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Religious affect and personality among 9- to 13-year-old children in the Republic of Ireland: introducing the Junior Personality Scales in Three Dimensions (JPS3D)

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ABSTRACT

This study builds on earlier research locating individual differences in religious affect within the three dimensional space proposed by Eysenck. The 18-item Junior Personality Scales in Three Dimensions (JPS3D) were designed to refine Eysenck's conceptualisation of the three dimensions of personality and to improve measurement of these dimensions among children by employing a five-point rating scale. Data provided by 1048 students in fourth class, by 1044 students in fifth class, and by 1079 students in sixth class within Church of Ireland (Anglican) primary schools in the Republic of Ireland confirmed the clear factor structure of the 18 items on a varimax rotated solution, demonstrated satisfactory internal consistency reliability for the three indices in terms of Cronbach's alpha, and supported construct validity. Positive religious affect was associated with lower toughmindedness scores and higher extraversion scores, but independent of anxiety scores.

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Short psychological measures; extraversion; emotionality; toughmindedness; children

Introduction

When Argyle (1958) undertook his first systematic review of empirical research within the psychology of religion, he concludes that insufficient consistent research had been thus far undertaken to establish reliable findings regarding the connection between personality and religion. Forty years later when Beit-Hallahmi and Argyle (1997, p. 164) re-examined the literature, they concluded that, by that stage, there was enough secure empirical evidence to locate individual difference in religiosity within an established model of personality. The model that they identified was the dimensional model of personality proposed by the Eysenckian family of personality measures (Eysenck et al., 1985; Eysenck & Eysenck, 1975). This model comprises three dimensions: extraversion, neuroticism, and psychoticism.

The shift that Beit-Hallahmi and Argyle (1997) identified was documented by a series of studies employing the Francis Scale of Attitude toward Christianity, as recently

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summarised by Francis (2020, pp. 15–20). Two stable and consistent findings have emerged from this body of research. First, psychoticism has been shown to be the dimension of personality fundamental to individual differences in religiosity, with higher levels of religious affect being associated with lower levels of psychoticism (Francis, 1992; Francis & Pearson, 1985a; Kay, 1981). Second, after controlling for sex difference, neuroticism has been shown to be unrelated to individual differences in religious affect (Francis et al., 1981a; Francis et al., 1983a; Francis & Pearson, 1991). There is, however, less consensus in the literature concerning the association between religious affect and extraversion (Francis et al., 1981b; Francis et al., 1983b; Francis & Pearson, 1985b; Williams et al., 2005).

The aim of the present study is to re-examine the conceptualisation and operationalisation of the Eysenckian three dimensional model of personality, to identify certain weaknesses in both conceptualisation and operationalisation, and to propose and test a new instrument building on Eysenck's approach. This new instrument is then employed to map the relation between personality and religious affect among 9- to 13-year-old children.

Conceptualising the three dimensions of personality

In their conceptualisation Eysenck and Eysenck (1991, p. 4) describe typical *introverts* as quiet, retiring, introspective, reserved and distant except to close friends. Introverts prefer books rather than people. They tend to plan ahead, to distrust impulse, and to be cautious. Introverts do not like excitement, prefer a well-ordered way of life, and approach matters of everyday life with proper seriousness. They tend to keep their feelings under control, avoid aggressive behaviour, and do not lose their temper easily. Introverts are reliable, somewhat pessimistic, and place great value on ethical standards. By way of contrast, typical *extraverts* are described as sociable and talkative, people who like parties, have many friends, and dislike reading or studying by themselves. Extraverts crave excitement, take chances, and are generally impulsive. They are fond of practical jokes, welcome change, and tend to be carefree and easy-going. Extraverts prefer to keep active, on the move and doing things. They tend not to keep their feelings under control, to be aggressive and to lose their temper easily. Extraverts tend to be optimistic, but may not always prove to be reliable.

