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Why are women more religious than men? Testing the explanatory power of personality theory among undergraduate students in Wales.

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Abstract

This study tests the explanatory power of personality-based psychologically-grounded theories to account for the well-established finding within the psychology of religion that within Christian and post-Christian contexts women are more religious than men. A sample of 1,682 undergraduate students in Wales completed the short form of the Eysenck Personality Questionnaire Revised together with the adult form of the Francis Scale of Attitude toward Christianity and measures of frequency of church attendance, and frequency of personal prayer. These data confirm that women record higher levels of religiosity and lower levels of psychoticism, and demonstrate that psychoticism is the strongest predictor of individual differences in religiosity. Multiple-regression analyses show that, when individual differences in personality are taken into account, biological sex adds no further impact on religiosity. This finding suggests that higher levels of religiosity among women may be interpreted as a function of basic psychological differences in levels of psychoticism rather than as a sociological function of being female.

Key words: religion, sex differences, personality, Eysenck.

Introduction

According to Argyle and Beit-Hallahmi (1975) the conclusion that women are more religious than men is one of the best attested findings in the psychology of religion. Recently reviewing the body of empirical research concerned with sex differences in religion, Francis and Penny (2013) confirmed this assessment, but also cautioned against unguarded generalisation beyond the Christian and post-Christian contexts. Debate and controversy remain, however, concerning a satisfactory theoretical framework which can account for the observed differences. Broadly speaking, two main groups of theories have been advanced to account for the greater religiosity of women: sociologically-grounded theories and psychologically-grounded theories. Sociologically-grounded theories are concerned with the external social and contextual factors that may help to shape the experiences of men and women differently. Psychologically-grounded theories are concerned with the internal factors that may help to shape the way that individuals (both men and women) respond differently to experiences. This study is designed to examine specifically the explanatory power of personality-based psychologically-grounded theories. Drawing on the analytic model proposed originally by Thompson (1991) within the context of gender-orientation theories and, subsequently, tested and developed by Francis and Wilcox (1996, 1998) and by Francis (2005), this study explores the ability of Eysenck's dimensional model of personality (Eysenck & Eysenck, 1991) to account for observed sex differences in religiosity (assessed as frequency of church attendance, frequency of personal prayer, and attitude toward religion) among undergraduate students studying in Wales.

Gender-orientation theories

Gender-orientation theories focus specifically on the psychological constructs of masculinity and femininity which are considered as stable and enduring aspects of personality among both men and women. Gender-orientation theory has its roots in the conceptualisation

and measurement proposed by Bem (1981) through the Bem Sex Role Inventory. According to this conceptualisation, masculinity and femininity are not bipolar descriptions of a unidimensional construct, but two orthogonal personality dimensions. Empirically the Bem Sex Role Inventory demonstrates considerable variations in both femininity and masculinity among both men and women. This theory was brought into the debate on sex differences in religiosity by Thompson (1991), who argued that individual differences in religiosity should be affected more by gender-orientation than by being male or female. According to this approach, being religious is a consonant experience for *people* with a feminine orientation, while men as well as women can have a feminine orientation.

Thompson (1991) formulated two hypotheses concerning the relationship between gender-orientation and individual differences in religiosity between men and women. The first hypothesis was that, if being religious is a gender type attribute related to women's lives in general, then multivariate analyses which control for the personality dimensions of masculinity and femininity should demonstrate that being female continues to have a significant effect in predicting religiosity. The second hypothesis was that, if being religious is a function of gender-orientation, then multivariate analyses which control for the personality dimensions of masculinity and femininity should result in no additional variance being explained by being female. Thompson's analysis of data from a sample of undergraduate students in the USA, who completed the Bem (1981) Sex Role Inventory alongside five measures of religiosity, supported the hypothesis that being religious is a function of gender-orientation.

Building on this research model, a series of studies have employed the Bem (1981) Sex Role Inventory alongside the Francis Scale of Attitude toward Christianity (Francis, Lewis, Philipchalk, Brown, & Lester, 1995), a measure of the affective dimension of religion, to test Thompson's hypotheses. The findings from these studies reported by Francis and

Wilcox (1996, 1998) and by Francis (2005) have demonstrated that femininity scores predict gender differences in religiosity. Most important, however, is the finding that when these studies employed multiple-regression to control for the impact of gender-orientation on religiosity, sex had no additional impact on individual differences in religiosity. This demonstrates, in agreement with Thompson's hypotheses, that higher levels of religiosity may be interpreted as a function of gender-orientation rather than as a function of being female. Other empirical studies utilising alternative measures of religiosity alongside the Bem Sex Role Inventory (Bem, 1981) support the conclusion that higher femininity scores are associated with higher levels of religiosity within the context of the Christian faith (Smith, 1990; Mercer & Durham, 1999) and within the context of the Islamic faith (Abu-Ali & Reisen, 1999), although these studies do not proceed to explore whether or not biological sex accounts for further variance in religiosity scores after controlling for femininity scores.

