



Psychometric properties of the fear of COVID-19 scale in Brazil – a reply to Lin et al. (2022) comments

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Dear editors of Current Psychology,

Recently, some of the developers of the Fear of COVID-19 Scale (FCV-19S) published (Lin et al., 2022) in Current Psychology a response to the paper by Medeiros et al. (2021), who evaluated the FCV-19S in the Brazilian context. In their letter, the authors expressed some concern about the reported results. In this sense, as members of the team of researchers responsible for the targeted publication by Lin et al. (2022), we would like to outline some considerations about your text.

Considering the effects of Covid-19 on people's mental health, we adapted the Fear of Covid-19 Scale (FCV-19S; Ahorsu et al., 2020) for Brazil, one of the countries most severely affected by the pandemic (Worldometers, 2022). This is undoubtedly an essential tool for screening mental health problems associated with the pandemic, with validations worldwide proving its relevance. Therefore, we understand that measures such as FCV-19S are very important and should be tested and used in Brazil, which has a health system that collapsed during the pandemic. The FCV-19S could help health professionals in screening for psychological problems associated with the pandemic, in addition to being used by researchers who seek to understand the predictors and consequences of fear of Covid-19 in the country, which motivated us to adapt it and test it psychometrically.

In this direction, we carefully read the letter to the editors written by Lin et al. (2022), and we came, through this, to point out aspects that can clarify any misunderstandings about the Brazilian adaptation and the proposition of an even shorter version (de Medeiros et al., 2021).

Due to the context of urgency that Covid-19 imposed and the thousands of daily cases in Brazil, with hospitalizations and deaths, health services were overloaded, with long waiting lines for hospitalizations and intensive care services (ICUs). In addition to the severe effects on physical health, Covid-19 also affects mental health, and screening measures become essential. In our understanding, in any context in which a health system collapses, the use of shorter and more effective screening instruments is better. For this purpose, in addition to presenting the psychometric adequacy of the original measure (seven items), we proposed a shorter version of the FCV-19S, without any intention of being disrespectful to its authors. The aim was to propose a shorter version of the measure, maintaining its excellent metric properties, to facilitate further its use in contexts that are not well prepared to deal with the pandemic. Thus, unfortunately, their points of view seemed biased, based mainly on authority criteria and a restrictive perspective about psychometric studies. Thus, we would like to explore three points of their paper:

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1. “However, we consider that removing scale items without informing or consulting the developers is poor scientific etiquette and may jeopardize the latent concept of fear of COVID-19 in the scale we co-developed.”

Science is essentially a public, collective, and collaborative endeavor, reflecting independent contributions based on empirical evidence. As the authors commented, there was no restriction for using their scale; respecting them attributes the corresponding credits for the publication, citing their paper. In this way, all research and statistical procedures

used by us were detailed and clear, corresponding to good scientific practice. Also, there is not sufficient fundamental because suppressed items can compromise the latent construct underlying the FCV-19S. Their comment that we were disrespectful to them by not requesting their opinion before removing items sounded somewhat authoritative. Specifically, we were based on theoretical analysis and empirical evidence, considering their published information.

Regarding the measure reduction, it is understood that if the instrument is available in the literature and free to be used by researchers and professionals, which was reinforced by Lin et al. (2022). In this sense, we can understand that there is no ethical problem in using and refining it psychometrically. In fact, several studies were published in important journals, proposing abbreviated versions of prominent measures widely used worldwide, such as the FCV-19S. For instance, the Trimmed Mach (Rauthmann, 2013), the Brief Aggression Questionnaire (Webster et al., 2014); the six-item version of the Need for Cognition Scale (Coelho et al., 2020); and the 16-item version of the Narcissistic Personality Inventory (Ames et al., 2006), an instrument originally composed of 40 items (Raskin & Terry, 1988). Therefore, refining measures is common in psychological science, facilitating the assessment of a given construct in contexts where there are few resources for data collection, studies with multiple variables, etc.

Lin et al. (2022) indicated that removing items compromises the latent concept of fear of Covid-19. However, a careful reading of the results of Medeiros et al. (2021) makes clear that the remaining items of the reduced version continue to cover the two types of fear responses (somatic and emotional) originally proposed and tested in studies that point to the possibility of being represented by two factors (Chen et al., 2022). We also performed confirmatory factor analysis using a robust estimator appropriate to the ordinal nature of the measure, showing that the four items adequately represent the latent trait fear of Covid-19. Furthermore, both versions of the FCV-19S presented excellent psychometric parameters, which indicates that the abbreviated version can be used perfectly without any compromise in assessing the construct. Also, through item response theory, it was found that even reducing the number of items by almost 50%, there was no substantial loss of psychometric information for the shorter version.

