2022, Vol. 22, No. 3
ISSN 1667-4545
Recuperado de https://revistas.unc.edu.ar/index.php/revaluar

Laboratorio de Evaluación Psicológica y Educativa
Facultad de Psicología - Universidad Nacional de Córdoba

Fear of Covid-19 Scale in Chilean University Students: Psychometric Properties and Measurement Invariance

Escala de Miedo al Covid-19 en Estudiantes Universitarios Chilenos: Propiedades psicométricas e invarianza de medida

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Recibido: 05/11/2022 **Revisado:** 07/11/2022 **Aceptado:** 08/11/2022

Abstract

The latest events in the lives of university students in Chile have been very stressful quarantines, online classes, and fear of contagion. It is imperative to have a solid instrument to measure the fear of Covid. This research aims to estimate the psychometric properties of the 'Fear of Covid-19 Scale (FCV-19S)' in a sample of 562 Chilean university students and to confirm its factorial structure. Confirmatory factorial analyses were performed and model parameters were estimated using the diagonally weighted least squares (DWLS) method. The assessment of FCV-19S had satisfactory values (ω = .94; α = .93). The results showed that the two-correlated factor model best fit the data CFI = .993, TLI = .989, RMSEA = .053, SRMR = .049. These findings suggest that FCV-19S has the proper psychometric properties for its application to Chilean university students.

Keywords: *fear of Covid-19, reliability, validity, FCV-19S, university students*

Resumen

Los últimos acontecimientos relacionados con el Covid-19 han sido muy estresantes en la vida de los universitarios chilenos. A partir de lo anterior, es imperativo contar con un instrumento sólido para medir el miedo al Covid. Esta investigación tiene como objetivo estimar las propiedades psicométricas de la Escala de Miedo al Covid-19 (FCV-19S) en una muestra de 562 estudiantes universitarios chilenos y confirmar su estructura factorial. Se realizó un análisis factorial confirmatorio y se estimaron los parámetros del modelo utilizando el método de mínimos cuadrados ponderados diagonalmente (DWLS). La evaluación de FCV-19S tuvo valores satisfactorios (ω = .94; α = .93). Los resultados mostraron que el modelo de dos factores correlacionados se ajusta mejor a los datos CFI = .993, TLI = .989, RMSEA = .053, SRMR = .049. Estos hallazgos sugieren que la FCV-19S tiene las propiedades psicométricas adecuadas para su aplicación en estudiantes universitarios chilenos.

Palabras clave: *miedo al Covid-19, fiabilidad, validez, FCV-19S, estudiantes universitarios*

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How to cite: Martínez-Líbano, J., Torres-Vallejos, J., Simkin, H., Oyanedel, J. C., Silva, A., & Yeomans, M. M. (2022). Fear of Covid-19 Scale in Chilean University Students: Psychometric properties and measurement invariance. *Revista Evaluar, 22*(3), 48-65. Recuperado de https://revistas.unc.edu.ar/index.php/revaluar

Participaron en la edición de este artículo: Fiorella Garabano, Gloria Nieve, Eugenia Barrionuevo, Déborah Figueroa, Florencia Ruiz, Mónica Serppe, Alicia Molinari, Ricardo Hernández, Jorge Bruera.

