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Exploring the factor structure of the adolescent form of the Francis Psychological Type and Emotional Temperament Scales (FPTETSA) among Canadian Baptist youth: full form and short form

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ABSTRACT

The Francis Psychological Type and Emotional Temperament Scales (FPTETS) operationalise the four components of the psychological-type model of personality alongside the fifth component of emotional temperament. The ten-item scales have been employed in research as continuous variables that explain individual differences in a wide range of religious beliefs and attitudes. The present study tested the factor structure of the adolescent form of the instrument (FPTETSA) and proposes a short form (FPTETSA-S) in which each of the five scales comprises six items, drawing on data provided by 360 Canadian Baptist youth. Both the full scales and the short scales are commended for use where the need is for continuous scale scores rather than generating psychological type categories.

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Psychological type; emotionality; short form; factor structure; internal consistency reliability; psychology of religion

Introduction

The Francis Psychological Type Scales (FPTS) were developed originally to provide a reliable and valid measure of psychological type theory appropriate for application in surveys conducted within the field of the psychology of personality and individual differences among adult participants, and with a particular concern regarding the contribution of such studies to the empirical psychology of religion (Francis, 2005). The FPTS is a 40-item instrument comprising four sets of 10 forced-choice items related to each of the four components of psychological type theory: orientation (extraversion and introversion), perceiving process (sensing and intuition), judging process (thinking and feeling), and attitude toward the outer world (judging and perceiving).

Over the past two decades the FPTS have been widely employed particularly in the fields of congregation studies and clergy studies. In the field of congregation studies, the FPTS has been employed to map the profile of 3304 Anglican churchgoers in England (Francis,

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Robbins, & Craig, 2011), 1527 churchgoers from a range of Christian denominations in Australia (Robbins & Francis, 2011), 1156 churchgoers from a range of denominations in England (Village et al., 2012) 105 Greek Orthodox churchgoers in London (Lewis et al., 2012), and 263 Methodist churchgoers in England (Lewis et al., 2021). In the field of cathedral studies, the FPTS has been employed to map the profile of 511 participants at the Sunday morning service in Southwark Cathedral (Francis & Lankshear, 2021) and participants at carol services in several cathedrals: 403 in Worcester Cathedral (Walker, 2012), 193 in Bangor Cathedral (Francis, Edwards, & ap Siôn, 2021), and 1234 in Liverpool Cathedral (Francis, Jones, & McKenna, 2021). Other studies have added to this tapestry by profiling participants engaged in various forms of Fresh Expressions of Church (Francis, Clymo, et al., 2014; Francis, Wright, et al., 2016; Village, 2015a) Comparable studies have profiled participants at Mosques (Francis & Dato, 2012), and online atheists (Baker & Robbins, 2012).

In the field of clergy studies, the FPTS has been employed to map the profile 134 lead elders within the Newfrontiers network of churches (Francis, Gubb, et al., 2009), 101 Church of England clergy engaged in ministry as full-time hospital chaplains (Francis, Hancock, et al., 2009), 1004 Methodist ministers in Britain (Burton et al., 2010), 231 Anglican clergymen serving in the Church in Wales (Francis et al., 2010), 39 Local Ordained Ministers serving in the Church of England (Francis & Holmes, 2011), 561 clergy serving in the Presbyterian Church (USA) (Francis, Robbins, & Wulff, 2011), 529 clergymen and 518 clergywomen ordained in the Anglican Church in the United Kingdom from 2004 to 2007 (Village, 2011), 164 male apostolic network leaders (Kay et al., 2011), 97 training incumbents and 98 curates serving in the church of England (Tilley et al., 2011), 154 leaders within the Newfrontiers network of churches (Francis, Robbins, & Ryland, 2012), 144 clergywomen serving in Local Ordained Ministry in the Church of England (Francis, Robbins, & Jones, 2012), 306 Catholic priests serving in Australia (Francis, Powell, & Robbins, 2012), 56 clergymen and 79 clergywomen serving in Local Ordained Ministry in the Church of England (Francis & Village, 2012), 845 lay church leaders in Australia (Powell et al., 2012), 55 Catholic priests serving in the USA (Burns et al., 2013), 168 bishops, serving or retired, in the Church of England (Francis, Whinney, & Robbins, 2013), 155 volunteer Christian youth leaders in Northern Ireland (Hamill & Francis, 2013), 236 readers serving in the Church of England (Francis, Jones, et al., 2014), 89 clergymen and 26 clergywomen serving in the Reformed Church in America (Royle et al., 2015), 117 Singaporean Pentecostal pastors (Robbins & Kay, 2015), 155 Catholic priests serving in Italy (Francis & Crea, 2015), 268 Anglican clergymen serving in the Church in Wales (Payne & Lewis, 2015), 120 clergywomen and 436 clergymen from Protestant denominations in Australia (Robbins & Powell, 2015), 1480 Church of England clergy, mainly stipendiary (Watt & Voas, 2015), 336 Canadian Baptist youth leaders (Francis, Fawcett, et al., 2016), 142 Methodist local preachers (Francis & Stevenson, 2018), 90 curates under the age of forty serving in the Church of England (Francis & Smith, 2018), 186 Church of England Archdeacons, serving or retired (Francis & Whinney, 2019), 283 Baptist Ministers serving in Great Britain (Garland & Village, 2022), 77 stipendiary and 53 non-stipendiary clergy serving in the Church of England (Rutledge, 2021), 153 Church of England readers (Francis, Jones, & Village, 2021), 434 Salvation Army Officers in England (ap Siôn & Francis, 2022), 93 ministers serving in the United Reformed Church (Lewis et al., 2022), 190 Catholic priests serving in England, Wales, and Ireland (Francis & Village, 2022a), and 951 Methodist ministers serving in Britain (Francis, Haley, & McKenna, 2023).

