

STABILITY OF THE SPANISH VERSION OF THE FIVE-ITEM FRANCIS SCALE OF ATTITUDE TOWARD CHRISTIANITY^{1, 2}

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Summary.—The aim of this study was to establish test-retest reliability of a Spanish version of the Francis Scale of Attitude toward Christianity (Campo-Arias, Oviedo, & Cogollo, 2009) among adolescent students in Cartagena, Colombia. A group of ninth grade students from two public schools in Colombia ($N=157$) completed the five-item scale. Cronbach's alphas were .74 and .76 in the first and second administrations, respectively. Both Pearson's ρ and intra-class correlation coefficient were .69. A Spanish translation of the 5-item scale had consistent stability over four weeks.

Among adolescents, the seven-item Francis Scale of Attitude toward Christianity, Short Form, exhibits good internal consistency, with Cronbach's alpha between .80 and .93 (Francis, 1992; Francis & Enger, 2002; Lewis, Francis, & Enger, 2003; Lewis, Francis, & Kerr, 2003; Lewis, Francis, & Ng, 2003; Lewis & Hermans, 2003; Lewis & Francis, 2004a, 2004b; Lewis, Francis, Ziebertz, & Kwiran, 2005; Campo-Arias, Oviedo, Díaz, & Cogollo, 2006), and high test-retest reliability over one to 15 weeks, with Pearson's ρ between .67 and .94 (Lewis, Cruise, & McGuckin, 2005; Lewis, Cruise, McGuckin, & Francis, 2006; McGuckin, Cruise, & Lewis, 2006; Lewis, Cruise, & Lattimer, 2007).

Recently, Campo-Arias, *et al.* (2009) introduced a shorter Spanish version with only five items that inquire about God, Jesus, and prayer. The researchers omitted Items 2 ("I think that going to church is a waste of time") and 7 ("I think the Bible is out of date"), which had low item-total correlation coefficients. The five-item Spanish version of the Francis Scale of Attitude toward Christianity showed excellent internal consistency reliability (Cronbach's alpha = .87).

The stability of scales over time is very important. A common prac-

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tice in the psychology of religion is to estimate test-retest reliability with Pearson product-moment correlation between a first and second administration (Pearson ρ ; Yen & Lo, 2002). However, Pearson ρ has two salient limitations: (a) its purpose is to calculate the association between two variables, not the concordance of two measures from the same variable (Bland & Altman, 1996); and (b) it cannot identify the presence of a systematic error (Streiner, 1995). The intra-class correlation coefficient (ICC) satisfactorily resolves both limitations (Yen & Lo, 2002). To date, there is no information available on the test-retest reliability of the Spanish 5-item Francis Scale of Attitude toward Christianity. The aim of the present study was to estimate the test-retest reliability of a Spanish version of the 5-item scale over four weeks, using Pearson ρ and ICC, in a sample of adolescent students in Cartagena, Colombia.

A total of 88 boys and 69 girls (M age = 15.1 yr., SD = 1.1, range 13–17) participated in the research. Participants completed a Spanish version of the 5-item Francis Scale of Attitude toward Christianity. Cronbach's alpha and McDonald's coefficient omega were computed as measures of internal consistency reliability (Cronbach, 1951; McDonald, 1970). Coefficient omega gives a higher estimate of reliability than Cronbach alpha if the items of a scale are not tau-equivalent (McDonald, 1970). Pearson's ρ correlation (Pearson, 1909) and ICC (Shrout & Fleiss, 1979) were used as a measure of the magnitude of stability over four weeks (test-retest reliability). ICC can detect systematic errors (Streiner, 1995; Yen & Lo, 2002) and it is better to estimate reliability over a period of time than Pearson's ρ (Bland & Altman, 1996). IBM-SPSS Statistics was used for all computations (IBM-SPSS, 2010).

In the first administration, scores ranged between 6 and 20 (M = 17.8, SD = 2.3); in the second, ranges were between 11 and 20 (M = 17.5, SD = 2.3). The scores were similar in both administrations ($t_{156} = 2.06$, $p = .04$, Cohen's $d = 0.13$). Cronbach alpha was .74 in the first administration and .76 in the second. McDonald's omega was .75 in the first administration and .77 in the second. The test-retest reliability over four weeks showed Pearson $\rho = .69$ ($p < .001$) and ICC = .69 (95% CI = .59, .76; $F_{156} = 5.45$, $p < .001$; $\eta^2 = 0.53$).

The present data offer support for the stability over a four-week period for the Spanish version of the 5-item Francis Scale of Attitude toward Christianity among a sample of Colombian adolescent students. Moreover, this research corroborates high internal consistency reliability for the 5-item scale, similar to an earlier study undertaken in Colombia wherein Cronbach's alpha = .87 (Campo-Arias, *et al.*, 2009). McDonald's omega has not been reported previously. This Spanish version of the 5-item scale has four-week test-retest reliability above .60, even when using a more conservative measure of concordance, the ICC (Bland & Altman, 1996; Yen

& Lo, 2002). More research should be undertaken to study the stability of the five-item scale over longer time periods across different populations. In addition, researchers should also report ICC as the indicator of test-retest reliability.

