# Psychometric properties of the Spanish Revised Short-Form of the Eysenck Personality Profiler – *EPP-SFr*


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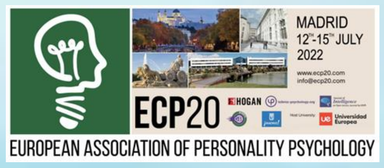


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## Introduction

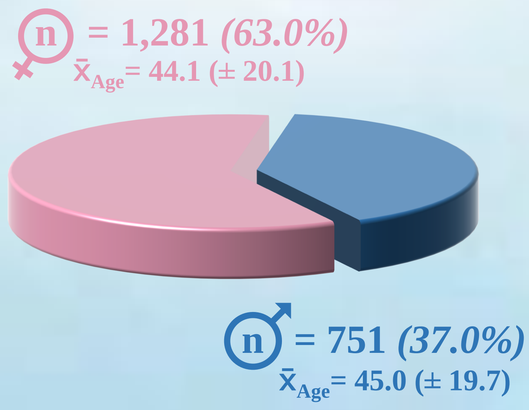
The Revised Short-Form of the Eysenck Personality Profiler (*EPP-SFr;* Petrides et al., 2003) comprises 10 scales, 3 primary Traits for each of the three Eysenckian superfactors (Types), plus a Lie scale (Dissimulation). *Activity, (Act) Sociability (Soc)*, and *Ambitiousness (Amb)* are marker scales for **Extraversion (E)**; *Unhappiness (Unhap)*, *Anxiety (Anx)*, and *Dependence (Dep)* are marker scales for **Neuroticism (N)**; *Risk-Taking (Risk)*, *Impulsivity (Imp)*, and *Sensation-Seeking (SS)* are marker scales for **Psychoticism (P)**. Each of these scales consists of 20-items responded to on a trichotomous scale *(yes / no / can't decide).*

## Objectives

Analyze the psychometric properties of the Spanish *EPP-SFr* through a Factorial Analysis of items (Ferrando et al., 2022).

## Methods

***Participants:*** **N= 2,032 volunteers of the community** (63.0% women) between 17-88 years (M=44.5, SD=19.9).




| Marital status | | Educational level | |
|---|---|---|---|
| Single | 29.2% | No-school. | 3.3% |
| Married | 55.2% | Primary | 14.6% |
| Divorced | 8.0% | Secondary | 51.1% |
| Widower | 7.6% | Univ/Postg | 31.0% |

**Employment status:** 55 % active

***Psychometric Analysis:*** The reliability study was carried out through an item analysis (average inter-item correlations), internal consistency (Cronbach's α), and test-retest (N= 265; Re-test 6-8 weeks after the first application) for the respective traits and types. The factor structure of the 200-items and the 10-scales was analyzed by Exploratory (EFA, unrestricted) and Confirmatory (CFA, restricted) Factor Analysis.