Introduction

In December 2019, 27 patients were diagnosed with pneumonia of unknown etiologic and associated with exposure to seafood, fish, or raw animal meat in Wuhan, China. On January 7th, 2020, a new coronavirus variant was isolated in these patients (SARS-CoV-2); the illness caused by this virus was identified as Covid-19 (Ramos, 2020). In the early stages of the pandemic, due to the lack of research on the topic, it was concluded that this coronavirus would only affect the respiratory system. However, as the number of infected patients rose, it was noted that cardiovascular diseases also played an essential role in the development and prognosis of the infection (Figueroa-Triana, Salas-Márquez, Cabrera-Silva, Alvarado-Castro, & Buitrago-Sandoval, 2020). Covid-19 is an illness that has heavily impacted everyday life. It has reached high mortality rates and political, social, psychological, educational and economic consequences (Martínez-Líbano, 2020; Martínez-Líbano, Yeomans, González-Campusano, & Campos-Flores, 2021; Martínez-Líbano & Yeomans-Cabrera, 2021a; Martínez-Libano & Yeomans-Cabrera, 2021b; Yeomans-Cabrera & Silva-Fuentes, 2022; Yeomans, Martínez-Líbano, & Silva, 2021; Yeomans-Cabrera & Silva-Fuentes, 2020). The pandemic interrupted normal activities for most of the world population due to social distancing policies and lockdowns (Tasnim, Islam, Sujan, Sikder, & Potenza, 2020), and it became an epidemic affecting all aspects of human lives (Nguyen & Le, 2021). Essentially, Covid-19 is characterized by three traumatic components: first, the associated fear of the present and future infections; second, its economic impact on the general population; and third, the interruption of daily routines and isolation (Kira et al., 2021). Therefore, confinement during the pandemic caused a radical change in lifestyles for most people, including social distancing from friends and families and a lack of activities unrelated to work (Corvo & de Caro, 2020). Despite the earthquake caused to the health system by Covid-19, the pandemic's interpersonal, financial, and social consequences have had a long and lasting effect on the population's mental health (Madigan, Racine, Cooke, & Korczak, 2021) in the long and the short run (Park et al., 2021).

Currently, extensive empirical evidence concerning the impact of Covid-19 on the population's mental health has been published (Gruber et al., 2021). Even more, research concerning the psychological effects of Covid-19 has identified high levels of anxiety, depression, and trouble sleeping in the general population (Huang & Zhao, 2020). Higher familiar and occupational stress levels and anxiety are associated with potential contagion and eventual illness (Asmundson et al., 2020), adding to financial instability. Besides, the fear of losing a stable job, primary resources, support, and interpersonal connections implies a possible separation or loss of loved ones (Gruber et al., 2021).

Likewise, research points to anxiety and depression as the main psychiatric symptoms of Covid-19, adding that one out of five patients diagnosed with the virus has presented unstable mental health (Taquet, Luciano, Geddes, & Harrison, 2021). This pandemic has decreased the quality of life and impacted on the mental health of people all over the world (Kaparounaki et al., 2020; Martínez-Libano & Yeomans-Cabrera, 2021a; Martínez-Líbano & Yeomans-Cabrera, 2021b; Yeomans-Cabrera & Silva-Fuentes, 2022; Yeomans-Cabrera & Silva-Fuentes, 2020). Many parents have experienced an increasing overload of tasks and higher stress as family-life routines have been disturbed (van Tilburg et al., 2020). The quality of partner relationships has also been

affected (Martínez-Libano & Yeomans-Cabrera, 2021a; Mousavi, 2020), as well as the generalized sense of happiness and social interactions (Ren, Stavrova, & Loh, 2022).

Furthermore, research indicates that fear of contagion can also increase the severity of Covid-19 infections, making patients more vulnerable to psychological problems such as distress and anxiety (Leal-Filho et al., 2021). Recent scientific publications suggest this fear may also be associated with worries about the fear of infection by asymptomatic carriers and transmission by physical contact (Shigemura, Ursano, Morganstein, Kurosawa, & Benedek, 2020). Despite the commonality of experiencing fear of infectious diseases, the high rates of morbidity and mortality of Covid-19 highlight the importance of research on fear of contagion and associated behaviors, especially in vulnerable populations (Brooks et al., 2020) and individuals with mental disorders (Holmes et al., 2020).

Fear is a psychological emotion that not only shapes essential aspects of humans, such as self-sufficiency and coping, but also may define responsible or irresponsible behavior towards infection. These increase the need for measurement, especially among young adults, the elderly and health system workers. Nonetheless, the absence of instruments to assess fear makes it harder to propose proper actions to promote health improvements (Sánchez-Teruel, Robles-Bello, Lara-Cabrera, & Valencia-Naranjo, 2022).

