

Evidence of factor validity of two Brazilian reduced scales measuring the Big Five*

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OBJECTIVES

The objective of this study was to evaluate the convergent and factor validity of two Brazilian scales designed to assess the five-factor personality model or Big Five: Extraversion (E), Conscientiousness (C), Agreeableness (A), Neuroticism (N), and Openness to Experience (O).

METHOD

Participants

The sample is composed of 554 subjects, mostly female (58,9%), with college level education (50,4%), and mean age of 30.6 years old (SD=8.6).

Instruments

The **Reduced Scale of Big Five Personality Factors (ER5FP)** is a semantic differential rating scale composed of 20 pairs of bipolar adjectives, with a 7-point Likert type response scale.

The **Reduced Inventory of Big Five Personality Factors (IGFP-5R)** is an instrument based on the translation and adaption of the Spanish version of the Big Five Inventory (BFI) to Brazilian Portuguese. The IGFP-5R is composed of 32 items, with a 5-point Likert type response scale.

Data analysis

First stage: dataset cleaning and exploratory analyses in order to check Confirmatory Factor Analysis (CFA) assumptions.

Second stage: CFA of the two instruments through Structural Equation Modeling.

Third stage: reliability estimation (Guttman's λ_2) to assess internal consistency of factors.

Fourth stage: estimation of raw and corrected for attenuation coefficients of convergent validity (Pearson).

RESULTS

Table 1. Fit indices of the initial and final measurement models of the scales

Scale	Model	Number of items	χ^2	χ^2 / DF	CFI	TLI	RMSEA (IC 90%)	SRMR
ER5FP	Initial	20	710.91	4.43	.83	.80	.079 (.073 - .085)	.088
	Final	15	233.57	2.92	.93	.91	.059 (.050 - .068)	.054
IGFP-5R	Initial	32	1618.73	3.57	.66	.63	.068 (.065 - .072)	.078
	Final	16	169.61	1.80	.95	.94	.038 (.029 - .047)	.043

Note: χ^2 = chi-square; DF = degrees of freedom; CFI = Comparative Fix Index; GFI = Goodness of Fit Index; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Square Residual.

Table 2. Number of items, mean of factor loadings, and reliability (Guttman's λ_2) (N=554)

Factor	Number of items		Mean of Factor Loadings		λ_2	
	ER5FP	IGFP-5R	ER5FP	IGFP-5R	ER5FP	IGFP-5R
Extraversion	3	3	.75	.61	.79	.65
Conscientiousness	3	4	.64	.59	.67	.68
Agreeableness	3	3	.66	.66	.69	.66
Neuroticism	3	3	.70	.68	.74	.72
Openness	3	3	.55	.64	.58	.67

Table 3. Correlation between factors (N=554)

Scale	Factor	E	C	A	N	O
ER5FP	E	1.00				
	C	.21 (.40)	1.00			
	A	.14 (.25)	.29 (.63)	1.00		
	N	-.01 (-.02)	-.14 (-.27)	-.13 (-.26)	1.00	
	O	.22 (.47)	.33 (.86)	.26 (.66)	-.04 (-.10)	1.00
IGFP-5R	E	1.00				
	C	.11 (.25)	1.00			
	A	.01 (.03)*	.12 (.26)	1.00		
	N	.08 (.18)	-.22 (-.44)	-.11 (-.23)	1.00	
	O	.05 (.11)*	.04 (.19)	.15 (.33)	.06 (-.12)*	1.00

Note: the coefficients corrected for attenuation are between parentheses; *non-significant correlations, $p < .05$.

Table 4. Raw and corrected for attenuation correlation coefficients between factors of the ER5FP and IGFP-5R scales (N=554)

Factors	IGFP-5R				
	E	N	A	C	A
E	.80 (.57)	-.10 (-.07)	-.23 (-.14)	-.20 (-.13)	-.02 (-.01)
N	-.07 (-.05)	.60 (.44)	-.17 (-.11)	-.39 (-.27)	-.28 (-.20)
ER5FP O	.27 (.20)	-.09 (-.06)	.74 (.46)	.42 (.28)	.29 (.20)
C	.11 (.08)	-.13 (-.09)	.35 (.21)	.43 (.29)	.24 (.15)
A	.22 (.16)	-.10 (-.07)	.39 (.25)	.31 (.21)	.48 (.33)

DISCUSSION

- CFA results concerning both scales showed an adequate adjustment of the measurement models to the data after excluding a number of items (RMSEA < .06; SRMSR < .06).
- The reliability of the ER5FP factors is acceptable for research purposes, ranging from .67 to .79, except for O ($\lambda_2 = .58$).
- The reliability of the IGFP-5R factors is also reasonable, ranging from .65 to .72.
- Moderate evidence of convergent validity were found for E ($r = .57$), N ($r = .44$), and O ($r = .57$). For A ($r = .33$) and C ($r = .29$), weak evidence was found.

REFERENCES

*this study is now published as

Laros, J. A., Peres, A. J. S., Andrade, J. M., Passos, M. F. D. (2018). Validity evidence of two short scales measuring the Big Five personality factors. *Psicologia: Reflexão e Crítica / Psychology: Research and Review*, 31:32. <https://doi.org/10.1186/s41155-018-0111-2>.

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