively and extrinsic scores positively related to sexual permissiveness.

The above-mentioned writings of Freud, Jung and James on religious behaviour imply relationships with individual differences in personality. James considered that his two kinds of religious experience were reflections of individual temperament and [Katz \(1971\)](#) also suggested that some of the identified dimensions of personal piety are simply reflections of fundamental differences in individual personalities. A substantial amount of work has been reported on the relationships between aspects of religiosity and the stable personality dimensions of extraversion, neuroticism and psychoticism as measured by Eysenck's P-E-N system ([Eysenck & Eysenck, 1964, 1975](#); [Eysenck, Eysenck, & Barrett, 1985](#)) or extraversion and neuroticism as measured by the Big-Five formulation proposed by [Costa and McCrae \(1985\)](#).

Based upon the theory of social learning and the knowledge that introverts are more easily socialised than extraverts, [Eysenck \(1954\)](#) proposed that introverts would be more sympathetic to ethical and religious ideas. Early attempts to demonstrate the predicted negative relationship between extraversion and religiosity gave conflicting results. [Siegman \(1963\)](#) found that introversion-extraversion was a significant source of variance in participants' religious behaviour, but the direction of the relationship varied with gender, and with religious affiliation between Jewish and Protestant participants. A Polish study found that for the inhabitants of one particular town, both men and women involved in religious activity were "highly introverted" ([Chlewinski, 1984](#)). Similarly, for a substantial but narrowly based sample—student members of the Cambridge Christian Union—religious practice was associated with lower extraversion scores among men, but not women ([Francis, 1992b](#)). Conversely, in a review of past studies, [Nauss \(1973\)](#) found that clergy and clergy trainees inclined towards extraversion. However, other studies ([Argyle & Hills, 2000](#); [Francis, Lewis, Brown, & Philipchalk, 1995](#); [Hills & Argyle, 1998](#); [Roman & Lester, 1999](#); [Taylor & MacDonald, 1999](#)) have failed to identify any significant relationships with extraversion.

There are alternative theoretical positions with regard to neuroticism. As seen above, [Freud \(1907\)](#) has argued that those who are religious, at least those who engage in religious ritual, are afflicted with an obsessional neurosis, which leads to the prediction that religious individuals would score more highly than the non-religious on the neuroticism dimension. [James' \(1902\)](#) view of the incidence of psychological distress among intensely religious individuals points in the same direction. However, the writings of [Jung \(1933, 1952\)](#) suggest that a religious outlook is restorative of and conducive to psychological well-being, and [Pratt \(1920\)](#) claims that mild religious experiences are not associated with mental disturbance and are a source of increased happiness. Is there any empirical evidence to support either of these positions?

Numerous studies have failed to find any relationship between various measures of religious behaviour and neuroticism (for example, [Choudhary, 1989](#); [Francis & Pearson, 1987](#); [Lewis & Maltby, 1995](#)). However, [Hills and Argyle \(1998\)](#) found significantly lower neuroticism scores among church members than among non-church members. Similarly, [Taylor and MacDonald \(1999\)](#), working with a sample of over 1100 Canadian students, reported that Big-5 neuroticism scores were greater for those with no religious affiliation, and that this effect was particularly marked among women. An Indian study ([Singh & Gupta, 1996](#)) found that neuroticism was positively related to religious values. A recent meta-analysis ([Saroglou, 2002](#)) has found that extrinsic religiosity is associated with high levels of neuroticism, whereas "open, mature religiosity and spirituality" reflects emotional stability.

There is a stronger consensus on the inverse association between psychoticism and religious behaviour. From a study of over 1300 British young people, [Francis \(1992a\)](#) concluded that

psychoticism is a dimension of personality fundamental to individual differences in religiosity, and this finding is substantiated by two recent reviews (Argyle, 2000; Eysenck, 1998) and a meta-analysis (Saroglou, 2002). Studies among members of the Greek Orthodox Church (Youtika, Joseph, & Diduca, 1999) and Moslems (Wilde & Joseph, 1997) suggest that Francis' conclusion may be mirrored in other cultures. Eysenck (1998) also suggested that the relationship between psychoticism and religiosity might be "contaminated" by social desirability as assessed by the Lie Scale, in so far as: "low psychoticism and high religiosity are both regarded as socially desirable, . . . individuals high in social desirability claim to be low in psychoticism and high in religiosity" (p. 16). However, several studies have shown that the psychoticism-religiosity relationship remains significant after the scores on the Lie Scale or other measures of social desirability are partialled away (Lewis, 1999, 2000; Wilde & Joseph, 1997).

