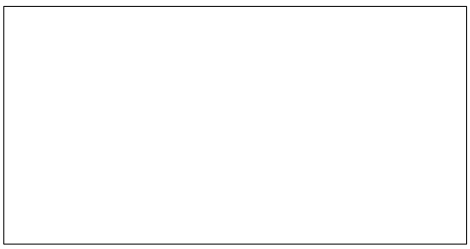

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Revising the Francis Psychological Type and Emotional Temperament Scales (FPTETS)

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ABSTRACT

The Francis Psychological Type and Emotional Temperament Scales (FPTETS) were developed from the Francis Psychological Type Scales to operationalise both the four components of psychological type theory and a component related to emotional temperament. Several studies of the parent and extended scales have suggested that, although the factor structure is generally robust, a few items consistently fail to correlate closely with their intended component. This study revises the FPTETS by testing 13 new items alongside the old in a sample of 4,370 Anglicans in England who took part in the *Coronavirus, Church & You* survey. Seven items were replaced across the five components and the revised scale had an improved factor structure. Comparing psychological-type profiles derived from the original and revised instruments in four sub samples of the dataset showed that the revision had not affected the categorisations needed to produce the sixteen-fold typology.

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Francis Psychological Type and Emotional Temperament Scales; factor structure; internal consistency reliability; psychological type

Introduction

The Francis Psychological Type Scales (FPTS) were created in order to provide a research tool that operationalised the psychological type model of personality that was originally suggested by Carl Jung (1971) and later modified by Katherine Briggs and Isabell Briggs Myers (Myers & McCaulley, 1985; Myers & Myers, 1980). The FPTS is a 40-item instrument that was initially intended to be used in surveys studying individual differences in relation to religion (Francis, 2005; Francis et al., 2017). Each scale consists of ten forced-choice responses that present characteristics of the paired preferences in each of the four dimensions of the model: extraversion versus introversion, sensing versus intuition, feeling versus thinking, and judging versus perceiving. It has been widely used since its introduction both to profile religious groups (Craig et al., 2005; Francis et al., 2011; Francis et al., 2010; Francis & Village, 2012; Powell et al., 2012) and to explore the relationship of personality to work-related psychological health (Francis et al., 2012; Francis et al., 2009; Francis et al., 2008; Robbins & Francis, 2010) and a range of different religious expressions

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(Village, 2010, 2014, 2016, 2019). The factor-structure of the FPTS has been tested in several samples and shown to be generally robust (Francis et al., 2017; Francis & Village, 2022; Village, 2021), but with a few items that loaded poorly on the expected scale.

The dimensions of the psychological type model have been shown to correlate well with some components in other personality models such as the three major dimensions model (Francis & Jones, 2000) and the five factor model (McCrae & Costa, 1989). One component present in these other models but absent in the psychological-type model is neuroticism. This prompted an expansion of the FPTS into the Francis Psychological Type and Emotional Temperament Scales (FPTETS) by the addition of a ten-item scale measuring neuroticism in the same forced-choice format as the FPTS, with the two preferences named "calm" and "volatile" (Village & Francis, 2023).

As was the case with the FPTS, studies to date of the factorial structure of the FPTETS have identified a few items that consistently loaded poorly on the intended dimension in different samples (Francis et al., 2017; Francis & Village, 2022; Village, 2021; Village & Francis, 2022, 2023). This may have been related to social desirability bias in some items that worked less well in largely religious samples. The aim of this paper is to test some revised items to see if they could improve the factorial structure and internal consistency reliability of the FPTETS.

Previous studies on the factorial structure of the FPTS

The first study to report the factor structure of the FPTS was based on a survey of 722 Church of England clergy serving in rural parishes (Francis et al., 2017). The authors employed factor analysis based on principal components extraction and a varimax rotation. This showed that most of the items were correctly assigned to their hypothesised factor with loadings of .38 or more. There were three items that loaded poorly:

> In the orientation (extraversion-introversion) scale, 'Speak before thinking' (extravert) versus 'Think before speaking' (introversion).
>
> In the perceiving (sensing-intuition) scale, 'Keep things as they are' (sensing) versus 'Improve things' (intuition).
>
> In the attitude toward the outer world (judging-perceiving) scale, 'Like to be in control' (judging) versus 'Like to be adaptable' (perceiving).