The Scale of Fear of Covid-19

The Scale of Fear of Covid-19 (FCV-19S; Ahorsu, Lin et al., 2022) is a manageable questionnaire that assesses fear out of 7 items (e.g., *I am terrified of this coronavirus*) with a Likert-type format of five possible answers according to the degree of agreement of participants. According to its authors, the FCV-19S has presented acceptable psychometric properties according to evidence found in literature, which makes them robust, reliable, and valid to assess and measure fear of Covid-19 in the general population: Cronbach alfa of .82 and interclass correlation of .72 (Ahorsu, Imani et al., 2022; Zolotov, Reznik, Bender, & Isralowitz, 2022). FCV-19S was translated and adapted to different languages such as Arabic (Al-Shannaq, Mohammad, & Kadher, 2021; Alyami, Henning, Krägeloh, & Alyami, 2021; Fawzy El-Bardan & Lathabhavan, 2021), Amharic (Elemo, Satici, & Griffiths, 2020), Bangla (Sakib et al., 2022), Chinese (Chang, Hou, Pakpour, Lin, & Griffiths, 2022; Chi et al., 2022), Greek (Nikopoulou et al., 2022; Tsipropoulou et al., 2021), Hebrew (Tzur-Bitan et al., 2020), Hindi (Doshi, Karunakar, Sukhabogi, Prasanna, & Mahajan, 2021), Indonesian (Nazari, Safitri, Usak, Arabmarkadeh, & Griffiths, 2021), Italian (Soraci et al., 2022), Japanese (Masuyama, Shinkawa, & Kubo, 2022; Wakashima et al., 2020), Malay (Pang et al., 2022), Norwegian (Iversen et al., 2022), Persian (Dadfar, Mahoghegh, & Eslami, 2021), Portuguese (Cavalheiro & Sticca, 2022; de Medeiros et al., 2021; Giordani, Zanoni da Silva, Muhl, & Giolo, 2022; Magano, Vidal, e Sousa, Dinis, & Leite, 2021), Romanian (Stănculescu, 2022), and Spanish (Broche-Pérez, Fernández-Fleites, Jimenez-Puig, Fernández-Castillo, & Rodríguez-Martin, 2022; Cassiani-Miranda, Tirado-Otálvaro, & Campo-Arias, 2022; Caycho-Rodríguez et al., 2022; Furman, Griffiths, Pakpour, & Simkin, 2020; García-Reyna et al., 2022; Huarcaya-Victoria, Villareal-Zegarra, Podestà, & Luna-Cuadros, 2022; Martínez-Lorca, Martínez-Lorca, Criado-Álvarez, Armesilla, & Latorre, 2020; Mercado-Lara, Campo-Arias, & Monterrosa-Castro, 2022; Moreta-Herrera et al., 2022; Piqueras et al., 2021) Turkish (Haktanir,

Seki, & Dilmaç, 2022; Satici, Gocet-Tekin, Deniz, & Satici, 2021).

In 2022, a series of articles were published where the structure of the FCV-19S scale is not clear. Some authors maintain the unifactorial structure of the original authors (Ahorsu et al., 2020). These validations have taken place in Canada for the French-speaking population (Attieh et al., 2022), Romania (Stănculescu, 2022), Brazil (Cavalheiro & Sticca, 2022), Pakistan (Mahmood, Jafree, & Qureshi, 2022), Arabia (Murad, Al-Dassean, Al-Neweiri, Murad, & Murad, 2022), Turkey (Haktanir et al., 2022) and Palestine (Mahamid, Bdier, & Berte, 2022). Other authors confirm its unifactorial structure, eliminating items (Cassiani-Miranda et al., 2022; Mercado-Lara et al., 2022). Likewise, there is a series of recent publications that stipulate two factors as the structure of FCV-19S, such as Japan (Masuyama et al., 2022); China (Chi et al., 2022; Yang et al., 2022); Hungary (Balázs, Mitev, & Brodszky, 2022); Norway (Iversen et al., 2022) and in Latin America, Ecuador (Moreta-Herrera et al., 2022); Argentina (Caycho-Rodríguez et al., 2022; Furman, Griffiths, Pakpour, & Simkin, 2022) and Peru (Huarcaya-Victoria, 2020).

Therefore, the structure of the FCV-19S continues to be discussed. This study is intended to contribute to a better understanding of the structure of the respective scale.

Covid-19 in Chile

Regarding Covid-19, the issue that affected most of the Chilean population compared to other countries was unemployment. According to the Chilean Central Bank, the rate of monthly economic activity between June 2019 and June 2020 decreased by 12.4%. The unemployed population increased by 42.9%: the highest in the 2010-2020 decade. In addition, the number of deaths and infected patients significantly rose from July 7th, 2020, to February 4th, 2021. The infected population has increased by 144%, reaching a total of 740,237 people, while the number of deaths increased by 185%, meaning 18,731 losses (Cerda & García, 2022). Yet, no research regarding the relevance of fear in the Chilean population has been published.