Fewer studies have been made of the relationships between the dimensions of personality and religious orientations and the results are variable. Using a large sample ($N < 1100$) of Canadian university students, Taylor and MacDonald (1999) found no relationship between extraversion and any measure of religious behaviour, including extrinsic and intrinsic religiosity. Pfeifer and Waelty (1995) found no relationship between neuroticism and extrinsic or intrinsic religiosity, Robinson (1990) found no relationship between extraversion and intrinsicity, and Maltby (1999) reported that neither extrinsic nor intrinsic religiosity was significantly related to extraversion or introversion. Conversely, Chau, Johnson, Bowers, Darvil, and Danko (1990) reported that neuroticism was associated negatively with extrinsic and positively with intrinsic religiosity, whereas a meta-study by Saroglou (2002) demonstrated a positive relationship between extrinsic religiosity and neuroticism. These conflicting results are probably due to the influence of moderator variables; Hutchinson, Patock-Peckham, Cheong, and Nagoshi (1998) found that intrinsic religiosity was predictive of obsessive-compulsive (neurotic) personality traits among Roman Catholics, but not among Protestants or the non-religious. There are few reports of dimensional associations with psychoticism. Robinson (1990) found small and positive relationships between the extrinsic orientation and psychoticism, whereas Maltby (1999) found that psychoticism related only to the intrinsic orientation.

The work so far reviewed has been conducted with scales designed to measure the higher-order personality dimensions of extraversion, neuroticism and psychoticism. A derivative instrument, the Eysenck Personality Profiler (Eysenck, Barrett, Wilson, & Jackson, 1992), is now available which is designed to identify the primary traits believed to underlie each of these higher-order personality dimensions. The present study aims to explore the associations between religious behaviours and these primary individual differences in personality.

2. Method

2.1. Participants

Four hundred first-year undergraduate students (110 men, 290 women) attending a college of higher education in Wales took part in the study, of whom 94% were pursuing studies in education or the humanities. Ages ranged from 18 to over 50 years; 65% of the participants were under 20 years old and 17% in their 20s. Seventeen per cent stated that they attended church weekly,

51% that they went to church from time to time and 32% never attended. The largest denominational groups were Anglican (27%), Roman Catholic (13%) and Methodist (7%), and 33% claimed no religious affiliation.

2.2. Measures

Participants were invited to complete and return self-report questionnaires including measures of religiosity and personality. Religious orientations were assessed by the Religious Life Inventory (Batson & Schoenrade, 1991), which includes sub-scales for the measurement of the extrinsic (11 items), intrinsic (9 items) and quest (12 items) dimensions of religiosity. Each item was rated on a 9-point Likert scale ranging from “strongly agree” to “strongly disagree”. Primary personality traits were evaluated by the Eysenck Personality Profiler (EPP; Eysenck et al., 1992). This scale measures 21 primary traits, seven of which are associated with each of the second-order factors of extraversion, neuroticism and psychoticism. Individual traits are evaluated by sub-scales of 20 items, each to be answered by “yes”, “no” or “can’t decide”. In addition, the instrument provides a similar 20-item Lie Scale that assesses the tendency of individuals to dissimulate by providing socially acceptable answers. Costa and McCrae (1995) and Furnham, Jackson, Forde, and Cotter (2001) have examined the reliability and validity of the EPP. Participants were also invited to provide demographic information, frequency of church attendance on a five-point scale ranging from “never” to “weekly”, and frequency of personal prayer on a five-point scale ranging from “never” to “daily”.

3. Results and discussion

3.1. Associations with higher-order factors

Table 1 presents the Pearson correlations between extraversion, neuroticism, psychoticism, dissimulation (Lie Scale) and the demographic and religious variables. Some of the correlations are highly significant although most are modest in size. As generally found (Eysenck et al., 1985), men score more highly on psychoticism than women, and the negative association between gender and dissimulation suggests that women are more socially conforming than men in answering

Table 1
Correlations between higher order personality factors and gender, age and religious variables

Higher-order factor	Gender	Age	Church attendance	Personal prayer	Extrinsic religiosity	Intrinsic religiosity	Quest
Extraversion	0.09	−0.02	−0.05	−0.01	−0.06	0.01	0.01
Neuroticism	−0.06	−0.04	0.01	0.02	0.22**	0.07	0.26**
Psychoticism	0.29**	−0.06	−0.24**	−0.24**	−0.17*	−0.23**	−0.21**
Dissimulation	−0.19**	0.06	0.07	0.00	0.15*	0.10	0.02

^a $P \leq 0.01$.