The authors suggested examining other samples to see if these same items emerged as relatively weak and in need of replacement.

A second study examined a sample of 1,522 clergy and 2,474 lay people who completed the 2013 *Church Times* survey which included the FPTS (Village, 2021). The analysis was based on Structural Equation Modelling (SEM) using both maximum likelihood (ML) and robust weighted least squares (WLSMV) estimations. For both clergy and laity, the overall model fit was poor, which seemed to be because of the poor loading of some items on their hypothesised latent variables. Two of the items were those found in the original study ("Speak before thinking" in the orientation scale and "Keep things as they are" in the perceiving scale). In addition, there were two weak items in the judging (think-feeling) scale: "Are you more truthful" (thinking) versus "tactful" (feeling) and "Do you tend to be more concerned for justice" (thinking) versus "harmony"

(feeling). Overall, the evidence again suggested that the four-factor structure was reasonably robust, but a few items may require revision.

A third study that examined the factor structure of the FTPS used two separate samples of 185 and 392 adults who participated in courses related to Christian ministry and who completed both the FPTS and the Myers Brigg Type Indicator (MBTI) (Francis & Village, 2022). Once again, there were indications of a largely robust four-factor structure with some weak items.

> In the orientation scales, the item 'Speak before thinking' versus 'Think before speaking' loaded least well on the expected factor
>
> In the perceiving scales, the item 'Keep things as they are' versus 'Improve things' loaded least well on the expected factor.
>
> In the judging process, the item 'Sceptical' (thinking) versus 'Trusting' (feeling) loaded least well on the expected factor.
>
> In the attitude toward the outer world scales, the item 'Like to be in control' (judging) versus 'Like to be adaptable' (perceiving) loaded least well on the expected factor.

Previous studies on the factorial structure of the FPTETS

The more recently introduced FPTETS has had fewer studies on its factorial structure, though these have also indicated some weak items, which often match those from the earlier studies of the FPTS. This five-dimensional scale has been shown to work reasonably well in a sample of 209 men and women enrolled on a university ministry training course. In a subsample of 78 from that same study, emotional volatility as measured by the FPTETS correlated well with neuroticism as measured by the Eysenck Personality Questionnaire (Village & Francis, 2022). The items with low loadings on the expected factor were:

> In the orientation scales, the item 'Speak before thinking' versus 'Think before speaking' loaded least well on the expected factor
>
> In the perceiving scales, the item 'Keep things as they are' versus 'Improve things' loaded least well on the expected factor. The item 'Are you more concerned about details' (sensing) versus 'Are you more concerned for meaning' (intuition) loaded most heavily on the volatility scale.
>
> In the judging process, 'truthful' (thinking) versus 'tactful' (feeling) loaded more heavily on the sensing scale and the item 'Sceptical' (thinking) versus 'Trusting' (feeling) also loaded poorly on the expected factor.
>
> In the attitude toward the outer world scales, the items 'Do you prefer to act on decisions' (judging) versus 'Do you prefer to act on impulse' (perceiving) and 'Are you happier with certainty' (judging') versus 'Are you happier with uncertainty' (perceiving) loaded least well on the expected factor. The item 'Like to be in control' (judging) versus 'Like to be adaptable' (perceiving) loaded equally well on the judging scale.
>
> In the emotional temperament scale, the item 'Are you emotional' (volatile) 'or unemotional' (calm) loaded more heavily on the orientation and judging scales, suggesting term 'emotional' tended to be associated with extraversion or feeling rather than emotional temperament.

A second study of the FPTETS was based on four separate samples of clergy and churchgoers (total $N = 3{,}991$) collected from 2009 to 2017 (Village & Francis, 2023).