Chilean society experienced a social outburst on October 18, 2019, when the population expressed discontent with the country's political, economic, and social systems (Fry, 2020). This generated a high emotional charge, resulting in fear, anxiety, and even disconnection from reality (Toloza & Figueroa, 2022). It is in this scenario that university students play a relevant role in this discontent (Amador-Baquiro & Muñoz-González, 2021). Before the arrival of the pandemic in our country, Chilean university students were significantly affected, since their usual activities were cut short by the quarantines (Mac-Ginty, Jiménez-Molina, & Martínez, 2021) and by the imposition of online classes (Zambrano, Bravo, Maluenda-Albornoz, & Infante-Villagrán, 2021). The above can affect the mental health of university students, understanding that they are a population that is particularly sensitive to psychological problems (Ganson et al., 2022; Mori, 2000), so Covid-19 can be a disease very stressful for the mental health of university students (Wood et al., 2022). In Chile, the prevalence of depressive and anxious symptoms among young people is high compared to other countries (Araya, Montero-Marin, Barroilhet, Fritsch, & Montgomery, 2013).

Although a systematic review of mental health problems in the general population due to Covid-19 has been carried out (Xiong et al., 2020), there are still no instruments to help determine the fear of Covid-19 in the Chilean university population.

Materials and Methods

Participants

The sample consisted of 562 university students from the Chilean higher education system. The participants' average age was 29.41 (SD = 7.1; range: 18-60), 82.4% were female, 17.3% were male and 0.4% were non-binary. Regarding the academic progress of the students, 20.1% were in their first year, 21.7% were in their second year, 22.6% were in their third year, 18.1% were in their fourth year, 8.7% were in their fifth year and 8.7% were in the process of graduating.

Measures and instruments

The Fear of Covid-19 Scale. FCV-19S (Ahorsu, Lin et al., 2022) is a self-administered questionnaire that assesses fear of Covid-19 through 7 items with a Likert-type format and five response anchors according to the degree of agreement of the participants. The FCV-19S has presented acceptable psychometric properties reported in the literature (Ahorsu, Lin et al., 2022; Furman et al., 2020). Its adaptation to Spanish (see appendix) was elaborated following the methodological standards recommended by the International Test Commission (ITC; Muñiz, Elosua, & Hambleton, 2013).

The abbreviated Chilean version of the Depression, Anxiety and Stress Scales. DASS-21 (Lovibond & Lovibond, 1995) was translated and adapted in Chile by Román et al., who also validated its psychometric properties (Román-Mella, Vinet, & Alarcón-Munoz, 2014; Román, Santibáñez, & Vinet, 2016). The DASS-21 has 21 items, with four response alternatives in Likert format, ranging from 0 to 3. The questionnaire asks the respondent to indicate to what extent the sentence describes what happened or felt to them during the last week. This instrument is a self-report scale, brief, and easy to administer and answer.

Procedure

To adapt and validate FCV-19S, firstly, a back-translation of the original technique was carried out (Ahorsu, Lin et al., 2022), from which the psychological meaning of each statement was maintained. The questionnaire was designed on the Google Forms platform and was administered through Facebook and Instagram between November and December 2021. Participation was voluntary, and none of the participants received financial compensation for collaborating with the study.

Data analyses

Psychometric properties of the FCV-19S were assessed with reliability and validity analyses. Before conducting these analyses, the item scores were summarized by mean, standard deviation, skewness, and kurtosis to verify deviation from a normal distribution. A polychronic correlation matrix was generated to explore the initial factorial structure due to the ordinal measure of the variables (Ekström, 2011). Then we analysed the corrected item correlation and Cronbach's alpha if an item was removed. Later, we explored construct validity using confirmatory factor analysis testing two different models: single-factor and two-correlated factor models. Model parameters were estimated using the diagonally weighted least squares (DWLS) method since we included ordinal observed variables in both models. The goodness of fit was estimated,

