BRAIN. Broad Research in Artificial Intelligence and Neuroscience
ISSN: 2068-0473 | e-ISSN: 2067-3957
Covered in: Web of Science (WOS); PubMed.gov; IndexCopernicus; The Linguist List; Google Academic; Ulrichs; getCITED; Genamics JournalSeek; J-Gate; SHERPA/RoMEO; Dayang Journal System; Public Knowledge Project; BIUM; NewJour; ArticleReach Direct; Link+; CSB; CiteSeerX; Socolar; KVK; WorldCat; CrossRef; Ideas RePeC; Econpapers; Socionet.

2022, Volume 13, Issue 4, pages: 122-140 | https://doi.org/10.18662/brain/13.4/379
Submitted: May 28th, 2022 | *Accepted for publication:* June 13th, 2022

Psychometric Properties of the Questionnaire Covid-19 Stress on the Romanian Community Sample

Bogdana MICLEA[1], **Romulus-Dan NICOARA**[2], **Horia-George COMAN**[3]

[1] Medical Psychology Department, Iuliu Hatieganu University of Medicine and Pharmacy, Cluj-Napoca, Romania, bogdanamilea@yahoo.ro
[2] Iuliu Haţieganu University of Medicine and Pharmacy, Romania, daninicoara@yahoo.it
[3] Medical Psychology Department, Iuliu Hatieganu University of Medicine and Pharmacy, Cluj-Napoca, Romania, hcoman@umfcluj.ro

Abstract: *The objective of the present research is to adapt the 36-item COVID-19 Stress Rating Scales to the Romanian population. It is a self-report scale used to assess the stress caused by COVID-19 through six dimensions: Danger, Socio-economic consequences, Xenophobia, Contamination, Traumatic stress, Verification. A total of 160 medically qualified participants, aged 19-59 years, completed a socio-demographic data sheet and the COVID-19 Stress Rating Scales. A high internal consistency was obtained for the 6 scales of the instrument, with Cronbach's alpha coefficients in the range 0.74-0.86. Exploratory factor analysis and Confirmatory factor analysis were also evaluated. The results indicate that the Romanian version of the CSS has good psychometric properties, being a suitable instrument for the assessment of stress caused by COVID-19.*

Keywords: *stress scale; Covid-19; pandemic.*

How to cite: Miclea, B., Nicoara, R.-D., & Coman, H.-G. (2022). Psychometric Properties of the Questionnaire Covid-19 Stress on the Romanian Community Sample. *BRAIN. Broad Research in Artificial Intelligence and Neuroscience, 13*(4), 122-140. https://doi.org/10.18662/brain/13.4/379

The spread of virus causing Severe Acute Respiratory Syndrome (SARS – Cov 2) generated a global health crisis with consequences in all population categories. In march 2020, the World Health Organisation (2020) declared the state of pandemic due to the speed of infection and number of deaths caused by the virus.

Health and wellbeing were affected both physically and mentally. With the extension and deepening of the epidemic situation, people's worries facing this vital threat increased exponentially, leading to a significant psychological distress. There is a multitude of critical factors contributing to the the negative impact on population's mental state, quality of life and level of anxiety associated with COVID-19 (Guan et al., 2021; Zhong et al., 2021)

Major efforts, in the medical and psychological areas, were made in order to explore the implications of the pandemic in the psycho-social domain and permitting later intervention strategies. Many recent studies aim to describe the mental state of people facing the Coronavirus pandemic and the factors that might influence the mental health (Shah et al., 2021; Vindegaard & Benros, 2020). Depression, anxiety, sleeping problems, fear of becoming infected from other people leading to xenophobia, traumatic stress symptoms like intrusive thoughts and nightmares have been reported worldwide.

The medical and psychological literature is rich and oriented towards general or specific population categories i.e. students, children and adolescents, pregnant women, medical workers. Researches constantly reveal direct and indirect neuropsychiatric consequences of the pandemic (Salari et al., 2020). The high prevalence of anxiety, stress and depression within front-line workers caring for COVID-19 patients has been repeteadly confirmed (Secosan et al., 2020).

In the atempt to determine the psychological profile of subjects, various study designs and different scales and interviews have been used. The large variety of evaluation instruments is reflecting the struggle of proffessionals all over the world to find an appropriate and comprehensive modality to describe the psychological characteristics of the targeted population.