Each dataset was examined by confirmatory factor analysis (CFA), with the number of factors set to the five predicated by the model. Principal components analysis (PCA) was used to extract factors followed by a varimax rotation. The authors concluded that, overall, all five scales worked well in all four datasets. Once again, though, there were a few items that tended to load poorly on the expected scale.

> In the Orientation Scales, 'Speak before thinking' versus 'Think before speaking'.
>
> In the Perceiving Scales 'Keep things as they are' versus 'Improve things'.
>
> In the Attitude Toward the Outer World Scales, 'Like to be in control' versus 'Like to be adaptable'.
>
> In the Emotional Temperament Scale, 'Emotional' versus 'Unemotional'.

Research question

It is clear from the foregoing that, although the FPTETS seems have a reasonably robust five-factor structure across a range of samples, some items work less well than others. These affect the overall model fit when tested by latent variable analysis. Although some items were problematic only in some analyses and not others, a few showed consistently poor loading on the hypothesised factor.

In the Orientation Scale, "Speak before thinking" versus "Think before speaking", was problematic in all five studies reviewed.

In the Perceiving Scale, "Keep things as they are" versus "Improve things", was problematic in all five studies reviewed.

In the Attitude Toward the Outer World Scales, "Like to be in control" versus "Like to be adaptable" was problematic in four of the five studies reviewed.

In the Emotional Temperament Scale, "Emotional" versus "Unemotional" was problematic in both of the FPTETS studies reviewed.

The judging process has demonstrated less consistency in which items were problematic. Three items were problematic in at least two samples: "Sceptical" versus "Trusting", "Truthful" versus "Tactful", and "Justice" versus "Harmony".

In the light of this, the aim of the present study was to test additional items alongside the original FPTETS to see if replacing some items would improve the factor structure of the instrument. If improvement could be made, a second questions was whether using new items would change the assignment of psychological types used in profiling. This was an important question because no change would suggest comparability of the revised scales with the original scales, which have been designed to give comparable profiling to the MBTI (Francis & Village, 2022).

Method

Participants

The dataset was from the *Coronavirus, Church & You* survey, which collected data from readers of the *Church Times* from May to July 2020 during the first national COVID-19 lockdown in the UK. (For details, see Village & Francis, 2021a, 2021b, 2021c). This was

Table 1. Profile of samples.

		Clergy	Laity	Both
	N =	1,290	3,080	4,370
		%	%	%
Sex	Female	47	66	61
	Male	53	34	39
Age	20s	1	4	3
	30s	8	6	6
	40s	17	12	13
	50s	27	19	21
	60s	31	29	29
	70s	14	27	23
	80s+	3	5	4

an online survey that included the FPTETS alongside a range of other items exploring responses to the pandemic among various Christian denominations. The survey began with an item which required respondents to indicate that they were 18 years or older and consented for their information to be used for research purposes. The project was approved by the school ethics committee of the first author. The subset of data used here are Anglican clergy and lay people who lived in England (for profile details, see Table 1).

Instrument

The FPTETS assess preferences between the two orientations (extraversion and introversion), the two perceiving functions (sensing and intuition), the two judging functions (thinking and feeling), the two attitudes (judging and perceiving), and the two emotional temperaments (calm and volatile). Assessment is made by identifying characteristics associated with each preference and then pairing them in forced-choice format. According to Village (2015), the ten preferences are characterised by the following descriptors.

Extraverts (E): active, sociable, having many friends, like parties, energised by others, happier working in groups, socially involved, talkative, an extravert, speak before thinking.

Introverts (I): reflective, private, a few deep friendships, dislike parties, drained by too many people, happier working alone, socially detached, reserved, an introvert, think before speaking.

Sensing types (S): interested in facts, practical, the concrete, prefer to make, conventional, concerned about details, sensible, present realities, keep things as they are, down to earth.

Intuitive types (N): interested in theories, inspirational, the abstract, prefer to design, inventive, concerned for meaning, imaginative, future possibilities, improve things, up in the air.