This body of research conducted within the fields of congregation studies and clergy studies provided generally consistent data on the internal consistency reliability of the FPTS with alpha coefficients (Cronbach, 1951) well in excess of the threshold recommended by DeVellis (2003). For example, in England among 1047 Anglican clergy, Village (2011) reported alpha coefficients of .85 for the EI Scale, .77 for the SN Scale, .72 for the TF Scale, and .81 for the JP Scale. Another series of studies has tested the factor structure of the FPTS. For example, Francis, Laycock, and Brewster (2017) tested the factor structure of the FPTS among a sample of 722 Anglican clergy in England (540 clergymen and 182 clergywomen). Confirmatory factor analysis demonstrated that 74 of the 80 items were located within the hypothesized four factor structure of the instrument with loadings of or above .38 on the hypothesized factors. Payne et al. (2021) replicated the analysis in a sample of 364 Anglican clergy in Wales and found that 78 of the 80 items were located within the hypothesized four factor structure of the instrument with loadings of or above .38 on the hypothesized factors. Similar findings were reported in a third study by Village (2021) who examined the factor structure of the FPTS employing structural equation modelling and confirmatory factor analyses among samples of 1522 clergy and 2474 laity from the Church of England.

A fourth study (Francis & Village, 2022b) replicated the analyses among two samples of adults participating in short courses relevant for Christian ministry ($N = 185$ and 392). In both samples, 39 of the 40 items were located within the hypothesized structure of the instrument with loadings of or above .30 on the hypothesized factors, with few cross-loadings. This study also tested the concurrent validity of the FPTS alongside the 126-item Form G (Anglicised) of the MBTI (Myers & McCaulley, 1985). The two measures aligned well with the proportion of same-type categorizations matching those reported for test-retest of the MBTI (see, for example, Bents & Wierschke, 1996; Howes & Carskadon, 1979; Johnson, 1992; Levy et al., 1972; McCarley & Carskadon, 1983; Silberman et al., 1992; Suzuki & Matsui, 1997).

More recently Village and Francis (2022c, 2023c) have introduced a fifth measure concerning emotionality (volatility and calmness) to the FPTS in order to produce the Francis Psychological Type and Emotional Temperament Scales (FPTETS). In the first of these two studies, Village and Francis (2022c) tested the factor structure of the FPTETS among a sample 209 men and women enrolled on a university ministry training course. Confirmatory Factor Analysis using both Principal Components Analysis and Categorical Principal Components Analysis gave similar results, with only four of the 50 items having factor loadings below .30 for their expected scale. A few items were identified that could be improved in some of the five dimensions, but the dimensionality of the instrument seemed generally robust. Validity of the orientation and emotional temperament scales was tested among 78 of the original sample who also completed the Eysenck Personality Questionnaire Revised shortened version (EPQR-S; Eysenck et al., 1985). There were significant correlations between extraversion scores on the two instruments ($r = .72$, $df = 77$, $p < .001$) and between Eysenck neuroticism and FPTETS volatile scores ($r = .78$, $df = 77$, $p < .001$), suggesting these two components of the FPTETS and the two dimensions of the EPQR-S assess similar components of personality in both instruments. In the second of these two studies, Village and Francis (2023c) tested the factor structure of the FPTETS drawing on four datasets comprising 1525 Church of England clergy, 2091 Baptist ministers, 1296 churchgoers from a variety of churches, and 879 churchgoers from a variety of churches. These data supported the factor structure of the FPTETS.