In their conceptualisation Eysenck and Eysenck (1991, pp. 4–5) describe individuals characterising neuroticism as anxious, worrying, moody, and frequently depressed. They are likely to sleep badly and to suffer from various psychosomatic disorders. They are overly emotional, react strongly to things, and find it difficult to restore equilibrium after emotionally arousing experiences. Such strong emotional reactions interfere with their proper adjustment, making them react in irrational and sometimes rigid ways. There is a constant preoccupation with things that may go wrong, and a strong emotional reaction of anxiety to those thoughts. Low scorers on the dimension of neuroticism, by way of contrast, are usually calm, even-tempered, controlled and unworried. They tend to respond emotionally only slowly and generally weakly, and to regain equilibrium quickly.

In their conceptualisation Eysenck and Eysenck (1991, pp. 5–6) describe individuals characterising psychoticism as being solitary, not caring for people, often troublesome, and not fitting in anywhere. They may be cruel and inhumane, lacking in feeling and empathy, and altogether insensitive. They may be hostile to others, and aggressive.

They have a liking for odd and unusual things, and a disregard for danger. They like to make fools of other people, and to upset them. Low scorers on the dimension of psychoticism, by way of contrast reflect the opposite of these characteristics.

These classic Eysenckian descriptions of the three major dimensions of personality are both rich and problematic. They are rich in the sense of containing a range of components, but problematic in the sense of blurring the distinctions between the dimensions. For example, Eysenck and Eysenck's (1991) rich description of the dimension of extraversion describes introverts as distrusting impulse, while extraverts are generally impulsive. However, since the introduction of psychoticism as the third dimension within the Eysenckian model, impulsivity has been reconceptualised as a component of psychoticism (Eysenck & Eysenck, 1976; Francis, 1992). Eysenck and Eysenck's (1991) rich description of extraversion describes introverts as keeping their feelings under control, while extraverts tend to lose their temper quickly. However, from the early development of the Eysenckian dimensional model of personality the theory has assumed emotionality and extraversion to function as orthogonal constructs, and the measures have been developed accordingly (Eysenck & Eysenck, 1964). It is for this reason that the development of new measures within the Eysenckian tradition need to be guided strongly by the operational definitions clarified by the Eysenckian family of instruments.

Operationalising the three dimensions of personality

The Eysenckian three major dimensions of personality have been operationalised through the Eysenck Personality Questionnaire (Eysenck & Eysenck, 1975), the Eysenck Personality Questionnaire Revised (Eysenck et al., 1985), and the Eysenck Personality Scales (Eysenck & Eysenck, 1991). Within this three dimensional model of personality the Extraversion Scale assesses the continuum from introversion (low scores), through ambiversion, to extraversion (high scores). The Neuroticism Scale assesses the continuum from emotional stability (low scores), through emotional instability, to incipient neurotic disorders (high scores). The Psychoticism Scale assesses the continuum from tendermindedness (low scores), through toughmindedness, to incipient psychotic disorders (high scores). These three major dimensions of personality have also been conceptualised and operationalised in instruments designed for use among children: the Junior Eysenck Personality Questionnaire (Eysenck & Eysenck, 1975), the Abbreviated Junior Eysenck Personality Questionnaire (Francis & Pearson, 1988), the Junior Eysenck Personality Questionnaire Revised (Corulla, 1990), and the Abbreviated Junior Eysenck Personality Questionnaire Revised (Francis, 1996). Within the context of empirical studies within the psychology of religion, the Eysenckian scales have played an important role as control variables, recognising the multiple ways in which these three dimensions of personality play a part in shaping a number of variables with which the psychology of religion is concerned, including factors like empathy (Francis et al., 2017), vulnerability to victimisation (Francis & McKenna, 2018), attitude toward religious diversity (Francis & Village, 2014), and sectarian attitudes (McKinney et al., 2021).

There remain, however, fundamental conceptual and operational problems with the Eysenckian measures, especially as applied among children (see Francis, 1996; Francis & Pearson, 1988). Conceptually the linkage between emotionality and neurotic disorders nuances emotionality in a particular way. Similarly the linkage between toughmindedness and psychotic disorders nuances toughmindedness in a particular way. Conceptually the

requirement that extraversion, neuroticism and psychoticism are considered as orthogonal factors may limit the width and richness of the three dimensions. Operationally the construct of psychoticism has proved difficult and elusive to operationalise among children. Operationally the design of items for assessment on the dichotomous choice of “yes” and “no” may fail to capture thoughtful reflection. Additionally the inclusion of reverse-coded items within the scales may detract from maximising internal consistency reliability (see for example Barnette, 2000, 2001; Roszkowski & Soven, 2010; Suárez-Alvarez et al., 2018).