## Results

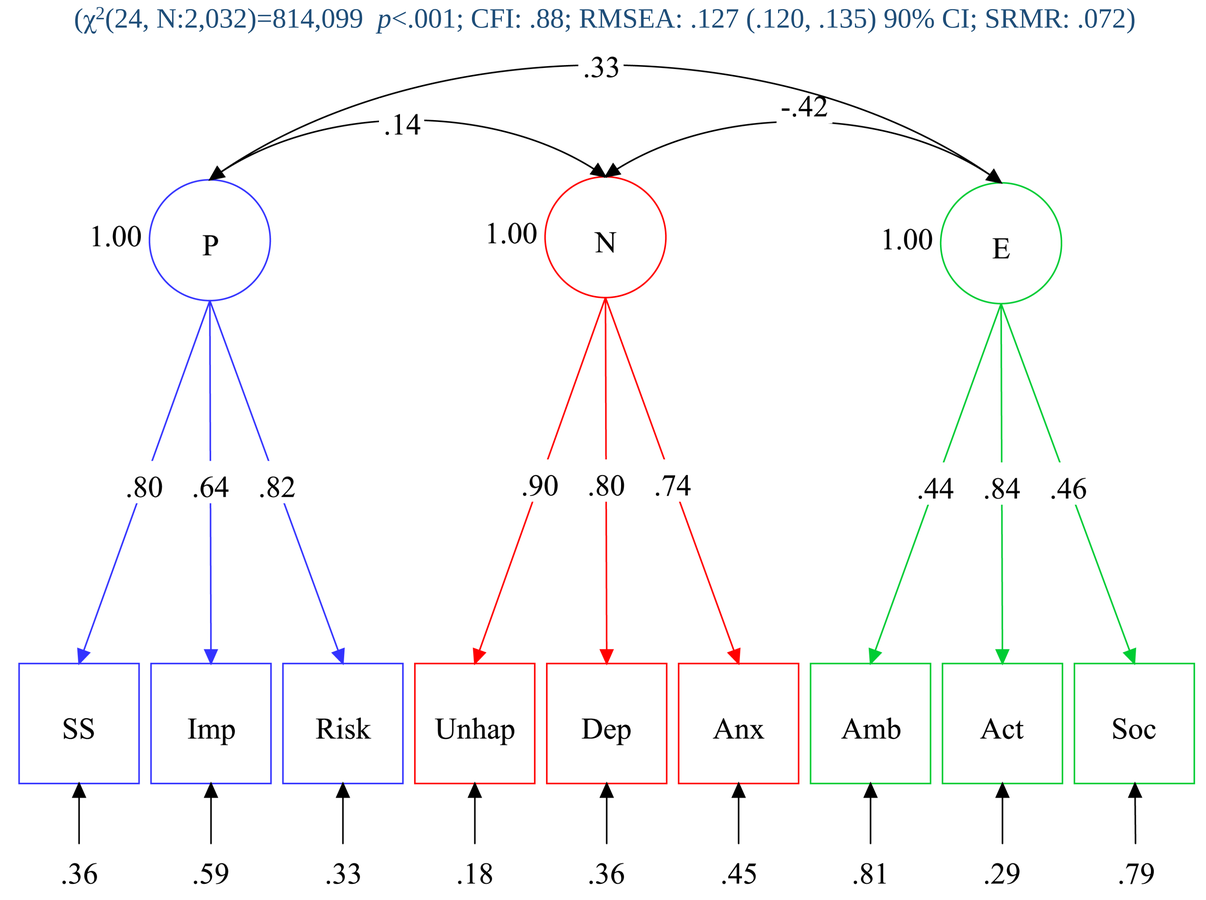
The data does not fit a normal distribution (presenting a lot of skewness and kurtosis), which makes recommendable the use of the ULS method *(Unweighted Least Squares)* for the estimation of factors in the EFA. Promin (oblique rotation) was the method for factor rotation, since both the items and the traits that make up the respective types are related to each other. Both the EFA, the one performed with the items (200) and with the scales (10), showed acceptable fit indices (see Table 1). However, the CFA 3-Factor of the EPP-SFr 9-Traits showed poor goodness-of-fit (see Figure 1).

**Table 1. DETAILS OF THE EXPLORATORY FACTOR ANALYSES (EFA)**

| Variables | Items: 200 | Scales: 10 |
|---|---|---|
| Number of participants | N = 2,032 | N = 2,032 |
| Correlation Matrix analized | Pearson | Pearson |
| Procedure for determining the number of dimensions | Optimal Parallel Analysis (PA): 11 | Optimal Parallel Analysis (PA): 2 |
| Method for Factor Extraction | Unweighted Least Square (ULS) | Unweighted Least Square (ULS) |
| Method for Rotation | Promin | Promin |
| Determinant of the Matrix | < .000001 | .026724 |
| Bartlett's Statistic | 22605.6 (*df*= 19900) *p* < .001 | 7341.6 (*df*= 45) *p* < .001 |
| Kaiser-Meyer-Olkin Test (KMO) | .90522 (very good) | .72798 (fair) |
| Values of MSA < .50 | 0 | 1 (E3= .521 [.480, .562]) |
| Factors with Eigenvalues > 1 | 10 | 3 |
| % of variance explained | 24.5% | 66.8% |
| Goodness of Fit Index (GFI) | .965 | .994 |
| Comparative Fit Index (CFI) | .994 | .953 |
| Root Mean Sq Error Ap (RMSEA) | | .103 |
| Bentler's Simplicity Index (S) | .564 | .991 |
| Loading Simplicity Index (LS) | .423 | .568 |
| Root Mean Sq. Residual (RMSR) | .022 | .035 |
| Expected RMSR (Kelley's crit.) | .022 | .022 |