including chi-square (χ^2), comparative fit index (CFI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR). A CFI ≥ .95 and RMSEA and SRMR ≤ .05 are considered a very good fit (Batista-Foguet & Coenders-Gallart, 2012; Hu & Bentler, 1999). We looked at differences in fit indexes to compare competing models and used the likelihood ratio test with chi-square (Satorra & Bentler, 2010). Subsequently, the scale's reliability was evaluated based on the internal consistency analysis, considering McDonald's omega coefficient (Deng & Chan, 2017). Considering the model that best fits the data, measurement invariance was tested between participants' gender at four levels: (a) configural, same items load onto the same latent variables; (b) metric, factor loading constrained; (c) scalar, factor loadings, intercepts, and factor mean constrained; (d) strict, factor loadings, intercepts, factor mean, and residual variances are constrained (Meredith, 1993). To provide evidence for invariance, a non-significant change in χ^2 was expected (Millsap, 2012; Millsap & Olivera-Aguilar, 2014) or a change in the CFI (ΔCFI) < .010 (Chen, Giannakouros, & Yang, 2007; Cheung & Rensvold, 2002; Millsap, 2012; Millsap & Olivera-Aguilar, 2014), supplemented by ΔRMSEA < .015 (Putnick & Bornstein, 2016).

Finally, a concurrent validation was carried out between the FCV-19S and the depression, anxiety, and stress subscales of the DASS-21.

For the data analysis of FCV-19S, R version 4.2.1, and RStudio version 2022.07.1 Build 554 (RStudio, 2009-2022) were used. A confirmatory factor analysis was performed in general using Lavaan (Rosseel, 2012) and semTools (Jorgensen, Pornprasertmanit, Schoemann, & Rosseel, 2022) packages.

The present study was developed under the authorization of the Ethics Committee of the Faculty of Education and Social Sciences of the Universidad Andrés Bello, under registration number 90660/2020.

Results

Descriptive statistics and polychoric correlations of the Chilean version of FCV-19S are summarized in Table 1. The skewness and kurtosis values ranged between -2 and +2 in all items.

FCV-19S reliability levels were adequate, and McDonald's omega reached satisfactory values (ω = .94) as well as the ordinal alpha (α = .93). (Table 2).

The results of the CFA to verify the internal structure of the FCV-19S are presented in Table 3. The indices showed that the two-correlated factor model best fit the data (CFI = .999, TLI = .989, RMSEA = .053, SRMR = .049) compared to the single-factor model (CFI = .981, TLI = .972, RMSEA = .084, SRMR = .076).

Also, the difference between the single-factor and two-correlated factors model was significant, χ^2 = 72.726, *df* = 1, $p \leq .001$). Finally, we observed that modification indices for the single-factor model suggested that different items of each factor should be correlated (e.g., Item 1 with Item 4, Item 6 with Item 7, etc.).

Considering the above mentioned reasons, we chose the last model for this sample, considering two factors consisting of an emotional (ω = .83) and physiological (ω = .86) response, as reported by other authors (Balázs et al., 2022; Iversen et al., 2022; Masuyama et al., 2022; Yang et al., 2022). Items 1, 2, 4, and 5 correspond to the emotional response factor, and items 3, 6, and 7 correspond to the physiological response factor.

The measurement invariance of the two-correlated factors model was tested between different participants' gender. Table 4 presents the fit indices and model comparisons. The fit for the

Table 1
Descriptive statistics and Polychoric correlations for the FCV-19S.

	Descriptive statistics				Polychoric correlations						
Items	**M**	**SD**	**Skewness**	**Kurtosis**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Item1	3.04	1.25	-0.17	-0.94	–						
Item2	2.79	1.26	0.03	-1.07	.65	–					
Item3	1.75	.93	1.14	0.72	.49	.67	–				
Item4	2.89	1.41	0.02	-1.31	.70	.50	.55	–			
Item5	2.52	1.29	0.34	-1.05	.61	.64	.72	.69	–		
Item6	1.79	1.02	1.20	0.72	.46	.54	.76	.55	.67	–	
Item7	1.99	1.15	0.98	0.00	.52	.54	.76	.61	.73	.83	–

Table 2
Item analysis for the FCV-19S.

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Item 1	13.74	31.19	.64	.87
Item 2	14.00	31.18	.64	.87
Item 3	15.03	33.27	.70	.86
Item 4	13.89	29.61	.66	.87
Item 5	14.26	29.37	.76	.85
Item 6	15.00	32.86	.67	.87
Item 7	14.78	31.11	.71	.86

Table 3
Model comparisons of the FCV-19S based on confirmatory analyses.