Research objective

In the light of these problems, the purpose of the present project was to propose a fresh set of items to operationalise among 9- to 13-year-old students the three constructs of extraversion, anxiety, and toughmindedness, to test the performance of these items on a five-point response scale from agree strongly through not certain, to disagree strongly, and to explore the association between these three dimensions of personality and religious affect. The project progressed in two stages.

Stage one of this project involved a small working group shaping and testing a bank of items. This led to the identification of three sets of eight items each designed to operationalise the three constructs of extraversion, anxiety, and toughmindedness. These 24 items were embedded in the survey designed for the 2016–2017 round of the Student Voice Project conducted in Wales (see Francis et al., 2018). During that year all 149 Church in Wales primary schools catering for year-six students were invited to participate in this survey, and 88 schools accepted the invitation. Within these 88 schools the survey was administered to all classes catering for year-five and year-six students (ages ranging from 9 to 11 years) by their class teachers. Participation by the students was voluntary, anonymous, and confidential. Thoroughly completed questionnaires were submitted by 1729 students in year five (885 boys and 844 girls) and by 1653 students in year six (813 boys and 840 girls).

Factor analysis, using varimax rotation, of the 3382 responses to this initial set of items removed six items that showed evidence of cross-loading and proposed three six-item scales with acceptable levels of internal consistency reliability: extraversion, $\alpha = .66$; anxiety, $\alpha = .77$; toughmindedness, $\alpha = .75$. There were, however, shortcomings with these new scales: the alpha coefficient for the Extraversion Scale was low, there was quite a high correlation between toughmindedness and anxiety, and the construct validity was poor against expected correlations with other variables. The achievement was nonetheless encouraging. The five-point response scale worked well and the hypothesised factor structure was recovered.

Stage two of this project involved a small working group reflecting on the performance of the initial pool of items, rejecting some items and developing new items. This revised pool of items was embedded in a project initiated in the Republic of Ireland in 2019.

Method

Procedure

As part of a research project in the Republic of Ireland, all 174 Church of Ireland (Anglican) primary schools were invited to participate in a survey, and 92 schools accepted the

invitation. Student surveys were posted to the participating Church of Ireland primary schools in October 2019. Class teachers were asked to administer the surveys with students in fourth, fifth, and sixth classes (the final three years of primary schooling, with ages ranging from 10 to 13 years) and to return the completed surveys to the researcher. A total of 3171 thoroughly completed questionnaires were returned. Participation by the students was voluntary, anonymous, and confidential. Ethical approval was granted by the Centre for Education Studies, University of Warwick, 15 January 2019.

Instrument

The survey contained three sets of eight items each designed to operationalise the three constructs of extraversion (e.g., I enjoy going to parties, I make friends easily), anxiety (e.g., I stay awake at night worrying about things, my feelings are easily hurt), and toughmindedness (e.g., I like playing tricks on people, I sometimes like being rude to people). These items were generated from close scrutiny of items included in existing Eysenckian measures. Each item was rated on the conventional five-point scale: disagree strongly (1), disagree (2), not certain (3), agree (4), and agree strongly (5).

The survey also included the Francis Scale of Attitude toward Christianity as a measure of religious affect (Francis, 1978a, 1978b). This is a 24-item instrument assessing affective responses to God, Jesus, Bible, prayer and church. Each item is rated on a five-point Likert scale: disagree strongly (1), disagree (2), not certain (3), agree (4), and agree strongly (5). In order to compute scale scores the eight negatively phrased items are reverse-coded. This instrument was specifically designed for use among children and its reliability and validity among children has been supported in a number of contexts (for review see Francis, 2009).

Following recognised convention sex was coded: male (1) and female (2).

Participants

Thoroughly completed questionnaires were submitted by 3171 students: by 1048 students in fourth class (487 boys and 561 girls), by 1044 students in fifth class (519 boys and 525 girls), and 1079 students in sixth class (561 boys and 518 girls).

