

ASSESSMENT OF COGNITIVE FUSION AMONG PORTUGUESE SAMPLES: PSYCHOMETRIC PROPERTIES AND FACTOR STRUCTURE OF THE COGNITIVE FUSION QUESTIONNAIRE

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Background

Acceptance and Commitment Therapy (ACT) conceptualizes human suffering as a result of psychological inflexibility. Within ACT's model of psychopathology cognitive fusion, broadly defined as the entanglement with thoughts, is a key psychological process.

Attending to the importance of measuring fundamental psychological processes within clinical and research settings, and given the need of adapting existent measures for non-English speakers, this cross-sectional study addresses **three aims**: (1) to explore the underlying factor structure of the Portuguese Cognitive Fusion Questionnaire (CFQ); (2) to test the measurement invariance of its latent structure across three different Portuguese samples; and (3) to evaluate the psychometric characteristics of this particular translated version of CFQ.

Methods

Participants

The sample characteristics are shown in Table 1. A total of 800 subjects from the Portuguese general population completed the CFQ and a subsample of 408 participants completed additional measures of mindfulness, metacognitions, decentering, psychopathological symptoms, and life satisfaction.

Table 1. Sociodemographic characteristics of the samples under study.

Sample	I (n = 408)	II (n = 291)	III (n = 101)
	M (SD)	M (SD)	M (SD)
Age	25.19 (10.07)	33.62 (9.87)	21.42 (6.72)
Years of Education	14.27 (3.12)	14.17 (3.18)	14.16 (1.07)
	n (%)	n (%)	n (%)
Gender			
Male	123 (30.1%)	291 (38.5%)	8 (7.9%)
Marital status			
Single	351 (86%)	135 (46.4%)	96 (95%)
Married	44 (10.8%)	140 (48.1%)	2 (2%)
Divorced	12 (2.9%)	15 (5.2%)	0 (%)
Widowed	1 (0.2%)	1 (0.3%)	1 (1%)
Professional class			
Low	46 (11.3%)	134 (46%)	0 (0%)
Medium	55 (13.5%)	138 (47.4%)	0 (0%)
High	12 (2.9%)	19 (6.5%)	0 (0%)
Student	295 (72.3%)	0 (0%)	101 (100%)

Measures

Cognitive Fusion Questionnaire (CFQ: Gillanders et al., 2014) assesses entanglement with private experiences such as thoughts (i.e., cognitive fusion).

Experiences Questionnaire (EQ: Fresco, 2007) evaluates the ability to take a decentered perspective on private events. In this study, we found a good internal consistency ($\alpha = .82$).

Metacognitions Questionnaire-short form (MCQ-30: Wells & Cartwright-Hatton, 2004) measures unhelpful metacognitive beliefs. The total score showed a very good internal consistency ($\alpha = .91$).

Five Facet Mindfulness Questionnaire (FFMQ: Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006) measures different facets of mindfulness, specifically: describing, observing, acting with awareness, non-judging and non-reacting. The internal consistency of the facets varied between .78 and .92.

Satisfaction with Life Scale (SWLS: Diener, Emmons, Larsen, & Griffin, 1985) broadly evaluates life satisfaction. We found a good internal consistency for this scale ($\alpha = .88$).

Depression, Anxiety and Stress Scales-21 (DASS-21: Lovibond & Lovibond, 1995) assesses psychopathological symptoms. All dimensions showed a good internal consistency, ranging between .87 and .90.

Analytic Strategy

Statistical analysis included Confirmatory Factor Analysis (CFA), Multigroup Confirmatory Factor Analysis (MCFA), and tests of reliability and convergent validity.

Results

Internal consistency

CFQ showed a good internal consistency among the samples under study (Cronbach's Alpha coefficients above .70).

Table 2. Means (M), standard deviations (SD) and alpha coefficients (α) for the Portuguese version of CFQ.