**Figure 1. Single CFA 3-Factor Model (ML) of the Spanish EPP-SFr**

($\chi^2$(24, N:2,032)=814,099 *p*<.001; CFI: .88; RMSEA: .127 (.120, .135) 90% CI; SRMR: .072)




In the EFA of 10-Factors (200 items) the factor loadings of 48% of the items were lower than absolute .30. In the EFA of 3-Factors (10 Scales) the correlations between factors were comparable to the original English scale (*r*PE= .24, *r*NE= –.37, and *r*PN= .13), which were also replicated in the CFA 3-Factors (Fig. 1).

**EFA 10-Scales Rotate Loading Matrix**

| EPP-SFr | F1 (E) | F2 (N) | F3 (P) |
|---|---|---|---|
| E1 (Soc) | .27 | | .27 |
| E2 (Act) | .75 | | |
| E3 (Amb) | .61 | | |
| N1 (Anx) | | .87 | |
| N2 (Dep) | | .80 | |
| N3 (Unhap) | | .86 | |
| P1 (Risk) | | | .84 |
| P2 (Imp) | | | .60 |
| P3 (SS) | | | .79 |
| L (Lie) | | | - .57 |

Loadings lower than absolute .27 omitted

♀ > ♂ in N (Anx)  ♂ > ♀ in P (SS)

**Table 2. Descriptive, Internal consistency, Test-Retest, and Sex Differences for Traits and Types on the Spanish EPP-SFr**

| EPP-SFr scales | | Total sample (N = 2,032) | | | | | Males (n = 751) | | | | Females (n = 1,281) | | | | Sex differences | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Traits & Types | Items | *M* | *SD* | α | $r_{ii}$ | ICC | *M* | *SD* | α | $r_{ii}$ | *M* | *SD* | α | $r_{ii}$ | $t_{(1093)}$ | *p* | *g* | CI (95%) * |
| E-Extraversion | 60 | 20.50 | 5.67 | .85 | .08 | .88 | 20.69 | 5.77 | .85 | .09 | 20.39 | 5.62 | .84 | .08 | 1.15 | .252 | – | – |
| E1-Sociability | 20 | 20.46 | 8.00 | .78 | .15 | .93 | 20.23 | 8.02 | .79 | .16 | 20.60 | 7.98 | .78 | .15 | - 1.0 | .312 | – | – |
| E2-Activity | 20 | 22.55 | 7.93 | .77 | .14 | .92 | 23.18 | 7.71 | .75 | .13 | 22.19 | 8.03 | .77 | .15 | 2.73 | .006 | 0.13 | [0.04, 0.22] |
| E3-Ambitiousness | 20 | 18.48 | 7.18 | .74 | .13 | .91 | 18.65 | 7.57 | .76 | .14 | 18.38 | 6.94 | .73 | .12 | .794 | .427 | – | – |
| N-Neuroticism | 60 | 12.41 | 7.59 | .93 | .19 | .93 | 10.93 | 7.30 | .93 | .18 | 13.29 | 7.62 | .93 | .18 | - 6.9 | < .001 | - 0.32 | [- 0.41, - 0.23] |
| N1-Anxiety | 20 | 15.07 | 9.10 | .85 | .22 | .93 | 12.64 | 8.66 | .84 | .21 | 16.50 | 9.05 | .84 | .21 | - 9.4 | < .001 | - 0.43 | [- 0.52, - 0.34] |
| N2-Dependence | 20 | 11.01 | 6.75 | .75 | .13 | .86 | 10.19 | 6.66 | .75 | .13 | 11.49 | 6.75 | .74 | .13 | - 4.2 | < .001 | - 0.19 | [- 0.28, - 0.10] |
| N3-Unhappiness | 20 | 11.16 | 9.92 | .90 | .32 | .92 | 9.95 | 9.28 | .89 | .30 | 11.87 | 10.20 | .91 | .32 | - 4.3 | < .001 | - 0.19 | [- 0.28, - 0.10] |
| P-Psychoticism | 60 | 15.04 | 6.37 | .89 | .12 | .93 | 16.34 | 6.55 | .89 | .12 | 14.28 | 6.14 | .88 | .11 | 7.14 | < .001 | 0.33 | [0.24, 0.42] |
| P1-Risk-Taking | 20 | 15.85 | 6.52 | .68 | .10 | .91 | 16.89 | 6.92 | .70 | .10 | 15.24 | 6.21 | .66 | .09 | 5.38 | < .001 | 0.25 | [0.16, 0.35] |
| P2-Impulsivity | 20 | 14.53 | 7.79 | .79 | .16 | .92 | 14.92 | 7.80 | .78 | .15 | 14.30 | 7.78 | .79 | .16 | 1.72 | .086 | – | – |
| P3-Sensation-Seeking | 20 | 14.74 | 8.46 | .81 | .18 | .69 | 17.22 | 8.31 | .80 | .16 | 13.28 | 8.20 | .81 | .18 | 10.4 | < .001 | 0.48 | [0.39, 0.57] |
| L-Lie (Dissimulation) | 20 | 18.08 | 8.27 | .80 | .17 | .92 | 17.04 | 8.31 | .80 | .17 | 18.69 | 8.20 | .80 | .17 | - 4.4 | < .001 | - 0.20 | [- 0.29, - 0.11] |