Another strand of research supporting the view that gender-orientation is fundamental to religiosity is concerned with the personality profile of male clergy. For example, Ekhardt and Goldsmith (1984) found that male seminarians scored a feminine profile on the Personality Preference Form (Jackson, 1974). Goldsmith and Ekhardt (1984) found that male seminarians scored higher on the femininity dimension of the Bem Sex Role Inventory (Bem, 1981). Francis, Jones, Jackson, and Robbins (2001) found that male Anglican clergy in England, Ireland, Scotland, and Wales scored lower on the masculinity scale of the Eysenck Personality Profiler (Eysenck, Wilson, & Jackson, 1999).

However, as Wilcox and Francis (1997) have argued, while gender-orientation is a clear predictor of individual differences in religiosity, the femininity and masculinity constructs operationalised by the Bem Sex Role Inventory were conceptualised in the 1970s and are in need of updating. The incompatibility of these constructs with modern perceptions of femininity and masculinity may be what is being observed with regard to findings of

recent studies which report no connection between gender-orientation and religiosity (Simpson, Cloud, Newman, & Fuqua, 2008), and of recent studies which report changes in the factor structure of the scale (Choi, Fuqua, & Newman, 2008).

Personality-based theories

Personality-based theories propose the existence of a range of stable and enduring psychological constructs that consistently differentiate between men and women. The three dimensional model of personality proposed by Eysenck (Eysenck & Eysenck, 1991) and operationalized through the Eysenck Personality Questionnaire (Eysenck & Eysenck, 1975), and the Eysenck Personality Questionnaire Revised (Eysenck, Eysenck, & Barrett, 1985), maintains that individual differences can be most adequately and economically summarised in terms of the three higher-order factors defined by the high scoring poles as extraversion, neuroticism, and psychoticism. Two of these factors have recorded significant and stable sex differences over time and across cultures. From the early development of the three dimensional model, higher psychoticism scores were associated with being male (Eysenck & Eysenck, 1976), on a continuum from tendermindedness, through toughmindedness, to psychotic disorder. Indeed, Eysenck, Barrett, Wilson, and Jackson (1992) in their identification of seven constituent components of high psychoticism scores, one of these components is labelled as masculinity. On the other hand, higher neuroticism scores have been associated with being female (see Francis, 1993), on a continuum from emotional stability, through emotional lability, to neurotic disorder.

A series of studies employing Eysenck's dimensional model of personality alongside the Francis Scale of Attitude toward Christianity (Francis, Lewis, Philipchalk, Brown, & Lester, 1995) have demonstrated that psychoticism scores comprise the dimension of personality fundamental to individual differences in religiosity, and that neuroticism scores are unrelated to individual differences in religiosity after controlling for sex differences (Kay,

1981; Francis & Pearson, 1985; Francis, 1992a). These findings have been consistently replicated internationally, including in: Australia and Canada (Francis, Lewis, Brown, Philipchalk, & Lester, 1995), Northern Ireland (Lewis & Joseph, 1994; Lewis, 1999, 2000), Republic of Ireland (Maltby, 1997), the USA (Roman & Lester, 1999), France (Lewis & Francis, 2000), Greece (Youtika, Joseph, & Diduca, 1999), Hong Kong (Francis, Lewis, & Ng, 2003), and South Africa (Francis & Kerr, 2003), as well as in the UK (Francis, 1999). Moreover, recent studies have reported similar results within the context of the Jewish faith (Francis, Katz, Yablon, & Robbins, 2004), and the Hindu faith (Francis, Robbins, Santosh, & Bhanot, 2008). These findings would account for sex differences in religiosity in terms of basic differences between men and women in levels of psychoticism.

Further support for this view, drawing on Eysenck's three dimensional model of personality, is provided by a series of studies exploring the personality profile of male clergy. Routinely these studies have suggested that male clergy display a characteristically feminine profile (see Francis, 1991, 1992b; Robbins, Francis, & Rutledge, 1997; Robbins, Francis, Haley, & Kay, 2001).

