

THE FEAR OF COVID-19 SCALE:

A META-ANALYTIC STRUCTURAL EQUATION MODELING APPROACH

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1. INTRODUCTION

Fear is often understood as a primitive and natural response that serves as a warning of imminent, real or perceived threats, and generally drives responses towards self-protection (Hooley et al., 2016).

In this case, any possible negative consequences resulting from COVID-19

One of the most widely studied constructs regarding the COVID-19 pandemic was fear...

The Fear of COVID-19 Scale (FCV-19S) was originally developed in Persian based on 717 subjects from the general Iranian population (Ahorsu et al., 2020), and was made up of the following 7 Likert-type items with 5 categories, ranging from "strongly disagree" (1) to "strongly agree" (5) :

One dimension?

THE FCV-19S

- Item 1: I am most afraid of coronavirus-19.
- Item 2: It makes me uncomfortable to think about coronavirus-19.
- Item 3: My hands become clammy when I think about coronavirus-19.
- Item 4: I am afraid of losing my life because of coronavirus-19.
- Item 5: When watching news and stories about coronavirus-19 on social media, I become nervous or anxious.
- Item 6: I cannot sleep because I'm worrying about getting coronavirus-19.
- Item 7: My heart races or palpitates when I think about getting coronavirus-19.

Psychological and...

physiological dimensions?

Although it was originally intended to be a one-dimension scale...

Some studies found that a **two-factor model** yielded a significantly better fit and suggested differentiating between psychological symptoms (items 1, 2, 4 and 5) and physiological symptoms (items 3, 6 and 7) of fear of COVID-19.

MAIN GOAL

SHED LIGHT ON THE CONTROVERSY DERIVED FROM THE NUMBER AND RELATION BETWEEN THE FACTORS THAT MAKE UP THE FCV-19S INTERNAL STRUCTURE.

...to improve the design of future questionnaires and advance the theoretical development of such important constructs as fear, and related ones like stress or anxiety.

2. METHOD

The **ONE-STAGE MASEM** approach was applied to synthesize the independent inter-item Pearson's correlation matrices from those studies that met the selection criteria.

1 POOLED INTER-ITEM CORRELATION MATRIX

Obtained based on a **fixed-effect** or a **random-effects model**, depending on whether more heterogeneity than that due to random sampling was found among the correlations between a specific pair of items.

2 MEASUREMENT MODEL FIT

Three different models were fitted (one-factor τ -equivalent, one-factor congeneric, and two-factor models) using weighted least square as the parameter estimation method.

3 RELIABILITY INDEX

A reliability index was chosen accordingly, and computed along with its confidence interval based on the estimated model parameters.

4 MODERATOR ANALYSES

Finally, single-predictor moderator analyses were carried out to account for the heterogeneity found in the inter-item correlations.

Additionally, a bifactor model was also fitted in order to assess the essential unidimensionality/multidimensionality of the scale (Brown, 2015).

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3. RESULTS

DESCRIPTIVE CHARACTERISTICS OF THE STUDIES

- Correlation matrices for **49 independent samples** were extracted from 48 studies.
- The average of mean and standard deviation of the FCV-19S total scores were 18.03 and 5.99, respectively.