Sample	M (SD)		
	I (n = 408)	II (n = 291)	III (n = 101)
CFQ1	3.06 (1.25)	3.30 (1.60)	3.32 (1.33)
CFQ2	2.53 (1.31)	2.73 (1.50)	2.67 (1.21)
CFQ3	3.15 (1.48)	3.17 (1.63)	3.23 (1.42)
CFQ4	2.50 (1.54)	2.70 (1.60)	2.71 (1.44)
CFQ5	3.25 (1.54)	3.90 (1.55)	2.95 (1.38)
CFQ6	3.26 (1.44)	3.27 (1.51)	3.02 (1.28)
CFQ7	2.88 (1.47)	3.10 (1.69)	3.03 (1.48)
Total	20.63 (7.76)	22.17 (8.77)	20.93 (8.12)
α	.89	.90	.94

Temporal Stability

As can be seen in Table 3, Pearson correlation coefficients showed a strong and statistically significant association between test and retest (2-months after test). Moreover, paired-samples t-test pointed to the absence of statistically significant differences between test and retest, further corroborating CFQ's temporal stability.

Table 3. Test-retest reliability of the CFQ in a subgroup of sample I (n = 29).

M (SD)		r	t(df)
Test	Retest		
20.60 (7.77)	20.93 (8.16)	.70**	t(28) = -0.96 ^{ns}

Note: ** $p < .001$; ns = non significant.

Factor Structure Analyses

Table 4. Local adjustment indices for the CFQ 7-items model in all samples.

Items	λ			R^2			r		
	I	II	III	I	II	III	I	II	III
CFQ1	.72	.77	.86	.52	.59	.73	.68	.72	.82
CFQ2	.73	.80	.85	.53	.63	.72	.68	.75	.81
CFQ3	.67	.73	.76	.45	.54	.58	.62	.68	.73
CFQ4	.79	.80	.90	.62	.63	.81	.73	.75	.88
CFQ5	.65	.61	.70	.43	.37	.49	.61	.58	.67
CFQ6	.74	.69	.83	.54	.47	.68	.69	.65	.80
CFQ7	.81	.87	.89	.65	.75	.80	.75	.82	.87

Note: λ = Standardized regression weights; R^2 = Squared multiple correlations; r = corrected item-total correlations.

Table 5. Global adjustment indices for the CFQ 7-items model in all samples.

Sample	χ^2 (df = 14)	p	NC (χ^2/df)	IFI	TLI	CFI	RMSEA (90% CI)
I	61.75	<.001	4.41	.97	.95	.96	.09 (.07-.12)
II	34.78	.002	2.48	.98	.97	.98	.07 (.04-.10)
III	25.76	.028	1.84	.98	.97	.98	.09 (.03-.15)

Note: χ^2 = Chi-square test; NC = Normed Chi-square; IFI = Iterative Fit Index; TLI = Tucker-Lewis Index; CFI = Comparative Fit Index; RMSEA = Root-Mean Square Error of Approximation; 90% CI = Confidence Interval for RMSEA.

Measurement Invariance

The Multigroup CFA (Table 6) confirmed the invariance of the measurement model across the three samples, giving additional evidence for the existence of a general factor of cognitive fusion underlying the scale.

Table 6. Measurement invariance across samples.

	χ^2	df	$\Delta\chi^2$	Δdf	NC (χ^2/df)	IFI	TLI	CFI	RMSEA (90% CI)
Unconstrained (baseline)	122.36	42			2.91	.97	.96	.97	.05 (.04-.06)
Constrained model (measurement weights)	143.13	54	20.77	12	2.65	.97	.97	.97	.05 (.04-.06)

Note: χ^2 = Chi-square test; df = Degrees of freedom; $\Delta\chi^2$ = Chi-square differences test; Δdf = Degrees of freedom difference; NC = Normed Chi-square; IFI = Iterative Fit Index; TLI = Tucker-Lewis Index; CFI = Comparative Fit Index; RMSEA = Root-Mean Square Error of Approximation; 90% CI = Confidence Interval for RMSEA.

Table 7. Pearson correlations between cognitive fusion (CFQ) and the variables under study (Sample I; n = 408).

Variables	r
	Cognitive Fusion (CFQ)
Decentering (EQ)	-.53**
Metacognitions (MCQ-30)	.54**
Observing (FFMQ)	.18**
Describing (FFMQ)	-.23**
Acting with awareness (FFMQ)	-.46**
Non-judging (FFMQ)	-.70**
Non-reacting (FFMQ)	-.08
Satisfaction with life (SWLS)	-.41**
Depression (DASS-21)	.56**
Anxiety (DASS-21)	.47**
Stress (DASS-21)	.51**

Note: ** $p < .001$

Discussion

This study corroborates prior research and supports the validity and reliability of CFQ as a suitable measure to assess cognitive fusion. Results are also favourable to the use of the Portuguese version of CFQ for research purposes. Future research should focus on the psychometric exploration of this measure within clinical groups.