The model of personality proposed by Costa and McCrae (1985) in the big five factor model identifies five higher-order factors defined by the high scoring poles as neuroticism, extraversion, openness, agreeableness, and conscientiousness. Two of these factors have recorded significant and stable sex differences over time and across cultures. Higher neuroticism scores are consistently associated with being female (Costa & McCrae, 1992), where this relationship is particularly shaped by high scores on the anxiety, vulnerability, and self-consciousness facets. Higher agreeableness scores are consistently associated with being female (Costa, Terraciano, & McCrae, 2001; Schmitt, Realo, Voracek, & Allik, 2008), where this relationship is particularly shaped by high scores on the tender-mindedness and trust facets.

A series of studies have found evidence to support the view that agreeableness and conscientiousness are the personality factors fundamental to individual differences in religiosity (Lodi-Smith & Roberts, 2007; Saroglou, 2002, 2010). Relatively few studies employing the big five factor model of personality have been designed to deal specifically with the question of sex differences in religiosity, although Saroglou (2010) argues that low psychoticism, according to the Eysenck model, is comparable to a blend of agreeableness and conscientiousness in the big five factor model (Goldberg & Rosolack, 1992; McCrae & Costa, 2003), and is likely to be related to religiousness in a similar way.

Findings among empirical studies which have included sex in the relationship between the big five factor model and religiosity are somewhat mixed and less definitive than those demonstrated by empirical studies employing Eysenck's model of personality. For example, Saroglou's (2010) meta-analyses across 55 nations demonstrated that sex had no significant impact on the relationship between religiosity, agreeableness, and conscientiousness. However, some empirical studies exploring the relationship between religiosity and the big five factor model have demonstrated that sex does play a part in shaping this relationship (Adamovova & Striženec, 2004; Cramer, Griffin, & Powers, 2008; Galen & Kloet, 2011). These studies, in addition to others, demonstrate that agreeableness emerges as the strongest predictor of religiosity even when sex differences are controlled for (see also Robbins, Francis, McIlroy, Clarke, & Pritchard, 2010; Saroglou & Fiasse, 2003). This appears to suggest that sex differences in religiosity could be accounted for in terms of basic differences between men and women in levels of agreeableness.

Research question

Reviewing the relevance of these findings, Francis and Penny (2013) concluded that psychologically-grounded theories were likely to offer the most consistent and powerful explanation of observed sex differences in religiosity. However, although this point has been

clearly demonstrated by the series of studies employing gender-orientation theory, there are no studies that have employed the same analytic model, proposed by Thompson (1991) and tested by Francis and Wilcox (1998,1999) and by Francis (2005), in respect of personality-based theories (Eysenck's dimensional model, or the big five factor model). Against this background, the present study has been designed specifically to examine whether sex differences in religiosity (assessed as frequency of church attendance, frequency of personal prayer and attitude toward religion) persist after individual differences in Eysenck's personality model have been taken into account.

Method

Participants

A sample of 1,682 undergraduate students in Wales participated in the project. The sample comprised 443 males (26%), 1,235 females (73%), and 4 respondents who failed to disclose their sex; 1,204 were aged under 20 (72%), 349 were aged between 20 and 29 (21%), 86 were aged between 30 and 39 (5%), 37 were aged between 40 and 49 (2%), and 6 respondents failed to disclose their age. Within this sample, 18% claimed they went to church weekly, and 23% claimed they never went to church; 15% claimed that they prayed daily, and 24% claimed that they never prayed.

Measures

Church attendance was assessed by the item 'How often do you attend a place of religious worship (e. g. church, mosque, temple, etc)?' Responses were recorded on a five-point scale: never (1), occasionally (2), at least once a month (3), at least once a week (4), nearly every day (5).

Personal prayer was assessed by the item 'Do you pray by yourself?' Responses were recorded on a five-point scale: never (1), occasionally (2), at least once a month (3), at least once a week (4), nearly every day (5).

Attitude toward religion was assessed by the adult form of the Francis Scale of Attitude toward Christianity (Francis, Lewis, Philipchalk, Brown, & Lester, 1995). This is a 24-item Likert-type instrument, employing a five-point response scale ranging from agree strongly, through agree, not certain, and disagree, to disagree strongly. The individual items assess the respondents' affective response to five key components of the Christian faith including: God, Jesus, Bible, church, and prayer. The Francis Scale of Attitude toward Christianity, originally proposed by Francis (1978), has been employed in over 200 empirical studies exploring the correlates of attitude toward religion over a thirty-year period. During this programme of research the scale has consistently been shown to function reliably and validly from the age of eight years to late-adult life (see Francis, 2009, for review).

Personality was assessed by the short form of the Eysenck Personality Questionnaire Revised (Eysenck, Eysenck, & Barrett, 1985). This is a 48-item instrument which proposes four twelve-item measures of extraversion, neuroticism, psychoticism, and a lie scale. Each item is assessed on a dichotomous scale: yes and no.

