

The internal consistency reliability and construct validity of the Francis Scale of Attitude toward Christianity (modified short-form) among 8- to 14-year-old churchgoers in Australia

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**Abstract**

This study examines the psychometric properties of a modified short form of the Francis Scale of Attitude toward Christianity. While the original seven-item short form contained two negatively voiced items, this modified form contains only one negatively voiced item, in order to improve the performance of the instrument among younger participants. Data provided by 10,084 young churchgoers between the ages of 8 and 14 years support the internal consistency reliability and construct validity of the instrument across the age range and commend the instrument for further use in research among this age group.

*Keywords:* attitude toward Christianity, children, Australia, psychology of religion

### **Introduction**

The Francis Scale of Attitude toward Christianity was first published for use among children and adolescents by Francis (1978a, 1978b) and developed by Francis and Stubbs (1987) for measuring attitude toward Christianity from childhood into adulthood. The instrument was designed to assess religious affect in relation to five accessible components of Christianity, namely God, Jesus, Bible, prayer and church, by means of 24 short and clear items rated on a five-point Likert scale. Following the wisdom of scale construction prevalent in the 1970s the 24-item scale was designed to include eight negatively voiced items in order to detect response setting among the participants. In the foundation paper, Francis (1978a) invited colleagues to employ and to test the Francis Scale of Attitude toward Christianity in a variety of contexts in order to generate a body of knowledge regarding the correlates, antecedents, and consequences of individual differences in religious affect.

The scientific basis for confidence in the assertion that studies conducted in different contexts could be considered together rested on the demonstration that the instrument functioned with comparable degrees of reliability and validity among different age groups, among different denominational groups and in different countries. This programme of establishing the reliability and validity of the Francis Scale of Attitude toward Christianity began in English-speaking contexts. The reliability and validity of the scale have been supported by studies among school students in England (Francis, 1987, 1988, 1989; Adamson, Shevlin, Lloyd, & Lewis, 2000; Lewis, Cruise, McGuckin, & Francis, 2006; Lewis, Cruise, & Lattimer, 2007; Francis, Lankshear, & Eccles, 2017), Kenya (Fulljames & Francis, 1987), Nigeria (Francis & McCarron, 1989), Northern Ireland (Francis & Greer, 1990; Greer & Francis, 1991), and Scotland (Gibson, 1989; Gibson & Francis, 1989). Another series of studies has supported the reliability and validity of the scale among adults in Australia (Hancock, Tiliopoulos, & Francis, 2010), Australia and Canada (Francis, Lewis,

Philipchalk, Brown, & Lester, 1995), England (Francis & Stubbs, 1987; Francis, 1992a), the Republic of Ireland (Maltby, 1994), Northern Ireland (Lewis & Maltby, 1997; Lewis, Cruise, & McGuckin, 2005), South Africa (Francis, Kerr, & Lewis, 2005), the USA (Lewis & Maltby, 1995), and Wales (Robbins, Francis, & Williams, 2003).

In order to facilitate further cross-cultural studies within the psychology of religion, the Francis Scale of Attitude toward Christianity has also been translated into a number of different languages, including: Arabic (Munayer, 2000), Chinese (Francis, Lewis, & Ng, 2002; Tiliopoulos, Francis, & Jiang, 2013), Czech (Francis, Quesnell, & Lewis, 2010), Dutch (Francis & Hermans, 2000), Estonian (Elken, Francis, & Robbins, 2010), French (Lewis & Francis, 2003, 2004), German (Francis & Kwiran, 1999; Francis, Ziebertz, & Lewis, 2002), Greek (Youtika, Joseph, & Diduca, 1999; Nazar, 2019), Italian (Crea, Baiocco, Ioverno, Buzzi, & Francis, 2014), Norwegian (Francis & Enger, 2002), Portuguese (Ferreira & Neto, 2002), Romanian (Francis, Ispas, Robbins, Ilie, & Iliescu, 2009), Serbian (Flere, Francis, & Robbins, 2011), Slovakian (Lewis, Adamovová, & Francis, 2008), Slovenian (Flere, Klanjsek, Francis, & Robbins, 2008), Spanish (Campo-Arias, Oviedo, Dtaz, & Cogollo, 2006), Swedish (Eek, 2001), and Welsh (Evans & Francis, 1996; Francis & Thomas, 2003).