In Romania, there is also a preocupation among the researchers in the medical and psychological domain to explore the relation between the pandemic and different psycho-social disturbances both in general population and among healthcare workers. Currently available psychological instruments or newly developed scales that adress specific aspects related to the pandemic crisis - depending on the study design and objectives - were

used, in the main univeristy and medical centers. Most instruments were distributed through online surveys for an easy and general access.

A study performed in 2020 (Timisoara) used the DASS 21 scale (The Depression, Anxiety, and Stress Scale) and the The Insomnia Severity Index (ISI) in order to determine if the false information avalanche related to the pandemic had psychological consequences over the frontline healthcare workers (ICU and Emergency Department, physicians, and nurses) and showed that the medical workers who declared to be affected by this kind of news were more stressed, anxious, and suffered more from sleeping problems than healthcare workers who declared that didn't take into consideration the large amount of false information related to pandemic (Armean et al., 2021).

Another research, evaluated the psychological consequences (stress, anxiety, burnout symptoms) of the pandemic in the medical students (Ahorsu et al., 2020). They used 2 scales, adapted and translated in Romanian. One of them was previously designed during the outbreak of severe acute respiratory syndrome (SARS, 2003-2005), to adress the healthcare workers of emergency departments in Hong Kong (Wong et al., 2005). The other instrument, The Fear of COVID-19 Scale (Stănculescu, 2021) was developed in 2020 during the COVID-19 pandemic. The Fear of COVID-19 Scale is a 7 item scale that aimes to evaluate the worries about becoming sick and is validated on Romanian population.

Another study used WHO-Five Well-Being Index (Spitzer et al., 2006)to assess depression and the Generalised Anxiety Disorder Scale (Cordoș & Bolboacă, 2021) for the anxiety assessment combined with a questionaire that explored in the romanian population how often the respondents saw COVID-19 related information using Social Media channels with an interesting outcome, opposite to most already available literature: there was no correlation between anxiety and depression and the context of lockdown and excessive COVID-19-related information exposure (Taylor et al., 2020).

Both systematic research and empirical clinical observations suggest that stress and anxiety are the major psychological manifestations related to de viral pandemic (Chung et al., 2021; Taylor et al., 2020; Xiong et al., 2020).

Several rating scales were developed since the outbreak of the pandemic. Researcher's efforts are often disparate, the tools used are various and often nonspecific. In this critical context, a psychological intrument for the specific assessment of stress and anxiety related to COVID-19, that is easy to use, practical and internationally applicable is essential.

The above sources justify the approach of translation, adaptation and validation of the new scale whose use in Romanian research would ensure the collection of comparable results.

This article reports the results of factorial, exploratory and confirmatory analysis of data collected in Romania following research. A methodological, quantitative, cross-sectional study was conducted to translate, adapt, and test psychometric properties of the Covid-19 Stress Scales to the romanian language.

Objective

The aim of this study was to assess the psychometric properties and the factorial structure of the cross-cultural version of the Covid-19 Stress Scales – CSS (Taylor et al., 2020) applied in the study of translation, adaptation and validation in Romania.

Material and Procedure

Covid-19 Stress Scales (CSS) (Taylor et al., 2020) realised by Steven Taylor, Caeleigh A. Landryb, Michelle M. Paluszekb, Thomas A. Fergusc, Dean McKayd, Gordon J.G. Asmundsonb, and validated on the population from Canada and the United States using an internet based self-report survey delivered in English.

Covid-19 Stress Scales (CSS) (Taylor et al., 2020) is originally composed by 36 affirmations, distributed in six scales: (a) danger scale contain 6 items. Example item for this scale: I am worried about catching the virus; (b) the socio-economic consequences scale contain 6 items. Example item for this scale: I am worried about grocery stores running out of food.; (c) xenophobia scale contain 6 items. Example item for this scale: I am worried that foreigners are spreading the virus in my country.; (d) contamination scale contain 6 items. Example item for this scale: I am worried that people around me will infect me with the virus.; (e) traumatic stress scale contain 6 items. Example item for this scale: I had trouble sleeping because I worried about the virus.; (f) checking scale contain 6 item. Example item for this scale: Checked social media posts concerning COVID-19.