Data analysis

The data were analysed by SPSS statistical package using the reliability, correlation, and multiple-regression functions. Stepwise multiple-regression was employed to control for individual differences in personality before testing for the influence of sex on church attendance, personal prayer and attitude toward Christianity.

Results

Table 1 presents the mean scale scores for males and females separately, together (where appropriate) with the alpha coefficients (Cronbach, 1951). These data demonstrate

- insert table 1 about here -

that the attitude toward Christianity scale, extraversion scale, neuroticism scale, and lie scale all function with satisfactory levels of internal consistency reliability above the threshold

recommended by DeVellis (2003) of .65. The psychoticism scale, however, is less satisfactory. Sex differences in the mean scale scores are consistent with previous research findings. Females record higher scores than males in terms of attitude toward Christianity, extraversion, neuroticism, and the lie scale, while males record higher scores than females in terms of psychoticism.

Table 2 presents correlations between church attendance, personal prayer, attitude toward Christianity, psychoticism, extraversion, neuroticism, and the lie scale. Two features of these data merit comment. First, these data demonstrate that there is a significant positive correlation between sex and all three measures of religiosity. Females record higher frequency of church attendance, higher frequency of personal prayer, and a more positive attitude toward Christianity than males. Second, these data demonstrate: a significant negative correlation between psychoticism and church attendance, personal prayer, and attitude toward Christianity; significant positive correlations between neuroticism and personal prayer and attitude toward Christianity; and a significant positive correlation between the lie scale and church attendance.

Table 3 presents the three regression models which propose church attendance, personal prayer, and attitude toward Christianity as the dependent variables and which examine the cumulative predictive power of psychoticism, extraversion, neuroticism, lie scale scores, and sex, entered in that fixed-order. These data confirm that psychoticism is the key predictor of religiosity in respect of church attendance, personal prayer, and attitude toward Christianity. These data also demonstrate that, after controlling for all personality dimensions in each model, sex contributes no additional predictive power to church attendance, personal prayer, or attitude toward Christianity.

Discussion

Building on the analytic framework proposed by Thompson (1991), the aim of the present study was to examine whether sex differences in religiosity persist after individual differences in Eysenck's dimensional model of personality have been taken into account. A sample of 1,682 undergraduate students in Wales completed measures of Eysenck's dimensional model of personality alongside three measures of religiosity, frequency of church attendance, frequency of personal prayer, and the Francis Scale of Attitude toward Christianity (a measure of affective religiosity). Multiple-regression analyses controlling for the influence of personality on religiosity scores reveal three key findings concerning individual differences in religiosity.

First, these data confirm the general consensus that women are more religious than men in Christian or post-Christian contexts. Women in this study recorded higher frequency of church attendance, higher frequency of personal prayer, and higher scores on attitude toward Christianity than men. This finding reflects wider empirical research within the psychology of religion which consistently demonstrates that, within Christian or post-Christian contexts, women are more religious than men (Argyle & Beit-Hallahmi, 1975; Francis & Penny, 2013). This is also supported by previous empirical studies that have explored the relationship between sex and religiosity, employing measures of church attendance (Crockett & Voas, 2006; Pollak & Pickel, 2007), personal prayer (Maselko & Kubzansky, 2006; Baker, 2008) and the Francis Scale of Attitude toward Christianity among adults (Kay & Francis, 1996).

Second, these data confirm that, in terms of Eysenck's dimensional model of personality, psychoticism is the strongest predictor of individual differences in religiosity. Findings from this study confirm the general pattern of results demonstrated by previous empirical studies that lower psychoticism scores are related to higher levels of religiosity (Kay, 1981; Francis & Pearson, 1985; Francis, 1992a).

Third, these data demonstrate that, when personality is controlled for, biological sex has no additional impact on religiosity scores in terms of worship attendance, personal prayer, and attitude toward Christianity. This shows that sex differences in religiosity can be accounted for in terms of individual differences in personality rather than in terms of being male or female. Findings from this study confirm that sex differences in religiosity can be attributed to basic differences between men and women in levels of psychoticism, whereby greater religiosity among women goes hand in hand with lower levels of psychoticism. Within Eysenck's dimensional model, masculinity and femininity are conceived of as comprising one of the seven constituent components of psychoticism (Eysenck, Barrett, Wilson, & Jackson, 1992), where low psychoticism is linked with femininity and high psychoticism is linked with masculinity. On this basis, the personality profile which shapes greater religiosity is one of psychological femininity. This provides further support for the hypothesis proposed by Thompson (1991), working within the framework of gender-orientation theory, that femininity is the key predictor of individual differences in religiosity. Studies testing this hypothesis have supported this claim by demonstrating that higher levels of religiosity are a function of gender-orientation rather than a function of being female (Francis & Wilcox, 1996, 1998; Francis, 2005). Taken together, findings from these studies provide firm evidence to support the view that sex differences in religiosity may be most adequately conceptualised in terms of psychological theories regarding differences in personality without recourse to sociological theories regarding contextual differences in the experiences of men and women.