References

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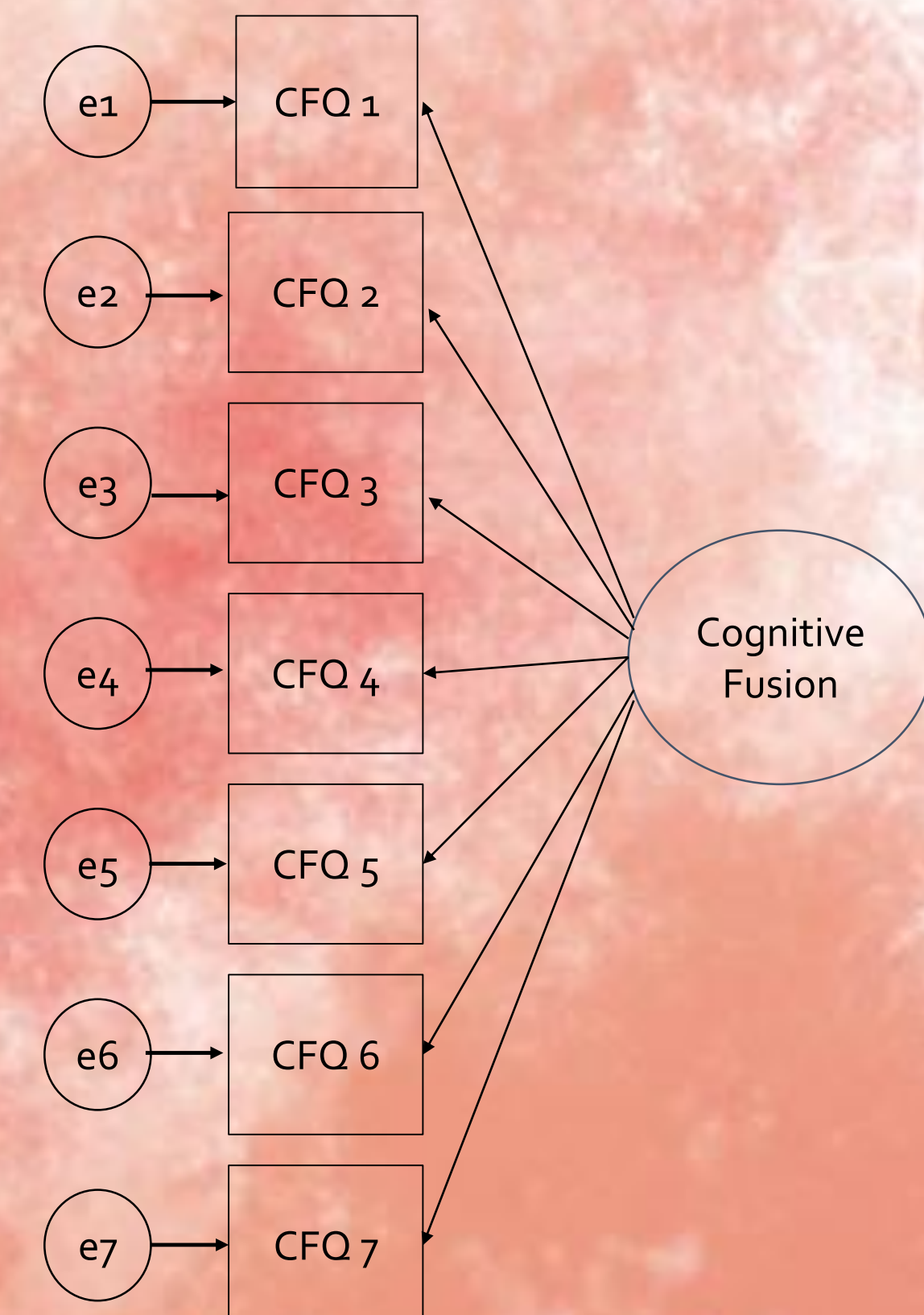


Figure 1. Graphic representation of the CFQ factorial structure

The CFAs conducted separately for the three samples supported the hypothesized unidimensional factor structure for the Portuguese CFQ, with all models tested showing an adequate model fit (Tables 4 and 5).