Thinking types (T): justice, analytic, thinking, firm, critical, logical, truthful, sceptical, seek for truth, fair-minded.

Feeling types (F): harmony, sympathetic, feeling, gentle, affirming, humane, tactful, trusting, seek for peace, warm-hearted.

Judging types (J): happy with routine, structured, act on decisions, like to be in control, orderly, organised, punctual, like detailed planning, happier with certainty, systematic.

Perceiver types (P): unhappy with routine, open-ended, act on impulse, like to be adaptable, easy going, spontaneous, leisurely, dislike detailed planning, happier with uncertainty, casual.

Volatile types (V): emotional, discontented, feel insecure, have mood swings, get angry quickly, feel guilty about things, anxious about things, panic easily, frequently get irritated, easily bothered by things.

Calm types (C): unemotional, contented, feel secure, stay stable, remain placid, feel guilt free, at ease, stay calm, rarely get irritated, unbothered by things.

The original FPTETS comprise 50 items offering paired dichotomous responses (ten in each dimension). The survey included the original items plus 13 new items (see supplementary data Table S1) that were designed to align with the characteristics of relevant preference.

Procedure

The FPTETS comprise 50 items that generate 100 paired dichotomous responses (ten in each dimension). For these analyses, we used responses to the E, S, F, J, and V Scales, which were the mirror image of responses to the I, N, T, J, and C Scales respectively. The process of revising the FPTETS was in three stages:

The first stage used the sample of 1,290 clergy to explore each of the five scales separately. For each scale, new and old items were pooled and then shortened by iteratively removing items that showed the lowest correlation with the rest of the scale items. Where there were two items with similarly low correlations, those identified as problematic in the original scale were removed first. Scales were then tested for uni-dimensionality using factor analysis with principal components extraction and varimax rotation. The procedure was applied until there were five ten-item scales.

In the second stage of analysis the new scales were tested among the 3,080 lay people in the sample by including all the items in a confirmatory factor analysis. The number of factors was set to five, and loadings of less than .3 were excluded from the tabulated output.

A third stage of analysis tested whether the binary classifications (which are used for psychological type profiling) derived from scale scores differed between the original and the revised scales. Instructions for dealing with ties and weighting classifications to mirror those of the MBTI were taken from Francis and Village (2022). The binary classifications produced in each dimension of the original psychological-type model (orientation, perceiving, judging, and attitude) were compared between the original and the revised scales in four sub-samples: clergywomen, clergymen, lay women, and lay men. Cohen's kappa (Cohen, 1960) is a statistic used to assess the consistency of raters selecting binary categories and was used to interpret the accuracy of the revised scales compared with the original. To test the performance in terms of the sixteen types of the psychological type model, we used standard psychological type tables (McCaulley, 1985) with the revised categorisations tested against the baseline of the original scale categorisation.

Results

Item endorsement

The percentage frequencies of endorsing the E, S, F, J, and V responses are shown in Table S1 for clergy and laity. The new items showed endorsement frequencies that were within

the range of endorsements in the original scales, and often reflected the same difference between clergy and lay responses.

Selecting items in the clergy sample

Table S2 shows the items dropped from the original scales and those used as replacements in the revised scales. The procedure led to the replacement of one item in each of the Extraversion, Judging and Volatility Scales and the replacement of two items in each of the Sensing and Feeling Scales. In each case, replacement items showed stronger correlations with the rest of the scale than the items which were dropped. The revised scales showed a modest improvement in alpha scores, as might be expected from the small number of replacement items.

Testing the revised items on the lay sample

The CFA of the revised items on the lay sample showed all items loaded most heavily on the expected scale, apart from one in the attitude to the outer world scale, "Happier with certainty" (judging) versus "Happier with uncertainty" (perceiving), which loaded more heavily on the sensing scale (Table S3). A similar CFA on the clergy sample used to revise the scale (results not shown here) showed all items loaded most heavily of the expected scale.