Conclusion

To conclude, the present paper reports on the findings of the first study designed specifically to examine whether sex differences in religiosity persist after individual differences in personality are taken into account by employing Eysenck's dimensional model

of personality. This study conducted among undergraduates in Wales confirms that within Christian or post-Christian contexts women are still found to be more religious than men, and that greater religiosity among women can be adequately accounted for in terms of basic personality differences.

Future research is now needed to build on these findings in four ways. The present study is the first of its kind to explore whether sex differences in religiosity persist after individual differences in Eysenck's dimensional model of personality have been controlled for. Replication studies are required among similar and larger samples within and outside the UK to test the consistency and generalisability of the present studies' findings. Second, the present study is grounded within the context of the Christian tradition. Replication studies utilising Eysenck's dimensional model of personality are required to gain a clearer understanding of how sex and personality shape individual differences in religiosity within the context of other major-faith groups. Third, replication studies are required which employ other personality measures (including the big five factor model and Jung's model of psychological type) alongside measures of religiosity to understand whether these findings are replicated within the context of other personality-based theories. Fourth, future empirical studies are required which continue to explore the general pattern of relationship between all personality-based psychologically-grounded theories and religiosity in a variety of cultural contexts. This is necessary because, as Francis and Penny (2013) highlight, recent empirical studies exploring sex differences in the big five factor model across different cultures have observed changes to the personality characteristics typically associated with men and women (Schmitt, Realo, Voracek, & Allik, 2008). If it is the case that personality characteristics can vary according to cultural context, this may, in turn, have an impact on which personality characteristics predict the relationship between sex and religiosity.

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Table 1

Reliability coefficients and mean scale scores by sex

Scales	α	Males		Females		t	$p <$
		M	SD	M	SD		
Attitude toward Christianity	.97	69.31	11.88	71.10	10.52	-2.96	.001
Extraversion	.85	8.44	3.29	8.94	3.05	-2.85	.01
Neuroticism	.78	6.42	3.35	7.09	2.91	-3.98	.001
Psychoticism	.57	3.27	2.06	2.01	1.60	13.00	.001
Lie scale	.69	3.17	2.41	3.92	2.50	-5.54	.001
Worship attendance		2.59	1.44	2.79	1.44	-2.69	.01
Personal prayer		2.58	1.39	2.94	1.28	-4.85	.001

Table 2

Correlation matrix

	Sex	L	N	E	P	Attitude	Prayer
Worship attendance	.07**	.05*	-.01	-.03	-.18***	.57***	.63***
Personal prayer	.10***	.04	.06*	-.03	-.17***	.68***	
Attitude toward Christianity	.07***	.05	.08***	-.05	-.19***		
Psychoticism (P)	-.30***	-.16***	-.11***	.04			
Extraversion (E)	.07***	-.12***	-.27***				
Neuroticism (N)	.09***	-.15***					
Lie scale (L)	.13***						

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 3

Multiple-regression

Predictor variables	R ²	Increase			Beta	t	p<
		R ²	F	p<			
<i>Worship attendance</i>							
Psychoticism	.032	.032	54.49	.001	-.17	-6.75	.001
Extraversion	.032	.001	1.40	NS	-.04	-1.51	NS
Neuroticism	.034	.001	2.23	NS	-.04	-1.42	NS
Lie	.034	.000	.29	NS	.01	.45	NS
Sex	.034	.000	.49	NS	.02	.70	NS
<i>Personal prayer</i>							
Psychoticism	.028	.028	48.52	.001	-.14	-5.42	.001
Extraversion	.029	.001	.81	NS	-.02	-.63	NS
Neuroticism	.030	.001	2.16	NS	.03	1.34	NS
Lie	.031	.001	1.30	NS	.02	.79	NS
Sex	.031	.000	.33	NS	.02	.69	NS
<i>Attitude toward Christianity</i>							
Psychoticism	.036	.036	63.29	.001	-.18	-6.87	.001
Extraversion	.038	.002	3.01	NS	-.02	-0.89	NS
Neuroticism	.041	.003	5.30	NS	.06	2.44	NS
Lie	.042	.001	1.52	NS	.03	1.17	NS
Sex	.042	.000	.17	NS	.01	.42	NS