Fawcett et al. (2011) proposed an Adolescent Form of the FPTS. The four sets of 10 forced-choice items relating to each of the four components of psychological type theory were discussed with a group of young people and expanded into four sets of 20 forced-choice items in light of the vocabulary understood and preferred by young people. This expanded set of 80 items was arranged for scoring in conventional forced choice format. As part of a wider survey this instrument was completed by 755 adolescents between the ages of 12 and 18 years attending a weeklong mission and service programme sponsored by the Convention of Atlantic Baptist Churches (now known as the Canadian Baptists of Atlantic America). Correlation, factor, and reliability analysis were employed to select the 10 best pairs of forced-choice items from the original pool of 20 items relevant to orientation (extraversion and introversion), perceiving process (sensing and intuition), judging process (thinking and feeling), and attitude to the outside world (judging and perceiving). Each of the four scales recorded adequate alpha coefficients: orientations = .82; perceiving process = .67; judging process = .69; and attitude to outside world = .79.

The Adolescent Form of the Francis Psychological Type Scales (FPTSA) has been employed in two studies among Canadian Baptist youth: 755 participants between the ages of 12 and 18 years by Fawcett et al. (2009), and 1630 participants between the ages of 12 and 19 by Fawcett et al. (2017).

One core application of the FPTS was to employ the underlying scale scores to propose categorisation into discrete psychological types as suggested by Jung's (1971) original conceptualisation. However, the underlying constructs proposed by psychological type theory are also amenable to reconceptualisation in terms of more conventional trait theory, proposing four continua, that is drawing on the 10-point scales to assess: orientation from higher extraversion (10) to high introversion (0); perceiving process from high sensing (10) to high intuition (0); judging process from high thinking (10) to high feeling (0); and attitude from high judging (10) to high perceiving (0). Within the FPTETS the fifth continuum assesses emotionality from high volatility (10) to high calmness (0). Several recent studies have now employed the FPTS or the FPTETS in this way, including work reported by Francis, Fawcett, Freeze, et al. (2021), Francis, Village, and Lewis (2021, 2022), Village (2007, 2012, 2014, 2015b, 2016, 2020), Village and Baker (2013), and Village and Francis (2021a, 2021b, 2022a, 2022b, 2023a, 2023b, 2023d).

Research question

Against this background, the first aim of the present study was to integrate the 10-item emotionality scale from the FPTETS into the FPTSA and to test the factor structure of this 50-item instrument. Following the example of Village and Francis ([under review](#)) who proposed a shorter six-item form of the FPTETS, the second aim of the present study was to develop a shorter six-item form of the newly constructed FPTETSA.

Method

Procedure

All the young people attending the week-long Tidal Impact summer youth mission and service programme sponsored by the Canadian Baptists of Atlantic Canada, held in

2017 in Halifax, Nova Scotia and in Bridgewater, Nova Scotia, were invited to complete a detailed questionnaire following the completion of seminars that provided training in spiritual disciplines. Following an explanation of the nature of the survey and assurances of confidentiality and anonymity, the questionnaires were distributed to the young people. Participation was voluntary, but the overall level of interest in the topic meant that few young people failed to complete the exercise. A total of 360 questionnaires were returned by participants with data fully completed for the analyses reported in the present study (that means without missing data). The research was approved by the Research Ethics Board of Crandall University in November 2016.

Participants

The 360 participants comprised 128 males (36%) and 229 females (64%) with a further three who decided not to address this item; 106 were aged 12 or 13, 122 were aged 14 or 15, 60 were aged 16 or 17, and 71 were aged 18 or over. The majority of the participants were Baptists (94%) and attended church weekly (77%).