As there is no generally accepted method for adapting a scale to another language, we used a combination of a back-translation procedure (Iliescu, 2017), i.e. one authorized translator translated from English into Romanian and another did a back-translation into English, in order to highlight the linguistic differences, the final form was decided by a team of 2

psychologists familiar with the subject covered by the text and the 2 authorized translators.

Participants

The sample size was estimated according to the rule proposed by the Consensus-based Standards for the selection of the health Measurement Instruments (Mokkink et al., 2016; Terwee et al., 2007). Thus, the sample size should be of 120 to 300 medical staff.

In this study were included the total sample (n = 160). The age of the respondents ranged from 19 to 59 years (M = 35.80, SD = 22 3.65). The study involved 2 biologist, 131 nurses, 11 medical registrars, 16 doctor (Tabel 1). By study, 66 post high school education, 48 License degree or equivalent, 40 master's degree or equivalent, 6 PhD graduate (Tabel 2). By gender, 135 of participants were women and 25 are men (Tabel 3). The sample consisted of medical personnel directly involved in the fight with Covid-19. All subjects volunteered to take part in the study.

Table 1. Frequencies profession

Levels	Counts	% of Total	Cumulative %
biologist	2	1.3 %	1.3 %
nurse	131	81.9 %	83.1 %
medical registrar	11	6.9 %	90.0 %
doctor	16	10.0 %	100.0 %

Source: Authors' own conception

Table 2. Frequencies Study

Levels	Counts	% of Total	Cumulative %
post high school education	66	41.3 %	41.3 %
License degree or equivalent	48	30.0 %	71.3 %
master's degree or equivalent	40	25.0 %	96.3 %
PhD graduate	6	3.8 %	100.0 %

Source: Authors' own conception

Tabel 3 Frequencies Sex

Levels	Counts	% of Total	Cumulative %
men	25	15.6 %	15.6 %
women	135	84.4 %	100.0 %

Source: Authors' own conception

Procedure

The inclusion criteria were as follows: (a) an adult of age 18 years or older; (b) living in Romania; (c) having provided consent to participate; (d) cadrul medical implicat in sectie Covid-19. The online survey was presented in a Google Form and was promoted by distributing the survey link via email. Participation was voluntary and respondents could choose to withdraw from the study at any point. All questions were anonymized to preserve confidentiality. Data collection was conducted from May 9 to June 16, 2021.

Results

The statistical analysis was performed with SPSS version 25 and AMOS version 26. The normality condition of the data was checked both by graphical inspection of the histograms and by calculating skewness and kurtosis indicators, verifying their conformity with the values provided in the literature for normal distribution.

The skewness and kurtosis values indicate that distributions do not deviate substantially from normality for any of the six scales. The internal consistencies alphas ranged from .87 (for the checking scale) to .95 (for the Stres_Covid19_total scale) thus showing very good reliability for all six scales. The correlation matrix of the COVID-19 Stress Scales is presented in Table 3. Correlations among scales ranged from .51 to .80, thus their intensity being similar to those reported by authors (Taylor et al., 2020).

Table 4 presents means and standard deviations for all 36 items of the original scale,

Table 4. Means and standard deviations for all items

Item	Mean	SD	Minimum	Maximum
Sunt îngrijorat(ă) de contactarea virusului.	1.919	0.883	1.00	4.00
Sunt îngrijorat(ă) că igiena de bază (ex., spălatul pe mâini) nu este îndeajuns pentru a mă ţine în siguranţă faţă de virus.	1.850	0.926	1.00	4.00
Sunt îngrijorat(ă) că sistemul nostru medical nu este capabil să mă ţină în siguranţă faţă de virus.	2.325	1.031	1.00	4.00
Sunt îngrijorat(ă) că nu îmi pot ţine în siguranţă familia faţă de virus.	2.281	1.023	1.00	4.00
Sunt îngrijorat(ă) că sistemul nostru medical nu va putea fi capabil să-i protejeze pe cei dragi mie.	2.569	1.032	1.00	4.00
Sunt îngrijorat(ă) că distanţarea socială nu este îndeajuns pentru a mă ţine în siguranţă faţă de virus.	1.869	0.946	1.00	4.00
Sunt îngrijorat(ă) de magazinele alimentare care rămân fără mâncare.	1.419	0.773	1.00	4.00
Sunt îngrijorat(ă) de farmaciile care rămân fără medicamente împotriva răcelii sau gripei.	1.519	0.839	1.00	4.00
Sunt îngrijorat(ă) de farmaciile care rămân fără medicamente pe bază de reţetă medicală.	1.613	0.938	1.00	4.00
Sunt îngriijorat(ă) de magazinele alimetare care rămân fără apă.	1.494	0.869	1.00	4.00
Sunt îngriijorat(ă) de magazinele care rămân fără substanţe pentru curăţat sau dezinfectanţi.	1.587	0.941	1.00	4.00
Sunt îngriijorat(ă) că magazinele alimetare se vor închide.	1.650	0.973	1.00	4.00
Sunt îngrijorat(ă) că străinii răspândesc virusul în ţara mea.	1.606	0.855	1.00	4.00