*α:* Standardized Cronbach's α. $r_{ii}$: Inter-item average correlation. ICC: Intraclass correlation coefficients. *t*: Student's *t*-test. *g:* Hedges' *g* effect size. * CI: Conf. Interval

Table 2 shows more than acceptable internal consistency indices, both for types and traits; the average α for types was .89, and .79 for the traits (in the three samples). The test-retest reliability showed high temporal stability on all scales of the EPP-SFr (*p* < .001; average intraclass correlation= .89; interval= .69, .93).

## Conclusions

Despite the acceptable internal consistency of the Spanish EPP-SFr scales, the EFA and CFA results support the proposal of Francis & Jackson (2004) that reducing items of each scale could improve the model fit indices, without losing reliability or validity.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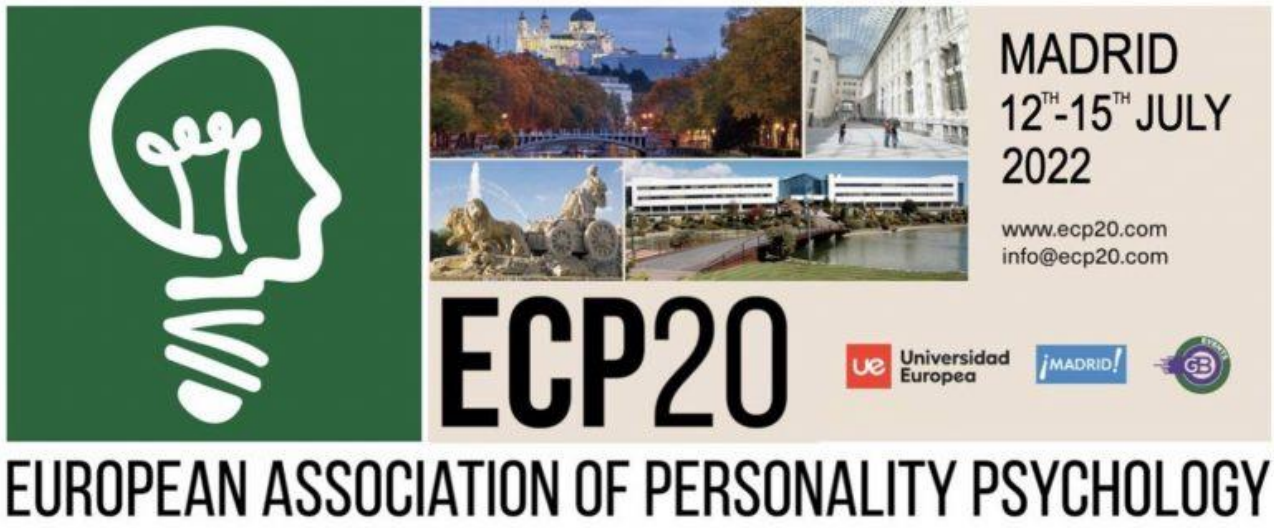


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**Topic:** Personality Assessment, Methods and Statistics

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