Analysis

The data were analysed by the SPSS statistical package, employing the frequency, reliability, factor, correlation, and t-test routines.

Results and discussion

Factor analysis, using varimax rotation, was employed to explore the structure of the original pool of 24 items. Table 1 presents a clear factor structure, after removing 6 items that showed evidence of cross-loading. This three-factor solution explained 46.0% of the variance.

Table 2 presents the internal reliability characteristics of the three indices in terms of the correlations between the individual items and the sum of the other five items in

the scale. The correlations demonstrate that each item is contributing satisfactorily to the overall scale. On the Extraversion Scale the item with the highest correlation (.53) characterises the extravert as the young person who is good fun to be with at parties. On the Anxiety Scale the item with the highest correlation (.61) characterises the anxious young person as someone who worries a lot about things that might happen. On the Toughmindedness Scale the item with the highest correlation (.63) characterises the toughminded young person as someone who likes being rude to people. The alpha coefficients (Cronbach, 1951) are acceptable for six-item scales: extraversion, $\alpha = .71$; anxiety, $\alpha = .78$; toughmindedness, $\alpha = .76$. Table 2 also displays the item endorsement in terms of the sum of the agree and agree strongly responses. The item endorsements demonstrate a fair range of discrimination within each of the three scales. In terms of extraversion, item endorsement ranges from 38% of the children who like to do things with a crowd, to 87% who enjoy going to parties. In terms of anxiety, item endorsement ranges from 13% who often feel life is very dull, to 47% who worry a lot about things that might happen. In terms of toughmindedness, item endorsement ranges from 2% who like to say mean things to people, to 22% who enjoy playing tricks on people.

Table 3 presents the mean scale scores for boys and for girls separately on the three indices. These data demonstrate that boys recorded significantly higher scores than girls on both extraversion and toughmindedness, but that girls recorded significantly higher scores than boys on anxiety. These findings are consistent with the established findings that males record higher scores on toughmindedness and psychoticism (Eysenck & Eysenck, 1976) and that females record higher scores on anxiety and neuroticism (Eysenck & Eysenck, 1991). Sex differences in extraversion are less well established in the literature. While Lynn and Martin (1997) concluded that males generally recorded higher scores on extraversion, Eysenck and Eysenck (1991) generally reported higher scores among females.

Table 1. Factor analysis: varimax rotation.

	1	2	3
	<i>f</i>	<i>f</i>	<i>f</i>
<i>Toughmindedness</i>			
I like making fun of people	.74		
I like playing tricks on people	.60		
I like saying mean things to people	.76		
I often hurt people I like	.62		
I sometimes like being rude to people	.77		
I sometimes like to tease animals	.57		
<i>Anxiety</i>			
I stay awake at night worrying about things		.76	
I often feel unhappy		.68	
My feelings are easily hurt		.61	
I often feel life is very dull		.57	
I often feel tired for no reason		.59	
I worry a lot about things that might happen		.78	
<i>Extraversion</i>			
I would rather be with others than by myself			.53
I like to do things with a crowd			.56
I enjoy going to parties			.72
I make friends easily			.62
I am good fun to be with at parties			.73
I like going out a lot			.63

Note: *f* = factor loading; all factor loadings below .35 have been suppressed.

Table 2. Reliability and percentage endorsements.

	<i>r</i>	Yes %
<i>Toughmindedness</i>		
I like making fun of people	.57	3
I like playing tricks on people	.43	22
I like to say mean things to people	.59	2
I often hurt people I like	.49	5
I sometimes like being rude to people	.63	5
I sometimes like to tease animals	.42	4
<i>Anxiety</i>		
I stay awake at night worrying about things	.59	28
I often feel unhappy	.60	16
My feelings are easily hurt	.41	29
I often feel life is very dull	.51	13
I often feel tired for no reason	.45	44
I worry a lot about things that might happen	.61	47
<i>Extraversion</i>		
I would rather be with others than by myself	.35	75
I like to do things with a crowd	.39	38
I enjoy going to parties	.51	87
I make friends easily	.46	62
I am good fun to be with at parties	.53	67
I like going out a lot	.42	68