Dacă aş întâlni o persoană străină, aş fi îngrijorat(ă) că ea ar putea fi infectată cu virusul.	1.637	0.797	1.00	4.00
Sunt îngrijorat(ă) să intru în contact cu străinii deoarece ei ar putea fi infectaţi cu virusul.	1.694	0.869	1.00	4.00
Sunt îngrijorat(ă) că străinii răspândesc virusul pentru că nu sunt la fel de curaţi aşa cum suntem noi.	1.331	0.661	1.00	4.00
Dacă aş merge într-un restaurant cu specific în mâncăruri străine aş fi îngrijorat(ă) să nu contactez virusul.	1.462	0.800	1.00	4.00
Dacă aş fi într-un ascensor cu un grup de străini, aş fi îngrijorat(ă) că ei ar putea fi infectaţi cu virusul.	1.800	0.867	1.00	4.00
Sunt îngrijorat(ă) că persoanele din jurul meu mă vor infecta cu virusul.	1.738	0.835	1.00	4.00
Sunt îngrijorat(ă) că dacă aş atinge ceva într-un spaţiu public (ex., balustradă, mânerul uşii), aş contacta virusul.	1.637	0.789	1.00	4.00
Sunt îngrijorat(ă) că în situaţia în care cineva ar tuşi sau strănuta lângă mine, aş contacta virusul.	2.050	0.917	1.00	4.00
Sunt îngrijorat(ă) că aş putea contacta virusul prin atingerea banilor sau folosirea unui bancomat.	1.656	0.793	1.00	4.00
Sunt îngrijorat(ă) de primirea restului la tranzacţiile în numerar.	1.600	0.754	1.00	4.00
Sunt îngrijorat(ă) că plicurile şi pachetele primite au fost contaminate de lucrătorii seviciului de livrare.	1.538	0.717	1.00	4.00
Am avut probleme legate de somn deoarece m-am îngrijorat cu privire la virus.	0.813	1.123	0.00	4.00
Am avut vise urâte legate de virus.	0.425	0.894	0.00	4.00
M-am gândit la virus fără să vreau.	1.094	1.143	0.00	4.00
Mi-au apărut în gând imagini neplăcute despre virus împotriva voinţei mele.	0.581	0.994	0.00	4.00

Am avut probleme de concentrare deoarece m-am tot gândit la virus.	0.512	0.971	0.00	4.00
Menţionările legate de virus mi-au cauzat reacţii fizice, precum transpiraţie sau bătăi accelerate ale inimii.	0.619	1.143	0.00	4.00
Am verificat postările din cadrul platformelor sociale legate de COVID-19.	1.750	1.346	0.00	4.00
Am verificat video-uri de pe Youtube legate de COVID-19.	1.269	1.316	0.00	4.00
Am căutat încurajări legate de COVID-19 din partea prietenilor sau familiei.	1.050	1.307	0.00	4.00
Mi-am verificat propriul corp pentru semne legate de infecţie (ex., măsurarea propriei temperaturi).	1.756	1.557	0.00	4.00
Am întrebat specialişti din domeniul sănătăţii (ex., doctori sau farmacişti) pentru sfaturi cu privire la COVID-19.	1.675	1.412	0.00	4.00
Am căutat pe Internet tratamente pentru COVID-19	1.044	1.251	0.00	4.00

Source: Authors' own conception

Table 5 presents means, standard deviations, skewness, kurtosis for the six COVID-19 Stress Scales.