REFERENCES

- BLAND, J. M., & ALTMAN, D. G. (1996) Measurement error and correlation coefficients. *British Medical Journal*, 313, 41-42.
- CAMPO-ARIAS, A., OVIEDO, H. C., & COGOLLO, Z. (2009) Internal consistency of a five item form of the Francis Scale of Attitude toward Christianity among adolescent students. *The Journal of Social Psychology*, 149, 258-262.
- CAMPO-ARIAS, A., OVIEDO, H. C., DÍAZ, C. E., & COGOLLO, Z. (2006) Internal consistency of a Spanish translation of the Francis Scale of Attitude toward Christianity Short Form. *Psychological Reports*, 99, 1008-1010.
- CRONBACH, L. J. (1951) Coefficient alpha and the internal structure of tests. *Psychometrika*, 16, 297-334.
- FRANCIS, L. J. (1992) Reliability and validity of a short measure of attitude towards Christianity among nine-to-eleven-year-old pupils in England. *Collected Original Resources in Education*, 16, Fiche 3, A02.
- FRANCIS, L. J., & ENGER, T. (2002) The Norwegian translation of the Francis Scale of Attitude toward Christianity. *Scandinavian Journal of Psychology*, 43, 363-367.
- IBM-SPSS. (2010) *SPSS Statistics 18.0*. Chicago: Author.
- LEWIS, C. A., CRUISE, S. M., & LATTIMER, B. (2007) Temporal stability of the Francis Scale of Attitude toward Christianity Short-Form among 10- to-12-year-old English children: test-retest data over 15 weeks. *Archive for the Psychology of Religion*, 29, 259-267.
- LEWIS, C. A., CRUISE, S. M., & MCGUCKIN, C. (2005) Temporal stability of the Francis Scale of Attitude toward Christianity Short-Form: test-retest data over one week. *Psychological Reports*, 96, 266-268.
- LEWIS, C. A., CRUISE, S. M., MCGUCKIN, C., & FRANCIS, L. J. (2006) Temporal stability of the Francis Scale of Attitude toward Christianity. *Social Behavior and Personality*, 34, 1081-1086.
- LEWIS, C. A., & FRANCIS, L. J. (2004a) Reliability and validity of a French translation of a Short Scale of Attitude toward Christianity. *Pastoral Psychology*, 52, 459-464.
- LEWIS, C. A., & FRANCIS, L. J. (2004b) Reliability and validity of a Welsh translation of a Short Scale of Attitude toward Christianity among 8-15 year olds. *Irish Journal of Psychology*, 23, 101-108.
- LEWIS, C. A., FRANCIS, L. J., & ENGER, T. (2003) Reliability and validity of a Norwegian translation of a Short Scale of Attitude toward Christianity. *Individual Differences Research*, 1, 230-235.
- LEWIS, C. A., FRANCIS, L. J., & KERR, S. (2003) Reliability and validity of a Short Scale of Attitude toward Christianity among 12-19 year-olds in South Africa. *IFE Psychology*, 11, 147-152.
- LEWIS, C. A., FRANCIS, L. J., & NG, P. (2003) Reliability and validity of a Chinese translation of a Short Scale of Attitude toward Christianity. *Journal of Personality and Clinical Studies*, 19, 195-200.

- LEWIS, C. A., FRANCIS, L. J., ZIEBERTZ, H-G., & KWIRAN, M. (2005) Reliability and validity of a German translation of a Short Scale of Attitude toward Christianity. *Individual Differences Research*, 3, 205-212.
- LEWIS, C. A., & HERMANS, C. A. M. (2003) Reliability and validity of a Dutch translation of a Short Scale of Attitude toward Christianity. *Journal of Beliefs & Values*, 24, 97-100.
- MCDONALD, R. P. (1970) Theoretical foundations of principal factor analysis and alpha factor analysis. *British Journal of Mathematical and Statistical Psychology*, 23, 1-21.
- MCGUCKIN, C., CRUISE, S. M., & LEWIS, C. A. (2006) Temporal stability of the Francis Scale of Attitude toward Christianity: test-retest data over five weeks. *Pastoral Psychology*, 54, 555-559.
- PEARSON, K. (1909) Determination of the coefficient of correlation. *Science*, 30, 23-25.
- SHROUT, P. E., & FLEISS, J. L. (1979) Intraclass correlations: uses in assessing rater reliability. *Psychological Bulletin*, 86, 420-428.
- STREINER, D. L. (1995) Learning how to differ: agreement and reliability statistics in psychiatry. *Canadian Journal of Psychiatry*, 40, 60-66.
- YEN, M., & LO, L-H. (2002) Examining test-retest reliability: an intra-class correlation approach. *Nursing Research*, 51, 59-62.

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