# 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)"

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Dear editors,

de Medeiros et al. (2021) recently published a study in your journal examining how Brazilian version of the Fear of COVID-19 Scale (FCV-19S) performed in the Portuguese language among Brazilians. The authors used different psychometric testing methods, including exploratory factor analysis, item response theory, and confirmatory factor analysis to indicate the robustness of the FCV-19S's psychometric properties. They confirmed that the use of FCV-19S was appropriate and recommended its use among Brazilians during the COVID-19 pandemic. As the original co-developers of FCV-19S, we welcome all empirical evidence concerning the FCV-19S because the accumulated psychometric knowledge of FCV-19S will be of benefit to the scientific community. However, we have some major concerns with their study.

First, the FCV-19S can be used freely by any researchers, treatment providers and healthcare practitioners, as well as laypeople. 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 (see: Ahorsu et al., 2020; Lin et al., 2021). More specifically, we used rigorous methodology to develop the FCV-19S with full consideration of the fear concept (using 30 different validated 'fear' scales as a basis

for developing the instrument). However, de Medeiros et al. (2021) did not inform and request opinions from us as the developers of FCV-19S before they developed a brief version of FCV-19S. We believe they should have to made a formal request to us as the original developers of the instrument before independently removing items and shortening it. Personally, we feel this is somewhat disrespectful.

Second, 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. More specifically, the factor loadings derived from exploratory factor analysis were between 0.73 and 0.88 for the original FCV-19S, and between 0.58 and 0.80 for the brief FCV-19S. The factor loadings derived from confirmatory factor analysis were between 0.47 and 0.81 for the original FCV-19S, and between 0.63 and 0.82 for the brief FCV-19S. The fit indices were all satisfactory for the original FCV-19S (comparative fit index [CFI]=0.985; Tucker-Lewis index [TLI]=0.977; and root mean square error of approximation [RMSEA]=0.073) as they were for the brief FCV-19S (CFI=0.996; TLI=0.989; RMSEA=0.039). Moreover, both the original FCV-19S and brief FCV-19S had good internal consistency in regards to Cronbach's alpha and McDonald's omega (alpha=0.87 for both original and brief FCV-19S; omega=0.86 for original FCV-19S and 0.83 for brief FCV-19S). The psychometric information was not that different between the original FCV-19S (theta=6.33 to 4.00) and the brief FCV-19S (theta=6.99 to 4.09). In sum, the psychometric properties are similar between our original FCV-19S and the brief FCV-19S by de Medeiros et al. (2021). Additionally, the findings reported by de Medeiros et al. (2021) are comparable to other studies testing the original FCV-19S (e.g., Huarcaya-Victoria et al., 2020; Lin et al., 2021; Martínez-Lorca et al., 2020).

Third, the major benefit of using a brief instrument is to save time in a busy setting (Li et al., 2021), especially when the participants have a condition that burdens them when completing the instrument (e.g., being very old). However, we believe that our seven-item FCV-19S with easy-to-understand item descriptions do not take too much time when any individual uses it. Indeed, it only takes a couple of minutes at most to complete the original seven-item FCV-19S. 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. In conclusion, we strongly recommend that anyone, including academic researchers, healthcare practitioners, and treatment providers, should think twice before using the brief version of our scale.

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