Table 5. Means, standard deviations, minimum, maximum, skewness, kurtosis CSS

						Skewness		Kurtosis	
	Mean	**Median**	**SD**	**Minimum**	**Maximum**	**Skewness**	**SE**	**Kurtosis**	**SE**
Stres_Covid19_total	54.43	49.00	23.01	24.00	127.0	0.973	0.192	0.334	0.381
Stress_COVID19_Pericol	12.81	12.00	4.69	6.00	24.0	0.470	0.192	-0.465	0.381
Stress_COVID19_Consecinte_socio_economice	9.28	6.00	4.71	6.00	24.0	1.544	0.192	1.707	0.381
Stress_COVID19_Xenofobie	9.53	8.00	4.06	6.00	24.0	1.333	0.192	1.443	0.381
Stress_COVID19_Contaminare	10.22	9.00	4.22	6.00	24.0	1.014	0.192	0.492	0.381
Stress_COVID19_Stres_traumatic	4.04	2.00	5.33	0.00	24.0	1.785	0.192	2.675	0.381
Stress_COVID19_Verificare	8.54	7.50	6.44	0.00	24.0	0.543	0.192	-0.685	0.381

Source: Authors' own conception

Table 6 presents Cronbach's α coefficients for CSS

Tabel 6. Cronbach's α coefficients for CSS

	if item dropped
	Cronbach's α
Stres_Covid19_total	0.96
Stress_COVID19_Pericol	0.89
Stress_COVID19_Consecinte_socio_economice	0.94
Stress_COVID19_Xenofobie	0.91
Stress_COVID19_Contaminare	0.94
Stress_COVID19_Stres_traumatic	0.92
Stress_COVID19_Verificare	0.87

Source: Authors' own conception

The reliability of the instrument was calculated by the Cronbach's alpha coefficient. High values were obtained for the Cronbach's alpha coefficients, between 0.87 and 0.96 (according to table no. 6). These are close to the values obtained for the original instrument (0.83-0.94, Taylor et al., 2020).

Table 7. Correlations among scales of the Romanian version of the CSS

		1	2	3	4	5	6	7
1. Stres_Covid19_total	Pearson Correlation	1						
2. Stress_COVID19_danger	Pearson Correlation	.80**	1					
3. Stress_COVID19_social_economic consequences	Pearson Correlation	.70**	.40**	1				
4. Stress_COVID19_Xenophobia	Pearson Correlation	.80**	.52**	.64**	1			
5. Stress_COVID19_Contamination	Pearson Correlation	.78**	.68**	.50**	.69**	1		

6. Stress_COVID19_traumatic_stress	Pearson Correlation	.78**	.63**	.35**	.51**	.46**	1	
7. Stress_COVID19_cheking	Pearson Correlation	.80**	.54**	.45**	.51**	.47**	.62**	1

Source: Authors' own conception

The correlations of the questionnaire were statistically significant, according to Table 6.

Exploratory factor analysis

To establish the factorial structure of CSS, exploratory factor analysis was used and then confirmatory factor analysis. In the first stage, the necessary conditions for performing the exploratory factor analysis were tested: the sphericity condition, respectively the adequacy condition of the sample. For testing the sphericity condition we used the Bartlett test for sphericity, which was statistically significant ($\chi 2$ (630) = 5532, p <0.001) and for testing the suitability of the sample, the Kayser-Meyer-Olkin index was used. (KMO), which had a value of 0.921, excellent for the use of exploratory factor analysis (Sava, 2011). Tabel 8 indicate item saturations in extracted factors

Tabel 8 Item saturations in extracted factors

Factor	Indicator	Estimate	SE	Z	p
danger	Stress_Covid1	0.702	0.0595	11.80	< .001
	Stress_Covid2	0.668	0.0653	10.23	< .001
	Stress_Covid3	0.657	0.0756	8.69	< .001
	Stress_Covid4	0.873	0.0663	13.18	< .001
	Stress_Covid5	0.697	0.0744	9.37	< .001
	Stress_Covid6	0.796	0.0616	12.91	< .001
social-economic consequences	Stress_Covid7	0.668	0.0487	13.70	< .001
	Stress_Covid8	0.780	0.0504	15.47	< .001
	Stress_Covid9	0.770	0.0612	12.58	< .001
	Stress_Covid10	0.778	0.0535	14.53	< .001