	χ^2	CFI	TLI	RMSEA	SRMR
Single-factor model	69.73*** (14)	.98	.97	.08 [.07, .11]	.07
Two-correlated factors model	33.23** (13)	.99	.99	.05 [.03, .08]	.05

Note. *** $p < .001$. ** $p < .01$.

configural model was appropriate: $\chi^2 = 174.735$, $df = 26$, $p > .001$; CFI = .932; RMSEA = .143, meaning that items loaded on the same factors in both groups. When factor loadings are constrained to be equal across groups, the model also showed a good fit: $\chi^2 = 179.932$, $df = 31$, $p < .001$, CFI = .932, RMSEA = .131. According to the threshold described in the data analysis section, CFI change is lower than .01, assuming the metric invariance of the model, even RMSEA change is in the threshold. Scalar invariance was assessed by constraining factor loadings and intercepts to be equal across groups ($\chi^2 = 185.017$, $df = 36$, $p < .001$, CFI = .932, RMSEA = .122). χ^2 difference testing was non-significant ($p > .05$), and the change in CFI and RMSEA are in the expected threshold, so the

Table 4
Female/male measurement invariance test for the two-factor model for FCV-19S.

		SBχ^2 (*df*)	CFI	RMSEA	SRMR	Model comparison	Δ CFI	Δ RMSEA	*p* (χ^2)
1	Configural	174.735*** (26)	.932	.143	.048				
2	Metric	179.932*** (31)	.932	.131	.052	2 vs. 1	0	-.012	> .05
3	Scalar	185.017*** (36)	.932	.122	.052	3 vs. 2	0	-.009	> .05
4	Strict	215.406*** (43)	.922	.120	.054	4 vs. 3	-.010	-.002	< .001

Note. *** $p < .001$.

Table 5
Correlations between the FCV-19S two factors and depression, anxiety, and stress subscales of the DASS-21.

		DASS-21		
		Depression	**Anxiety**	**Stress**
FCV-19S	Total	.22***	.34***	.30***
	Emotional response	.19***	.31***	.29***
	Physiological response	.20***	.31***	.26***

Note. *** $p < .001$.

scalar invariance for the two-factor model can be assumed. Finally, we added the constraint of the residual variances to be equal across groups (χ^2 = 215.406, *df* = 43, $p < .001$, CFI = .922, RMSEA = .120), indicating that this level is not met since CFI change is greater than the threshold and χ^2 difference testing was significant ($p < .001$).

To test the current validity of the FCV-19S, correlations were tested between the full scale with its dimensions and the dimensions of DASS-21. We found that all correlations were positive and statistically significant. This instrument has presented adequate psychometric properties for the current study (χ^2 = 588.359, *df* = 186, $p < .000$, CFI = .930, TLI = .921, RMSEA = .062, SRMR = .044). McDonald's omega for each dimension was also high (depression = .89, anxiety = .91, stress = .91).

Discussion

The present study offered the Chilean context a linguistically adapted version of the Covid-19 Fear Scale (FCV-19S). The analyses have shown adequate values for the technique regarding its internal consistency. McDonald's omega reached satisfactory values (ω = .94), as did the ordinal alpha (α = .93). Considering that a new translation of the scale was made, it is encouraging that these indicators are in line with those obtained in previous regional validations in the same language (Caycho-Rodríguez et al., 2022; Furman et al., 2020; García-Reyna et al., 2022). Equally acceptable values are also observed in the international context. According to these authors, it can be inferred that the measurements of the different versions of the FCV-19S are inherently stable and equally acceptable in the international context.

Likewise, correlational analysis with the Abbreviated Chilean version of the Depression, Anxiety, and Stress Scales (DASS-21) has yielded positive associations, allowing us to link a greater fear of Covid-19 with depression, anxiety, and stress, thus corroborating the validity of the instrument concerning other variables. It is worth mentioning that the study of both constructs has been previously addressed in various research studies (Kumar & Nayar, 2021; Menzies & Menzies, 2020; Pradhan, Biswasroy, Kumar-Naik, Ghosh, & Rath, 2020).