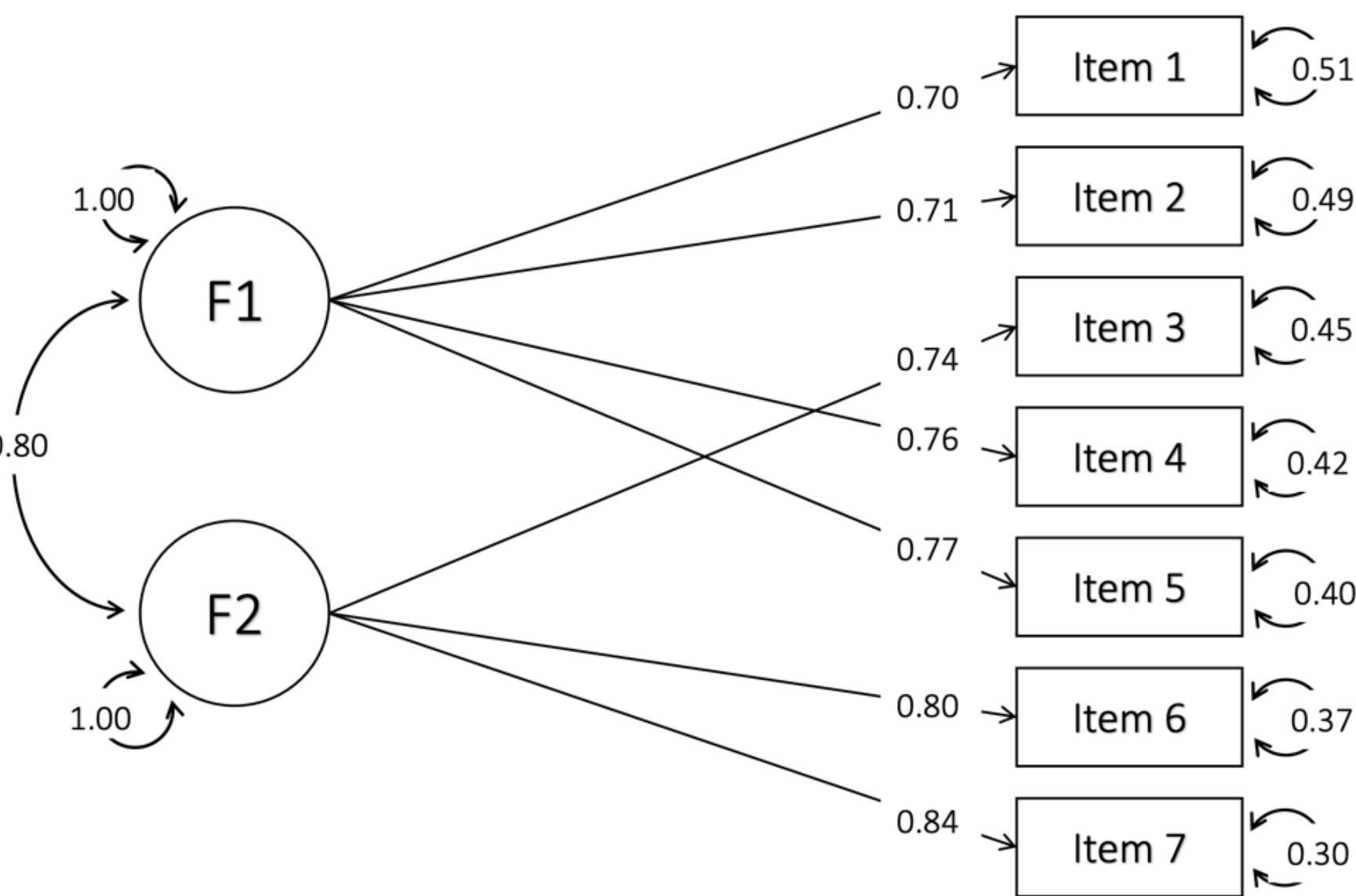
POOLED CORRELATION MATRIX

- One matrix was nonpositive definite and was therefore **excluded** from the subsequent analyses (Lathabhavan et al., 2021).
- A statistically significant better fit was found for the four measurement models based on **random-effects** rather than fixed-effect correlations.

MEASUREMENT MODEL

Measurement MODEL	$\chi^2(df)$	Cfi	Tli	RMSEA [95%ci]	SRMR
One-factor τ -EQUIVALENT	461.5089 (20)*	.8778	.8717	.0161 [.0146, .0176]	.0695
One-factor CONGENERIC	411.6081 (14)*	.8900	.8350	.0182 [.0165, .0201]	.0722
Two-factor	154.7577 (13)*	.9608	.9366	.0113 [.0094, .0132]	.0345
Bifactor	52.7076 (7)*	.9874	.9621	.0087 [.0062, .0114]	.0189

* = $p < .001$.



OVERALL SCALE RELIABILITY

Based on a **two-factor model**: Overall omega equal to .83 (95%CI: [.82, .84]) for the psychological symptoms subscale, and .83 (95%CI: [.83, .84]) for the physiological symptoms subscale.

The overall omega for the entire scale reached 0.91 (95% CI: [.90, 0.91])

MODERATOR ANALYSES

Moderator variable	k (N)	ΔAIC	$\Delta LL(df)$	p
Standard deviation of total scores	45 (78,075)	-94.03	108.03 (70)	<.01
Mean of total scores	47 (84,274)	33.28	-19.28 (28)	1.00
Standard deviation of participants' age	43 (66,962)	205.52	-191.52 (112)	1.00
Mean of participants' age	44 (67,190)	180.43	-166.43 (91)	1.00
Sample size	48 (85,403)	7.23	6.77 (7)	0.45
Male proportion	47 (78,653)	2.63	11.37 (28)	1.00
Target population (specific vs. general)	48 (85,403)	-80.30	94.30 (7)	<.001
Country development (WHO)	47 (70,846)	14.84	-0.84 (28)	1.00
Language of the scale (other vs. Spanish)	46 (70,491)	82.45	-68.45 (49)	1.00

4. DISCUSSION

In summary...

WHAT HAVE WE GOT?

Out of the 48 studies, the one-factor congeneric model yielded a good fit in the 64.58%.

- However, the fit indices did not reach the cut-off points stated in this work and positive covariances between the error variances of the items comprising one of the two factors were needed.

In the present study, adequate fit indices were obtained for the **two-factor model**.

- Although the two factors were found to be **highly correlated** ($r=.80$)

The fit of the bifactor model suggest that the FCV-19S is "essentially unidimensional".

- Therefore, there is the possibility of **reporting a FCV-19S total score** and a reliability index that accounts for this "essential unidimensionality".

... and

- The reliability (for the entire scale and both subscales) were above the threshold of .80, **recommended for general research purposes** (Nunnally & Bernstein, 1994).

- The estimated factor loadings increased (leading to an increase in the scale reliability) when...
 - The standard deviation of the participants' total scores increased
 - The FCV-19S is administered in specific target populations rather than in a general population