In order to extend this body of research beyond the context of Christian and post-Christian cultures a family of instruments was developed, including the following scales. The Sahin-Francis Scale of Attitude toward Islam (Sahin & Francis, 2002) comprised 23 items, of which six items were negatively voiced. The Katz-Francis Scale of Attitude toward Judaism (Francis & Katz, 2007) comprised 24 items, of which eight items were negatively voiced. The Santosh-Francis Scale of Attitude toward Hinduism (Francis, Santosh, Robbins, & Vij, 2008) comprised 19 items of which three items were negatively voiced. The Athwal-Francis Scale of Attitude toward Sikhism (Francis, Athwal, & McKenna, under review) comprised 24 items, of which eight items were negatively voiced.

In addition to the full 24-item form of the Francis Scale of Attitude toward Christianity, a seven-item short form has been developed and tested among primary school students (Francis, 1992b), secondary school students (Francis, Greer, & Gibson, 1991) and adults (Francis, 1993; Francis, Lewis, Philipchalk, Lester, & Brown, 1995; Maltby & Lewis, 1997; Lewis, Shevlin, Lloyd, & Adamson, 1998). Following the model of the 24-item scale, the seven-item scale included two negatively voiced items. Reporting on the performance of the Spanish translation of the seven-item scale among 13- to 17-year-old students in Colombia, Campo-Aria, Oviedo, Díaz, and Cogollo (2006) drew attention to the relatively poor performance of the two negatively voiced items and recommend further consideration should be given to producing a five-item measure that omitted these negatively voiced items. As a consequence Campo-Arias, Oviedo, and Cogollo (2009), Miranda-Tapia, Cogollo, Herazo, and Campo-Arias (2010), Cogollo, Gómez-Bustamante, Herazo, and Campo-Arias (2012), Ceballos, Suescun, Oviedo, Herazo, and Campo-Arias (2015), and Campo-Arias and Ceballos-Ospino (2020) have developed and tested the five-item version of the Francis Scale of Attitude toward Christianity.

These reservations concerning the negatively voiced items in the short-form Francis Scale of Attitude toward Christianity prompted closer scrutiny of correlations between individual items and the sum of the other 23 items in the recent analysis of the performance of the parent instrument among 4,581 students in three year groups (8- to 9-year-olds, 9- to 10-year-olds, and 10- to 11-year-olds) in Wales, reported by Francis, Lankshear, and Eccles (2017). These data demonstrate that the negatively voiced items consistently performed less well than the positively voiced items, especially among the youngest of the three age groups.

### **Research aim**

Against this background, the present study sets out to explore the psychometric properties and practical application of a further modification of the short-form Francis Scale

of Attitude toward Christianity. The distinctive characteristics of these modifications are that it retains seven items; that the seven items reflect the five constructs present in the original short form, namely God, Jesus, Bible, prayer, and church; and that the number of negatively voiced items has been reduced from two to one. The rationale for this compromise is that one negatively voiced item has been retained to guard against response setting, but that there is now only one negatively voiced item in view of the difficulty presented by negatively voiced items to young participants. This broad research aim is reflected in four more specific research questions concerning: the factor structure of the seven-item instrument; the internal consistency reliability of the instrument; the construct validity of the instrument; and the practical information carried by the endorsement of the seven items for insight into the changing levels of religious affect experienced by young churchgoers between the ages of 8 and 14 years.

## **Method**

### **Procedure**

The Australian National Church Life Survey is now a well-established instrument for assessing congregational opinions and attitudes across a wide range of Christian denominations. Surveys have been conducted in 1991, 1996, 2001, 2006, 2011 and 2016, and the findings have been widely disseminated (Kaldor, Bellamy, Correy, & Powell, 1992; Kaldor, Bellamy, Moore, Powell, Castle, & Correy, 1995; Kaldor, Bellamy, Powell, Hughes, & Castle, 1997; Kaldor, Bellamy, Powell, Castle, & Hughes, 1999; Kaldor, Dixon, Powell, Bellamy, Hughes, Moore, & Dalziel, 1999; Bellamy, Cussen, Sterland, Castle, Powell, & Kaldor, 2006; Kaldor & McLean, 2009; Powell, Bellamy, Sterland, Jacka, Pepper, & Brady, 2012; Pepper, Sterland, & Powell, 2015; Pepper, Powell, Sterland, & Hancock, 2018). The 2016 National Church Life Survey included a special questionnaire styled 'Children's survey for 8 to 14 year olds'. Participating congregations were invited to distribute these

questionnaires among young people within the target age group attending either ‘church groups for children and youth’ or ‘church worship services or mass’. Young participants were assured of privacy, confidentiality and anonymity.

### **Instrument**

In addition to sex (male = 1; female = 2) and age (years 8, 9, 10, 11, 12, 13, 14), the following data from the survey were used in the analyses.