Measure

The FPTSA (Fawcett et al., 2011) is a 40-item instrument comprising four sets of 10 forced-choice items related to each of the four components of psychological type theory: orientation (introversion and extraversion), perceiving process (sensing and intuition), judging process (thinking and feeling), and attitude toward the outer world (judging and perceiving). Included also were the 10 forced-choice items related to emotionality (volatility and calmness) proposed by the FPTETS (Village & Francis, 2023c). The full instrument is presented in Table 1.

Data analysis

The data were analysed by the SPSS statistical package employing the frequency, correlation, reliability, and factor routine. Classic exploratory factor analysis (Varimax Rotated solution with Kaiser Normalisation) was employed, constrained to five factors, to explore how much of the hypothesised structure of the 50 pairs of items could be recovered by this procedure.

Results

Table 1 presents the factor structure of the 50 pairs of items proposed by the FPTETSA, employing Varimax Rotated solution with Kaiser Normalisation, constrained to five factors, with item loadings below .35 suppressed for clarity of presentation. These data show that 46 of the 50 pairs of items loaded strongly on the hypothesised factor. All ten of the emotionality items loaded strongly on factor 2. Nine of the ten orientation items loaded strongly on factor 1, but the item “Do you like parties (extraversion) or dislike parties (introversion)” failed to make the grade (.31). Nine of the ten judging process items loaded strongly on factor 3, but the item “Do you test people (thinking) or trust people (feeling)” failed to make the grade (.32). Nine of the attitude toward the

Table 1. Rotated factors.

	factor 1	factor 2	factor 3	factor 4	factor 5
<i>Orientation (Extraversion – Introversion)</i>					
an open person – a private person	.66				
easy to talk to new people – hard to talk to new people	.45				
easy to get to know – difficult to get to know	.57				
like parties – dislike parties					
others bring you to life – too many people tire you	.58				
with the crowd – on your own	.43				
get to know you quickly – get to know you slowly	.58				
talkative – quiet	.72				
an extravert – an introvert	.60				
like to talk – like to listen	.62				
<i>Emotionality (Volatile – Calm)</i>					
emotional – unemotional		.45			
discontented – contented		.43			
feel insecure – feel secure		.51			
have mood swings – stay stable		.58			
get angry quickly – remain placid		.58			
feel guilty about things – feel guilt-free		.36			
anxious about things – at ease		.55			
panic easily – stay calm		.66			
frequently get irritated – rarely get irritated		.59			
easily bothered by things – unbothered by things		.60			
<i>Judging process (Thinking – Feeling)</i>					
test people – trust people					
hard to be sympathetic – easy to be sympathetic			.49		
thinking – feeling			.38		
firm – kind			.61		
correct others – encourage others			.60		
others' rights – others' feelings			.57		
hard – sensitive			.49		
sceptical – trusting			.40		
debate – agreement			.53		
fair-minded – warm-hearted			.62		
<i>Attitude to outer world (Judging – Perceiving)</i>					
happy with routine – unhappy with routine				.52	
structured – open-ended				.57	
to act on decisions – act on impulse					
best work in advance – work best at the last minute				.58	
lists helpful – lists a waste of time				.54	
organised – disorganised				.51	
take deadlines seriously – feel relaxed about deadlines				.38	
like to be well prepared – find being too prepared unhelpful				.62	
time organised is good – time organised is annoying				.56	
timetables are helpful – timetables are irritating				.59	
<i>Perceiving process (Sensing – Intuition)</i>					
one thing at a time – many things at once					
practical – inventive					.60
tried and tested paths – new and novel ways					.45
experience – inspiration					.52
matter of fact – imaginative					.57
stick with familiar things – try new things					.50
a realist – a dreamer					.50
see things as they are – see things as they might be					.47
keep things as they are – change things					.53
down to earth – up in the air					.43

Note: Item loadings below .35 suppressed for clarity of presentation.

outer world items loaded strongly on factor 4, but the item “Do you prefer to act on decisions (judging) or on impulse (perceiving)” failed to make the grade (.17). Nine of the perceiving process items loaded strongly on factor 5, but the item “Do you like to

Table 2. Scale properties: Internal consistency reliability.

	Full scale			Short form		
	Alpha	CITC range		Alpha	CITC range	
Extraversion – Introversion	.78	.24	.58	.75	.46	.54
Sensing – Intuition	.71	.20	.48	.70	.34	.51
Thinking – Feeling	.73	.29	.54	.70	.37	.54
Judging – Perceiving	.74	.20	.51	.70	.37	.49
Volatile – Calm	.75	.25	.53	.71	.41	.49

Note: *N* = 360.