2. “based on the results reported by de Medeiros et al. (2021), it is obvious that the seven-item FCV-19S (i.e., our original FCV-19S) does not perform any worse than the shortened four-item FCV-19S.”

At this point, the authors' comment was ambiguous. Considering the scientific criterion of parsimony, if two theories (or instruments) perform precisely equally, the

most recommended one is the more parsimonious (Popper, 2005). Thus, if our 4-item version showed similar factor loadings, internal consistency, and fit indexes compared to the original 7-item version, our Brazilian adaptation of the FCV-19S Brazilian is scientifically recommended over its original version.

3. “Developing an even shorter version of the FCV-19S does not appear to have any significantly enhanced benefits by slightly reducing the time taken to complete the FCV-19S and provides less useful information overall.”

We agree that the FCV-19S is a short measure. However, there are contexts where an even smaller alternative can be very advantageous, as psychological research is generally not conducted using just one measure. They routinely involve evaluating multiple variables. For example, if the researcher(s) aim to consider ten variables in a study, each consisting of a seven-item questionnaire, the total number of items will be 70. On the other hand, if they were even shorter questionnaires, this number would drop drastically, bringing a significant increase in the rate of return of responses, especially for researchers who do not have funding or cannot subsidize the participants. Finally, we strongly advocate that everyone, especially researchers, have the autonomy to choose the measures they want to use based on their psychometric qualities and needs, and not just on the projection of citations they will receive when using version A, B, or C of the chosen instruments.

Data Availability Data sharing not applicable to this article as no datasets were generated or analysed during the current study.

Declarations

Ethical Approval All procedures performed in this study involving human participants were in accordance with the 1975 Helsinki Declaration.

Conflict of Interest The authors have no conflict of interest to declare.

References

- Ahorsu, D. K., Lin, C., Imani, V., Saffari, M., Griffiths, M., & Pakpour, A. H. (2020). The Fear of COVID-19 Scale: Development and Initial Validation. *International Journal of Mental Health and Addiction*. <https://doi.org/10.1007/s11469-020-00270-8>
- Ames, D. R., Rose, P., & Anderson, C. P. (2006). The NPI-16 as a short measure of narcissism. *Journal of Research in Personality*, 40, 440–450. <https://doi.org/10.1016/j.jrp.2005.03.002>
- Chen, I. H., Chen, C. Y., Zhao, K. Y., et al. (2022). Psychometric evaluation of fear of COVID-19 scale (FCV-19S) among Chinese

- primary and middle schoolteachers, and their students. *Current Psychology*. <https://doi.org/10.1007/s12144-021-02471-3>
- Coelho, G. L. H., Hanel, P. H. P., & Wolf, L. J. (2020). The very efficient assessment of need for cognition: Developing a six-item version. *Assessment*, 27, 1870–1885. <https://doi.org/10.1177/1073191118793208>
- Medeiros, E. D., Reis, L. M., Guimarães, C. L. C., da Silva, P. G. N., Monteiro, R. P., de Holanda Coelho, G. L., ... & de França, L. L. A. (2021). Psychometric properties of the Brazilian version of the fear of COVID-19 scale (FCV-19S). *Current Psychology*, 1–10. <https://doi.org/10.1007/s12144-021-01476-2>
- Lin, C. Y., Griffiths, M. D., & Pakpour, A. H. (2022). Psychometric properties of the Fear of COVID-19 Scale: A response to de Medeiros et al. “Psychometric properties of the Brazilian version of the Fear of COVID-19 Scale (FCV-19S)”. *Current Psychology*, 1–2. <https://doi.org/10.1007/s12144-021-02686-4>.
- Popper, K. (2005). *The logic of scientific discovery*. Taylor & Francis e-Library.
- Raskin, R., & Terry, H. (1988). A principal-components analysis of the narcissistic personality inventory and further evidence of its construct validity. *Journal of Personality and Social Psychology*, 54, 890–902. <https://doi.org/10.1037/0022-3514.54.5.890>
- Rauthmann, J. F. (2013). Investigating the MACH-IV with item response theory and proposing the trimmed MACH. *Journal of Personality Assessment*, 95, 388–397. <https://doi.org/10.1080/00223891.2012.742905>
- Webster, G. D., DeWall, C. N., Pond Jr., R. S., Deckman, T., Jonason, P. K., Le, B. M., et al. (2014). The brief aggression questionnaire: Psychometric and behavioral evidence for an efficient measure of trait aggression. *Aggressive Behavior*, 40, 120–139. <https://doi.org/10.1002/ab.21507>
- Worldometers (2022, January 31). *Worldometers COVID-19 coronavirus pandemic*. Retrieved from <https://www.worldometers.info/coronavirus/#countries>

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