The Francis Scale of Attitude toward Christianity (modified short form) is a seven-item measure comprising items concerned with assessing affective responses to God, Jesus, Bible, prayer, and church. Each item is assessed on a five-point scale: disagree strongly (1), disagree (2), not certain (3), agree (4), and agree strongly (5).

Frequency of church services or mass attendance was assessed on a four-point scale: hardly ever or never (1), some weeks (2), most weeks (3), and every week (4).

Frequency of personal prayer was assessed on a three-point scale: never (1), sometimes (2), and often (3).

### **Data analysis**

The data were analysed by the SPSS package, using the frequency, reliability, factor, and correlation routines.

### **Participants**

A total of 10,084 participants submitted surveys in which they had completed the seven items of the modified short-form Francis Scale of Attitude toward Christianity, and provided information about their age. Of these participants, 1,312 were aged 8 years, 1,504 were aged 9 years, 1,669 were aged 10 years, 1,603 were aged 11 years, 1,537 were aged 12 years, 1,317 were aged 13 years, and 1,142 were aged 14 years.

- insert tables 1, 2, and 3 about here -

Tables 1, 2, and 3 provide further description of the participants. Table 1 demonstrates that the proportions of male and female participants remained quite close throughout the age range, with almost equal numbers of males and females within each year group. Table 2 has classified participants into the four denominational streams of the congregations within which surveys were completed: Catholic, Mainstream Protestant, Other Protestant, and Pentecostal. The denominational fluctuations across each of the seven age groups were not great. Table 3 examines the frequency of church attendance across the age range. Weekly attendance was more pronounced among the 13- and 14-year-old participants. This increase in frequency needs to be read alongside the declining numbers among these early teenagers. After the age of 12 fewer young people attend church, but according to table 3 those who continue to attend tend to do so more frequently.

### **Results and discussion**

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Table 4 presents the factor structure of the seven-item scale among each of the seven age groups included in the study. Among each age group principal component analysis extracted only one factor. The proportion of variance accounted for by this factor increased progressively through the seven age groups from 54% to 71%. The factor loadings demonstrate the weakest item was the one remaining negatively voiced item ('I think churchgoing is a waste of my time'), although the factor loading on this item increases from .48 among 8-year-old participants to .70 among 14-year-old participants.

- insert table 5 about here -

Table 5 examines the internal structure of the seven-item scale among each of the seven age groups, in terms of the correlations between the individual items and the sum of the other six items and in terms of the alpha coefficient (Cronbach, 1951). The alpha coefficient indicates good internal consistency reliability among each of the seven age groups, but once

again the alpha coefficient increased progressively through the seven age groups from .85 to .93. The correlations between the individual items and the sum of the other six items again draw attention to the one remaining negatively voiced item, although this correlation increases from .37 among 8-year-old participants to .62 among 14-year-old participants.

- insert table 6 about here -

In previous studies the construct validity of the Francis Scale of Attitude toward Christianity has been established by exploring correlations with sex, church attendance, and personal prayer. Theory suggests that females tend to record a more positive attitude toward Christianity than males (see Francis & Penny, 2014). Theory suggests that although attitudes alone may not be simple or direct predictors of behaviour (Ajzen, 1988; Eiser & van der Pligt, 1988), there is likely to be significant correlations between attitude toward religion and religious behaviours, as evidenced by studies like Francis (1989). Theory also suggests that there is likely to be a much clearer relationship between religious affect and intrinsic religious behaviour like prayer than with extrinsic religious behaviour like church attendance (see Francis & Orchard, 1999). Table 6 tests these three theories among each of the seven age groups. The data presented in table 6 generally support all three hypotheses generated by theory. First, among five of the seven age groups females recorded a significantly more positive attitude toward Christianity. Among the oldest two of the seven age groups this sex difference disappears. This finding may be accounted for by the theory that males with a less positive attitude toward Christianity may have lapsed from church attendance by this stage in their lives. Second, among all seven age groups there are significant positive correlations between scores of attitude toward Christianity and both indices of religious behaviour (frequency of church attendance and frequency of personal prayer). This is consistent with the theory that religious affect and religious behaviour are connected. Third, among all seven age groups there is a stronger correlation between religious affect and personal prayer than

between religious affect and church attendance. Moreover, while the level of correlation with church attendance remains relatively stable across the age range, the correlation with personal prayer grows increasingly stronger year-by-year. This is consistent with the theory that religious affect is more closely associated with interior or intrinsic religious behaviour (like prayer) than with exterior or extrinsic religious behaviour (like church attendance).