Table 4 presents the bivariate correlations between age, sex, religious affect and the three personality scales assessing extraversion, anxiety, and toughmindedness. In terms of the correlations between the three indices: there was a significant negative correlation between extraversion and toughmindedness ($r = -.05, p < .01$); there was also a significant negative correlation between extraversion and anxiety ($r = -.23, p < .001$); and there was a significant positive correlation between anxiety and toughmindedness ($r = .31, p < .001$). Consistent with established findings in the field these data confirm a positive correlation between religious affect and sex, showing females record higher scores of religious affect (Francis & Penny, 2014) and a negative correlation between religious affect and age, showing a decline in scores of religious affect during these years of schooling (Kay & Francis, 1996). There are also significant correlations between both sex and age and the personality scales, confirming the need to control for the effects of sex and age.

Table 5 presents the five incremental steps of the regression model on religious affect, entering sex, age, toughmindedness, anxiety, and extraversion in that fixed order. These data demonstrate that there is a strong negative path from toughmindedness to religious affect ($\beta = -.27, p < .001$), that there is no association between anxiety and religious affect ($\beta = -.03, ns$), and that there is a positive path from extraversion to religious affect ($\beta = .18, p < .001$). These data support the construct validity of the three new measures.

Table 3. Mean scale scores by sex.

	N items	Boys		Girls		<i>t</i>	<i>p</i> <
		Mean	SD	Mean	SD		
Toughmindedness	6	11.19	3.87	9.51	3.26	13.2	.001
Anxiety	6	16.34	4.85	16.80	5.03	-2.6	.01
Extraversion	6	23.15	3.87	22.75	4.05	2.8	.01

Note: *N* (boys) = 1567; *N* (girls) = 1604.

Table 4. Correlation matrix.

	Rel	A	T	E	Age
Sex	.09***	.05**	-.23***	-.05**	-.04*
Age	-.15***	.03	.08***	-.05**	
Extraversion (E)	.20***	-.23***	-.05**		
Toughmindedness (T)	-.30***	.31***			
Anxiety (A)	-.15**				

Note: * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 5. Regression on religious affect.

	Model 1	Model 2	Model 3	Model 4	Model 5
Sex	.09***	.08***	.02	.03	.03
Age		-.14***	-.12**	-.12***	-.11***
Toughmindedness			-.29***	-.26***	-.27***
Anxiety				-.07***	-.03
Extraversion					.18***

Note: ** $p < .01$, *** $p < .001$.

Conclusion

The present study was designed to develop short measures of extraversion, emotionality, and toughmindedness appropriate for use in empirical studies within the psychology of religion among 9- to 13-year-old students. In contrast with the original measures developed by Eysenck, the new JPS3D included no reverse-coded items and each item was rated on a five-point Likert scale. The three six-item indices generated on data provided by 1048 students in fourth class, by 1044 students in fifth class, and by 1079 students in sixth class (ages ranging from 10 to 13 years), were shown to have a clear factor structure by varimax rotation. Each of the three indices achieved satisfactory levels of internal consistency reliability and comprised items with face validity. Construct validity was established by exploring the association of the three personality variables with religious affect. On these grounds the three scales can be commended for further application and investigation. Further studies are now needed to test the reproducibility of the factor structure and the scale properties among different samples, to build up evidence for the construct validity of the indices, and to establish the reproducibility of the core findings concerning the location of religious affect within the three dimensional space proposed by the JSP3D.

While the three sets of items have worked well to produce three measures with acceptable levels of internal consistency reliability, the low levels of endorsement recorded by five of the six items comprising the scale of toughmindedness draw attention to problems previously encountered by the items selected for the original Eysenckian measure of psychoticism (Francis et al., 1992). By concentrating too closely on the characteristics associated with the precursors of psychotic disorders, these items fail to capture fully the nuanced range of predispositions distinguishing between the poles of tendermindedness and toughmindedness. Future studies designed to refine and to improve the JSP3D need to give further consideration to conceptualising the continuum from tendermindedness to toughmindedness and to identifying items appropriate for operationalising this conceptualisation.

Ethical approval

Ethical approval was granted by the Centre for Education Studies, University of Warwick, 15 January 2019.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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