The indices showed that the two-correlated factor model (emotional and physiological) best fit the data (CFI = .993, TLI = .989, RMSEA = .053, SRMR = .049). The physiological response factor did not have a predictor. However, the emotional response was a positive predictor of anxiety ($\beta = .207$, $p < .05$) and stress ($\beta = .269$, $p < .01$), while depression was not related. Covid-19 severely impacts university students' mental health, which may explain how fear of Covid generates anxiety and stress in students. In a recently published systematic review, it was possible to determine that the prevalence of anxiety in this population is close to 41% (Liyanage et al., 2022), and it is one of the most commonly reported mental health disorders by university students, which may significantly affect academic performance by increasing the feeling of inefficiency (American College Health Association, 2019). Lockdown, social isolation, and disruption of daily life during Covid-19 have affected students' lives and have predisposed them to stress, potentially creating a new public health crisis (Calina et al., 2021). Anxiety and stress factors in university students are associated with fear of infection, inadequate supplies, boredom, stigmatization, difficult financial situation and expectations, and academic worries (Nadareishvili et al., 2022). It is, therefore, essential to have validated instruments for the correct measurement of fear of Covid in Chilean students and to continue studying this phenomenon in this and other populations suffering the psychological, emotional, and social consequences of this pandemic.

Limitations

Most of the sample were female university students which might affect the results due to their gender characteristics. Analyzing the results by gender is suggested since there is evidence that it is a variable in people's emotions regarding Covid-19 (Yeomans-Cabrera et al., 2021). In addition to measuring, this research was conducted with college students; hence, these findings cannot be generalized to the whole Chilean population.

Conclusions

The Fear of Covid-19 Scale (FCV-19S) has good psychometric properties to be applied to Chilean university students. The assessment of FCV-19S had satisfactory values $\omega = .94$ and $\alpha = .93$. The results showed that the two-correlated factor model (emotional & physiological) best fit the data CFI = .993, TLI = .989, RMSEA = .053, SRMR = .049. Simultaneous regression analyses were conducted to examine the emotional and physiological response to the fear of Covid-19 as predictors of each DASS21 dimension. The physiological response factor did not have a predictor. However, the emotional response was a positive predictor of anxiety ($\beta = .207$, $p < .05$) and stress ($\beta = .269$, $p < .01$), while depression was not related. Covid-19 severely impacts university students' mental health, which may explain how fear of Covid generates anxiety and stress in students. From these results, we can conclude that the Fear

of Covid-19 Scale (FCV-19S) is an excellent measurement instrument for this Chilean population. Its use can be relevant in helping higher education institutions prevent possible serious pathologies in future professionals.

Supplementary Materials: The following supporting information can be downloaded at: https://drive.google.com/drive/folders/1fey1fsYzYvGddPUY44fp7AIdUkGhWwft?usp=sharing

Author Contributions: Conceptualization, J.M., and M.Y.; methodology, J.M., and J.T.; software, J.M., J.T., H.S., and J.O.; validation, J.M., J.T., and H.S.; formal analysis, J.M., J.T., M.Y.; investigation, J.M., and M.Y.; resources, J.M., and M.Y.; data curation, J.M., J.T.; writing—original draft preparation, J.M., A.S., and M.Y.; writing—review and editing, M.Y.; visualization, M.Y.; supervision, M.Y.; project administration, J.M.; funding acquisition, J.M., and M.Y.. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Ethics Committee of the Faculty of Education and Social Sciences of the Universidad Andrés Bello, under registration number 90660/2020.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Data supporting reported results can be found at https://drive.google.com/file/d/14Mz-kFYzGV40UNdZMSxnPhIhhTGpgEtD/view?usp=sharing

Conflicts of Interest: The authors declare no conflict of interest.

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Annex

Annex 1

Ítems Escala del Miedo al Coronavirus	Totalmente en Desacuerdo	En Desacuerdo	Ni de Acuerdo ni en Desacuerdo	De Acuerdo	Muy de Acuerdo
Siento un gran temor al Coronavirus.					
Me incomoda pensar en el Coronavirus.					
Siento que me sudan las manos cuando pienso en el Coronavirus.					
Tengo miedo de morir a causa del Coronavirus.					
Me pongo nervioso o ansioso cuando veo nuevas historias o noticias sobre el Coronavirus en las redes sociales.					
No puedo dormir porque me preocupa tener Coronavirus.					
Mi corazón se acelera cuando pienso en contraer Coronavirus.					