In order to explore the more detailed shift in attitude between the ages of 8 and 14 years, tables 7 and 8 explore the endorsement of the seven individual items, in terms of the percentages of participants within each age. Table 7 combines the agree strongly and the agree responses, while table 8 presents only the agree strongly responses.

- insert tables 7 and 8 about here -

Table 7 that aggregates the agree strongly and agree response suggests that there may be comparatively little fluctuation across the seven year groups. Only two of the seven items drop by more than six percentage points between the age of 8 and 14 years. The proportion of young participants who agree that Jesus is very close to them drops from 90% at the age of 8 to 79% at the age of 14. The proportion of young participants who agree that the Bible is helpful to their life drops from 85% at the age of 8 to 74% at the age of 14. Table 8, however, indicates that during these seven years the movement has been more visible in terms of the proportion of young participants who move their responses from 'agree strongly' to 'agree'. Here is evidence of the value of the five-point Likert scale rather than a three-point scale. Over the seven year period the proportions of young participants who endorsed the agree strongly response drops by more than ten percentage points between the age of 8 and 14 years in respect of four of the seven items. The proportion who agree strongly that God means a lot to them drops from 74% to 56%. The proportion who agree strongly that prayer helps them a lot drops from 49% to 38%. The proportion who agree strongly that Jesus is very close to

them drops from 71% to 44%. The proportion who agree strongly that the Bible is helpful to their life drops from 55% to 37%.

### **Conclusion**

This study set out to address a problem recognised by the application of the 7-item short form of the Francis Scale of Attitude toward Christianity among younger participants. The recognised problem concerns the difficulty caused for some young participants by negatively voiced items. In its original form the short-form Francis Scale of Attitude toward Christianity included two negatively voiced items. In the modified short form under review only one negatively voiced item was retained. The rationale for this modification was to retain one negatively voiced item to guard against response setting, accepting that the retention of one negatively voiced item may reduce the internal consistency reliability of the instrument among younger participants. The functioning of this modified instrument was explored on data provided by 10,084 young churchgoers between the ages of 8 and 14 years who participated in the 2016 Australian National Church Life Survey. Four specific research questions were addressed by these data.

The first research question concerned the factor structure of the modified short form of the Francis Scale of Attitude toward Christianity. The data confirmed the extraction of only one principal component (with an eigenvalue greater than one) using principal component analysis across the seven-year age range. The reverse-coded remaining negatively voiced item had the lowest factor loading but held its place within the principal factor. The proportion of variance accounted for the principal factor increased consistently across the seven-year age range. It is possible that this particular item, which asked whether church was 'a waste of time' was more conceptually difficult for the youngest attenders to assess. Future studies might apply negative voicing to alternative items to evaluate if the issue lies in the complexity of the concept or the direction of the voicing.

The second research question concerned the internal consistency reliability of the modified short form of the Francis Scale of Attitude toward Christianity. The data demonstrated a satisfactory alpha coefficient across the seven-year age range, with a consistent increase from .85 to .93 from the age of 8 to 14 years. The correlations between the individual items and the sum of the other six items demonstrated improvement in the performance of the negatively voiced item across the seven years. This also suggests that the youngest participants may have found the item more conceptually challenging.

The third research question concerned the construct validity of the modified short form Francis Scale of Attitude toward Christianity. Construct validity was tested against three hypotheses relating to sex differences in religious affect, relating to the connection between religious affect and religious behaviours, and relating to the stronger connection between religious affect and personal prayer than the connection between religious affect and church attendance. The data largely supported all three hypotheses. The correlation between religious affect and personal prayer increased consistently from the age of 8 to the age of 14 years. This suggests that as the young churchgoers grew older, so their religious affect became more crystallised and more effective in predicting personal religious practices.

The fourth research question concerned the extent to which close attention to the seven individual items comprising the modified short form Francis Scale of Attitude toward Christianity could be of practical benefit for churches and so legitimate the inclusion of this instrument in ventures like the National Church Life Survey. The data demonstrated the particular benefits of such items being rated on a five-point rather than a three-point scale. Over the seven-year period what was most noticeable in the responses of the young participants was not their movement away from overall agreement with the items, but their movement away from strong intensity of agreement. If religious affect is an important internal motivator for the maintenance of religious practice, local congregations may wish to

give more attention to identifying those aspects of church life that nurture, support, and sustain positive religious affect among young churchgoers. Special attention to the experiences of those aged 13- and 14 years is also warranted, as this appears to be a stage of increased personal agency with regard to religious practice. Future iterations of the National Church Life Survey's 'Children's Survey for 8 to 14 year olds' may wish to consider focusing more questions designed to explore in greater depth the correlates, consequences, and antecedents of individual differences in religious affect among young churchgoers.