CITC range = range of the correlated item total correlations for each of the ten items within the scale

do one thing at a time (sensing), or many things at once (intuition)” failed to make the grade (.27).

Table 2 presents data on the internal consistency reliability of the five 10-item scales in terms of the alpha coefficient (Cronbach, 1951) and the range of the corrected item total correlations for each item within the scale. The data suggest that each of the five scales demonstrate an acceptable level of internal consistency reliability of .70 or above.

Table 3. Rotated component matrix.

	factor 1	factor 2	factor 3	factor 4	factor 5
<i>Orientation (Extraversion – Introversion)</i>					
an open person – a private person	.70				
easy to get to know – difficult to get to know	.63				
others bring you to life – too many people tire you	.59				
get to know you quickly – get to know you slowly	.65				
talkative – quiet	.70				
an extravert – an introvert	.64				
<i>Judging process (Thinking – Feeling)</i>					
hard to be sympathetic – easy to be sympathetic		.55			
firm – kind		.62			
correct others – encourage others		.60			
others’ rights – others’ feelings		.59			
hard – sensitive		.53			
fair-minded – warm-hearted		.66			
<i>Emotionality (Volatile – Calm)</i>					
have mood swings – stay stable			.58		
get angry quickly – remain placid			.63		
anxious about things – at ease			.57		
panic easily – stay calm			.69		
frequently get irritated – rarely get irritated			.65		
easily bothered by things – unbothered by things			.66		
<i>Attitude to outer world (Judging – Perceiving)</i>					
happy with routine – unhappy with routine				.58	
structured – open-ended				.58	
best work in advance – work best at the last minute				.58	
lists helpful – lists a waste of time				.72	
like to be well prepared – find being too prepared unhelpful				.65	
timetables are helpful – timetables are irritating				.63	
<i>Perceiving process (Sensing – Intuition)</i>					
practical – inventive					.70
experience – inspiration					.53
matter of fact – imaginative					.66
a realist – a dreamer					.61
see things as they are – see things as they might be					.53
down to earth – up in the air					.58

Note: Item loadings below .35 suppressed for clarity of presentation.

The second step in data analysis employed an iterative technique of selecting the items with the best corrected item total correlations until each scale was reduced from ten to six items. Table 2 demonstrates that each of these shorter scales still reported an alpha coefficient of .70 or above. Then table 3 presented the factor structure of this reduced set of 30 pairs of items, employing Varimax Rotated solution with Kaiser Normalisation, constrained to five factors, with item loadings below .35 suppressed for clarity of presentation. These data show that all 30 pairs of items loaded strongly on the hypothesised factor.

Conclusion

The present study set out with two aims. The first aim was to test the internal consistency reliability and factor structure of the newly proposed FPTETSA among a sample of 360 Canadian Baptist youth. The data demonstrated that all five ten-item scales, assessing orientations (extraversion and introversion), perceiving process (sensing and intuition), judging process (thinking and feeling), attitude toward the outer world (judging and perceiving), and emotionality (volatility and calmness) generated satisfactory levels of internal consistency reliability. On these grounds the full ten-item instrument may be commended for further use. However, the varimax rotated factor solution questioned the performance of one item within four of the scales (orientations, perceiving process, judging process, and attitude toward the outer world). Further work is needed to test replacement items for these four scales.

The second aim was to develop a short form of the FPTETSA comprising scales of six items. The data demonstrated that all five six-item scales generated satisfactory levels of internal consistency reliability and that the factor structure of this shorter instrument was fully recovered by a varimax rotated solution constrained to five factors. On these grounds the short six-item instrument may be commended for further use. While the continuous scale scores proposed by the FPTETSA, in both its full form and its short form, can be commended for further use, further research is needed before these scores can be used with confidence to generate discrete type categories.

A core limitation with the present study is that it was conducted on just one (quite distinctive) sample of Canadian Baptist youth. The study now requires replication among diverse samples. In particular it would be wise to employ a larger sample comprising religious and non-religious young people in order to check whether the same items continue to be problematic among non-religious young people as well as among religious young people.

Alongside such replication, new items need developing and testing to replace the four items that were not properly aligning with the hypothesised factors proposed by the original ten-item form of the instrument. Then the new ten-item scales need validating against the FPTETSA in order to weight the continuous scale scores for allocating participants to discrete type categories.

Disclosure statement

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

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