^b $P \leq 0.001$.

the questionnaire. There are no significant associations with age, perhaps because the participant sample—of undergraduates—contained relatively few older individuals.

There are no significant associations of extraversion-introversion with any of the religious variables. Neuroticism is not associated with the behaviour variables—frequency of church attendance and personal prayer. It is, however, positively associated with extrinsic religiosity and quest although not intrinsic religiosity. It is reasonable to suggest that extrinsically and quest-oriented individuals will be more subject to the doubts and anxieties that are primarily associated with neuroticism. Psychoticism is related significantly and negatively to all of the religious variables, behavioural or psychometric. All associations are broadly similar in magnitude, although that for extrinsic religiosity is weaker. Because of the previously noted gender effect, it was necessary to examine whether the observed associations with the religious variables could be explained by gender differences in the sample. A series of separate hierarchical multiple linear regressions of the psychoticism scores, not reported here, was conducted, in which gender was entered first, followed by one of the religious variables. In every case, after controlling for the influence of gender, the addition of a religious variable made a significant additional contribution to the total variance explained. It therefore appears that the associations with psychoticism reported in Table 1 are not due to gender differences alone, and that the observed negative relationship with psychoticism is a general characteristic of religiosity.

3.2. *Associations with primary factors*

Table 2 summarises the partial correlations between the primary personality factors and each of the religious variables after controlling for the effects of gender, age and dissimulation as measured by individual Lie Scale scores. Each primary factor is described in terms of the pair of qualities which best represent the range of the factor, and a positive correlation indicates a tendency towards the first-named. The significant extraversion-introversion primary factors suggest that sociability is not a notable characteristic of religious people and that high scorers on extrinsic religiosity and quest are less sociable. There are significant positive associations with an ambitious outlook for all of the religious variables, except the frequency of personal prayer. High scorers on the intrinsic and quest dimensions tend towards dogmatism. Finally, those who more frequently attend church and say their prayers, appear to be non-aggressive (peaceable?), but there are no significant relationships with any of the other religiosity dimensions.

There are more, significant associations with the primary factors of neuroticism and they tend to be marginally greater in magnitude than for extraversion. Individual differences in self-esteem are generally insignificant, although high scorers on extrinsic religion and quest incline towards low self-esteem. Those who more frequently attend church and pray privately report significantly greater happiness, but the quest-inclined appear to be significantly less happy. High scorers on the extrinsic and quest scales are significantly more anxious than low scorers and are dependent rather than autonomous. They also tend towards hypochondria, and each religious orientation displays obsessive traits. However, there are two general features in the data for the neuroticism-related factors. Firstly, associations with a feeling of guilt involve every religious variable, both behavioural and psychometric; the association between guilt and quest, $r = 0.36(343)$, $P < 0.001$, is the strongest relationship noted for any of the EPP primary factors. Secondly, quest is significantly associated with every primary factor that is included in the higher-order factor of neuroticism, and

Table 2

Partial Correlations between primary personality factors and religious variables controlling for gender, age and dissimulation

Primary factors		Church attendance	Personal prayer	Extrinsic religiosity	Intrinsic religiosity	Quest
<i>Extraversion</i>	<i>Introversion</i>					
Active	Inactive	0.02	0.04	−0.03	0.02	−0.05
Sociable	Unsociable	−0.03	0.03	−0.15*	−0.03	−0.10*
Expressive	Inhibited	−0.08	−0.04	−0.01	−0.05	0.04
Assertive	Submissive	−0.05	−0.02	−0.20***	−0.02	−0.08
Ambitious	Unambitious	0.13*	0.06	0.12*	0.15**	0.18**
Dogmatic	Flexible	0.02	0.03	0.04	0.17**	0.19**
Aggressive	Peaceful	−0.15*	−0.12*	0.01	−0.09	0.05
<i>Neuroticism</i>	<i>Stability</i>					
Inferiority	Self-esteem	−0.05	−0.02	0.17**	0.01	0.17**
Unhappy	Happy	−0.13*	−0.13*	0.10	−0.06	0.14**
Anxious	Calm	0.01	0.03	0.23**	0.07	0.23**
Dependent	Autonomous	−0.11	−0.09	0.22**	−0.07	0.17**
Hypochondriacal	Healthy	−0.06	0.01	0.13*	0.05	0.15**
Guilt	Guilt free	0.14*	0.24***	0.21***	0.26***	0.36***
Obsessive	Casual	0.09	0.14*	0.25***	0.16**	0.22***
<i>High Psychoticism</i>	<i>Low Psychoticism</i>					
Risk-taking	Careful	−0.21***	−0.27***	−0.15*	−0.19***	−0.19***
Impulsive	Controlled	−0.11*	−0.09	−0.03	−0.01	−0.01
Irresponsible	Responsible	−0.14*	−0.14*	−0.10	−0.13**	−0.13*
Manipulative	Empathic	−0.25***	−0.19***	0.10	−0.02*	0.02
Sensation seeking	Unadventurous	−0.12*	−0.18**	−0.13*	−0.14*	−0.14*
Tough-minded	Tender-minded	−0.06	−0.11*	−0.06	−0.07	−0.12*
Practical	Reflective	−0.08	−0.10	−0.05	−0.13*	−0.22***

* $P \leq 0.05$.