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Table 1

*Sex of sample by age*

	Year of age						
	8	9	10	11	12	13	14
Male (%)	51	49	50	48	49	50	48
Female (%)	49	51	50	52	51	50	52

Table 2

*Frequency of denominational type by age*

	Year of age						
	8	9	10	11	12	13	14
Catholic (%)	23	21	21	21	20	18	19
Mainstream Protestant (%)	38	38	36	38	39	43	45
Other Protestant (%)	33	36	40	37	37	35	32
Pentecostal	6	6	4	5	4	4	3

Table 3

*Frequency of church attendance by age*

	Year of age						
	8	9	10	11	12	13	14
Hardly ever/never (%)	5	5	5	6	5	3	3
Some weeks (%)	16	13	14	13	13	10	10
Most weeks (%)	35	38	35	34	34	28	27
Every week (%)	44	43	47	48	48	59	59

Table 4

*Factor loadings by age*

	Year of age						
	8	9	10	11	12	13	14
I know that Jesus helps me	.74	.78	.81	.83	.86	.87	.86
I think going to church is a waste of my time*	.48	.46	.58	.63	.67	.68	.70
God helps me to lead a better life	.74	.77	.80	.82	.86	.87	.87
God means a lot to me	.81	.81	.83	.85	.88	.88	.90
Prayer helps me a lot	.77	.74	.80	.81	.83	.84	.85
I know that Jesus is very close to me	.79	.79	.83	.85	.84	.87	.88
I think the Bible is helpful to my life	.77	.76	.79	.82	.82	.84	.83
% Variance	54	55	61	65	69	70	71
N	1312	1504	1669	1603	1537	1317	1142

Note: \* This item is reverse coded

Table 5

*Item-rest-of-test correlations by age*

	Year of age						
	8	9	10	11	12	13	14
I know that Jesus helps me	.62	.67	.72	.75	.80	.81	.80
I think going to church is a waste of my time*	.37	.35	.48	.53	.58	.59	.62
God helps me to lead a better life	.63	.66	.70	.74	.80	.81	.81
God means a lot to me	.71	.72	.75	.78	.82	.83	.85
Prayer helps me a lot	.65	.62	.71	.73	.76	.77	.79
I know that Jesus is very close to me	.66	.68	.74	.78	.80	.81	.83
I think the Bible is helpful to my life	.66	.65	.71	.74	.77	.78	.77
Alpha	.85	.85	.89	.91	.92	.93	.93
N	1312	1504	1669	1603	1537	1317	1142

Note: \* This item is reverse coded

Table 6

*Mean scale scores and correlations with sex, personal prayer, and church attendance*

	N	Mean	SD	Sex <i>r</i>	Attend <i>r</i>	Prayer <i>r</i>
8 years old	1312	31.5	4.0	.06*	.21***	.31***
9 years old	1504	31.5	3.8	.12**	.20***	.37***
10 years old	1669	31.4	4.1	.11***	.21***	.45***
11 years old	1603	30.7	4.7	.10***	.26***	.51***
12 years old	1537	30.3	5.0	.06*	.26***	.57***
13 years old	1317	30.3	5.0	.04	.27***	.58***
14 years old	1142	29.8	5.2	.05	.27***	.62***

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

Table 7

*Item percentage endorsement by age*

	Year of age						
	8	9	10	11	12	13	14
I know that Jesus helps me	93	92	92	90	90	90	88
I think going to church is a waste of my time	5	5	2	3	5	4	5
God helps me to lead a better life	89	89	90	88	88	87	87
God means a lot to me	92	92	92	89	89	89	86
Prayer helps me a lot	82	82	82	78	76	75	76
I know that Jesus is very close to me	90	89	89	86	83	82	79
I think the Bible is helpful to my life	85	83	82	77	75	77	74
N	1312	1504	1669	1603	1537	1317	1142

Note: Item percentage endorsement is the sum of the agree and agree strongly responses

Table 8

*Item percentage endorsement (agree strongly) by age*

	Year of age						
	8	9	10	11	12	13	14
I know that Jesus helps me	69	68	69	64	62	61	59
I think going to church is a waste of my time	2	2	1	2	2	2	2
God helps me to lead a better life	63	62	63	59	58	58	54
God means a lot to me	74	73	73	66	64	63	56
Prayer helps me a lot	49	46	48	43	41	42	38
I know that Jesus is very close to me	71	68	67	59	51	51	44
I think the Bible is helpful to my life	55	51	49	44	40	40	37
N	1312	1504	1669	1603	1537	1317	1142

Note: Item percentage endorsement is the agree strongly responses