Testing the revised instrument for psychological type profiling

The final test of the revised scales was to see whether the binary categorisation within each dimension used in psychological type profiling would be changed if the revised scales were used instead of the original scales. Table S4 shows the percentage of accurate classifications in four sub-samples, alongside estimates of Cohen's kappa (Cohen, 1960), which indicates the measure of agreement between the two means of rating. Interpreting kappa is not straightforward, but the scores were generally high, with 14 of the 16 comparisons scoring .81 or higher, which Landis and Koch (1977) suggest means "almost perfect" agreement.

Comparison of the 16 psychological types between original and revised scales using a psychological-type table is illustrated in Table S5, which refers to the clergymen sub sample. The statistic *I* tests the difference in proportions between the two samples. In the example table there were no significant ($p < .05$) differences in the proportions of any of the binary classifications or the 16 types. Corresponding analysis for 607 clergywomen, 1,045 lay men, and 2,035 lay women showed similar results, with only two of 60 comparisons indicating any significant difference. It seems safe to conclude that the revised scales are very unlikely to produce consistently different psychological profiles to the original FPTS or FPTETS.

Discussion

The FPTS and FPTETS have both proved to be useful instruments with which to investigate the psychological profiles of religious groups and the ways in which psychological

predispositions influence a variety of religious expressions. Examination of the factor structure of the two instruments indicated that although the factor structures were largely robust, a few items showed consistently poor performance in predicting scores in the scales to which they were originally assigned. In part this may have been because the wording of items pointed to preferences that are not so easily accepted in faith contexts. Speaking before thinking, keeping things as they are, and liking to be in control are not attributes that always sit well with idealised views of what religious people should be like. Changing seven of the 50 items in the FPTETS improved the factor structure, with only one item in the revised scales loading incorrectly in test sample of lay people. In the clergy sample used to revise the scales there were no mismatches, so it may be that the revised FPTETS will prove to work slightly better among clergy than among lay people. Further work would be needed to test this idea.

The original FPTS, which were reproduced in the FPTETS, have been used to produced continuous scale scores to measure tendencies for the eight preferences of extraversion, introversion, sensing, intuition, thinking, feeling, judging and perceiving. As these are paired, it is necessary to use only one score for each pair as a dependent or independent variable in analyses. The addition of emotional temperament, with its two mirror scales of calmness and volatility, allows the FPTETS to reflect more closely the components of three-dimensional (Eysenck & Eysenck, 1985) and five-factor models (Costa & McCrae, 2008). Improving the reliability of each of the five component scales makes them more fit for research purposes.

Psychological type models have the advantage over trait models of having an inherent reason for categorising traits into binary opposites. Those who advocate trait models of personality often criticise models using typologies, though such criticism is not always justified (Lloyd, 2012). Whatever the strengths and weaknesses of typologies, it is useful that any revision of scales such as the FPTS does not so alter them that the typologies between original and revised scales are incompatible. Our analyses suggest that profiles produced by the original FPTS and FPTETS can safely be compared with the revised FPTETS.

Limitations of the study

The revised items were tested in a survey where the main focus was on the COVID-19 pandemic, rather than the scales themselves. This limited the scope for testing many new items. The samples used here were from the Church of England and, although they were relatively large, it would be useful test the revised instrument on more populations from within and beyond the Anglican church in England.

Conclusions

The revised Francis Psychological and Emotional Temperament Scales (FPTETS-R) differ from the original scales by seven items. The change has slightly improved the internal consistency reliability of the sub-scales and more substantially improved the factor structure of the whole instrument. The changes have not altered the way in which the scales produce psychological type profiles, which should allow the FPTETS-R to be used in future research where results need to be compared with earlier studies using the original scales. We commend the FPTETS-R for future use. The presentation of the instrument is shown in Table S6. The addition of the emotional temperament scales to the FPTS increased the

number of items by 20 percent, so it might be useful to produce a shorter version of the FPTETS-R for use in long questionnaires where it is important to minimise the number of items, and where the emphasis is in employing the underlying scale rather than type categories.

Disclosure statement

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

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