** $P \leq 0.01$.

*** $P \leq 0.001$.

extrinsic religiosity with all but one. The uniform directions of the associations would suggest that quest- and extrinsically-oriented individuals display the trait characteristics of the classical neurotic.

Significant correlations with the primary factors of psychoticism involve every religious variable and all are negative, that is, indicative of low psychoticism scores. Individuals who are in any way religious are risk-averse. Frequent church attenders tend to be controlled rather than impulsive, but this is not reflected by any of the psychometric components of religiosity. There is also a general trend towards responsibility and empathy, although not for high scorers on the extrinsic dimension. Similarly, every religious variable indicates that religious individuals tend to be unadventurous rather than sensation seekers. There is only one significant relationship with the tough/tender minded primary factor and that involves quest and a tendency toward tender-mindedness. High scorers on the intrinsic and quest components show evidence of a reflective disposition rather than practicality (pragmatism?). The number of the significant associations

with the primary factors of psychoticism and the uniformity of their direction—all are negative—lend support to the argument that low psychoticism is a general characteristic of religious people.

The results of Table 2 indicate many significant associations with the primary factors but apart from the association between awareness of guilt and a quest orientation, none is substantial and some are trivial. To identify those more important to the dimensions of extrinsic, intrinsic and quest religiosity, these dimensions were separately, and in turn, regressed against all of the primary factors. This was completed in two stages: in the first, gender, age and dissimulation were entered to correct for any effects of these variables; the personality trait factors were next entered either by multiple entry or stepwise procedures. There was little difference in the results of the two procedures in terms of the amounts of total variance explained, R^2 . The stepwise results are reported in Table 3, because these indicate the relative importance of the significant predictors in terms of their order of entry into the regression equation (shown in the table by numerals in parentheses).

Nine of the 21 primary factors were significant predictors of at least one of the dimensions of religiosity, and traits from each of the second-order personality factors were represented. The most important observation is that a sense of guilt is associated with each religious orientation, and is the strongest predictor of intrinsic and quest religiosities. There were only two other predictors of extrinsic religiosity, obsessiveness and submissiveness, of which the former was more important. In addition to guilt, quest was predicted only by a sense of responsibility. The predictors of intrinsic religiosity were more numerous. Guilt was the prime predictor and the strongest of any recorded, $\beta=0.436$, $P<0.001$. In descending order of importance, intrinsics also appear to be happier, risk averse, dogmatic, non-aggressive, and autonomous rather than dependent. These results offer some clarification of the complex picture first presented in this

Table 3
Primary personality predictors of extrinsic, intrinsic and quest religiosity^a

Primary factors		Extrinsic religiosity	Intrinsic religiosity	Quest religiosity
<i>Extraversion</i>	<i>Introversion</i>			
Assertive	Submissive	-0.147** (2)		
Dogmatic	Flexible		0.197*** (4)	
Aggressive	Peaceful		-0.190** (5)	
<i>Neuroticism</i>	<i>Stability</i>			
Unhappy	Happy		-0.165* (2)	
Dependent	Autonomous		-0.182* (6)	
Guilt	Guilt free	0.118* (3)	0.436*** (1)	0.369*** (1)
Obsessive	Casual	0.220*** (1)		
<i>High Psychoticism</i>	<i>Low Psychoticism</i>			
Risk-taking	Careful		-0.134* (3)	
Irresponsible	Responsible			-0.168** (2)
R^2		0.137	0.208	0.157

^a Predictor values are standardised regression coefficients.

* $P \leq 0.05$.

** $P \leq 0.01$.

*** $P \leq 0.001$.

study. It appears that religious behaviour is associated with aspects of all the Eysenckian PEN higher-order factors, in contrast to previous findings (Argyle & Hills, 2000; Francis, 1992a; Hills & Argyle, 1998) that psychoticism is the sole or dominant predictor of religiosity. The present results also suggest that the primary factors associated with neuroticism, may be at least as important as those associated with psychoticism, and that among these a sense of guilt predominates. This finding is in part supportive of the views of Freud and Pratt on the nature of religion, both of whom considered that religious beliefs were associated with a sense of guilt. However the regression results do not support the view that religious individuals are otherwise neurotic; two of the observed primary factors associated with neuroticism are inversely related to (intrinsic) religiosity; intrinsics tend to be happy and autonomous.

It is also possible to interpret the conceptual assumptions that have been made in defining the extrinsic, intrinsic and quest dimensions of religiosity in terms of their associated personality traits as identified above. The extrinsically religious individual is nearest the sample average, differing only in an inclination towards guilt, obsessive behaviour and towards compliance. It seems reasonable to suggest that such a person would be attracted towards the ritual elements of public and private worship and be comfortable about accepting and adopting the received wisdom of religious teachings. Quest-oriented individuals however, feel guilty about the uncertainties and inconsistencies of life and come to terms with them through a personal religious approach, which they do in a reflective and responsible manner. Intrinsically oriented individuals demonstrate the greatest number of personality differences from the sample average and have little in common with the extrinsically inclined apart from a sense of guilt. They experience the same sense of personal guilt as quest-oriented individuals, but to a greater degree. However, they are assured (autonomous) in their religious beliefs and inclined to be dogmatic about them. In line with their firm religious beliefs, they are both peaceable and careful. They also appear to be happier! These, albeit tentative, observations provide some independent support for the separate existence of the extrinsic, intrinsic and quest dimensions of religiosity.

Given the almost universal agreement in the literature, from correlational studies, that religiosity is inversely related to psychoticism, it is surprising that only two of the primary factors traditionally associated with psychoticism feature as significant predictors of religiosity in Table 3. This could be related to the overall properties of the EPP. Eysenck et al., (1992) observed that in factor analysis, the primary factors that define neuroticism and extraversion are much more closely grouped than those of psychoticism. Risk-taking, manipulation and sensation-seeking loaded on extraversion as much as on psychoticism, and tough-mindedness, practicality and obsessiveness appeared to belong to none of the higher order factors. These ambiguous primary factors, obsessiveness apart, are those traditionally associated with psychoticism. These considerations could explain why psychoticism appears to be under-represented in the above regression analyses.

In order to investigate how these observations might relate to the present study, an exploratory factor analysis was conducted for the significant predictors together with the individual scores for each dimension of religiosity. Principal components analysis extracted four factors with Eigen values > 1 , and the results after orthogonal (Varimax) rotation are reported in Table 4. The first and largest factor comprises unhappiness, dependency, guilt, and a secondary loading on non-assertiveness, all qualities consistent with a neurotic disposition. The third factor comprises three primary factors of extraversion: dogmatism, aggressiveness and assertiveness. The fourth factor includes irresponsibility, risk-taking and being casual. These items fit best, but not well, into the

Table 4
Factor analysis of predictive primary factors and dimensions of religiosity

Primary factors		Factor 1	Factor 2	Factor 3	Factor 4	h^2
Dependent	Autonomous	0.90				0.81
Unhappy	Happy	0.89				0.81
Guilt	Guilt free	0.77				0.70
Quest			0.90			0.84
Intrinsic religiosity			0.81			0.68
Extrinsic religiosity			0.70			0.55
Dogmatic	Flexible			0.82		0.75
Aggressive	Peaceful			0.76		0.71
Assertive	Submissive	−0.42		0.74		0.78
Irresponsible	Responsible				0.80	0.72
Risk taking	Careful				0.74	0.68
Obsessive	Casual				−0.74	0.72
Variance explained		26%	21%	16%	10%	

Factor loadings <0.35 not shown. h^2 = communality.

typology of psychoticism; although the change in sign of the obsessive-casual trait is puzzling. *But by far the most notable observation is that the dimensions of religiosity form a discrete and substantial second factor that is not associated with any of the primary or higher-order factors of personality.*

Although it has not been claimed that the three dimensions of religiosity are mutually exclusive (Hunt & King, 1971), they were originally conceptualised to represent different ways of being religious and can be statistically differentiated (Hilty, Morgan, & Hartman, 1985). Nevertheless, the results of Table 4 would suggest that the different dimensions of religiosity have more in common with one another, than with any of the primary factors of personality. This being so, it can be concluded either that being religious is associated with some aspect of personality that is not represented in the 21 primary factors of the EPP, or that spiritual awareness is itself an individual personality difference that is missing from most traditional models. The latter possibility is consistent with the suggestion of Piedmont (1997) that ‘spiritual transcendence’ may be an additional factor that is not included in the five-factor model of personality.

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