	Stress_Covid11	0.803	0.0601	13.35	< .001
	Stress_Covid12	0.772	0.0643	12.00	< .001
xenophobie	Stress_Covid13	0.684	0.0571	11.98	< .001
	Stress_Covid14	0.657	0.0532	12.35	< .001
	Stress_Covid15	0.711	0.0583	12.20	< .001
	Stress_Covid16	0.508	0.0454	11.20	< .001
	Stress_Covid17	0.673	0.0527	12.79	< .001
	Stress_Covid18	0.650	0.0598	10.87	< .001
contamination	Stress_Covid19	0.651	0.0556	11.71	< .001
	Stress_Covid20	0.687	0.0494	13.91	< .001
	Stress_Covid21	0.663	0.0629	10.53	< .001
	Stress_Covid22	0.745	0.0470	15.85	< .001
	Stress_Covid23	0.692	0.0455	15.20	< .001
	Stress_Covid24	0.642	0.0440	14.59	< .001
traumatic stress	Stress_Covid25	0.861	0.0757	11.38	< .001
	Stress_Covid26	0.732	0.0583	12.55	< .001
	Stress_Covid27	0.876	0.0770	11.39	< .001
	Stress_Covid28	0.924	0.0597	15.47	< .001
	Stress_Covid29	0.859	0.0605	14.19	< .001
	Stress_Covid30	0.877	0.0770	11.38	< .001
cheking	Stress_Covid31	1.039	0.0935	11.12	< .001
	Stress_Covid32	1.019	0.0914	11.15	< .001
	Stress_Covid33	1.040	0.0889	11.71	< .001
	Stress_Covid34	1.006	0.1149	8.76	< .001
	Stress_Covid35	1.087	0.0976	11.13	< .001
	Stress_Covid36	0.830	0.0915	9.07	< .001

Source: Authors' own conception

Confirmatory factor analysis

Confirmatory factor analysis (CFA) had been performed to assess the model's fitness for purpose. The CFA as well as the estimation of the structural equation model by AMOS have been tried out. There is an investigation of the measuring model that assumes each item is solely loaded on its expected latent variable (Thompson, 2004). The measuring model, shown in the picture above, contains all of the information pertinent to their specific factor loading procedures. Following the drawing of covariance between the mistakes terms of the few redundancy elements, the analysis determined that the model in the current research study was adequate. As stated by Hair et al., a CMIN/DF ratio of 1.485 is appropriate (2010). A confirmation factor analysis (CFA) was performed to support the measurement model (Bagozzi & Edwards, 1998). Danger, SEC, Xenophobia, Contamination, Traumatic Stress, & Checking were all included in this study's latent variables, which were categorized as follows: Model fit has been evaluated using a combination of different fit indices, including the chi-square model, the IFI, the Tucker Lewis (TLI) index, the CFI, and the root mean approximate square error (RMSAA). When compared to the data from different models, the model had been an excellent fit. (CMIN/DF = 2.291, CFI =0.855, TLI (0.843), IFI (0.857), and RMSEA (0.090) are the values for the coefficients (Hinkin, 1995). In this study, the acceptable validity of a five-factor model was established by the CFAs. Furthermore, all of the items had a substantial effect on their respective latent variables.

Tabel 9 Fit indexes of the models tested by CFA

Model	CMIN	CMIN/DF	IFI	T L I	CFI	RMSEA
Default model	1326.652	2.291	.857	.843	.855	.090
Saturated model	.000		1.000		1.000	
Independence model	5800.278	9.207	.000	.000	.000	.227

Source: Authors' own conception

According to the findings of the CFA, discrimination is justified in this situation. The reason for this is that all elements loaded on their latent building techniques only follow the thresholds that are necessary for them to function. Once all of the units have been uploaded into their idea, the model matches the results fairly well. Because the objects put on some linked concepts are highly interconnected with one another, it lends further

evidence to the convergent significance hypothesis. Furthermore, element uploading is important, accounting for more than 0.7 percent of the total (Javed & Liu, 2018).

Tabel 10 Average Variance Exerted and Composite reliability

Construct	Average Variance Exerted (AVE)	Composite Reliability (CR)
Danger	0.757	0.891
SEC	0.862	0.946
Xenophobia	0.803	0.916
Contaminatio n	0.857	0.944
Traumatic_ stress	0.825	0.928
Checking	0.739	0.879

Source: Authors' own conception

Above the table of AVE, and Composite reliability, total construct are six, In this table we calculate AVE and CR, AVE is normal value Is 0.5, and CR is 0.7, in this table show AVE value are showing higher than 0.5, and CR is higher than 0.7.

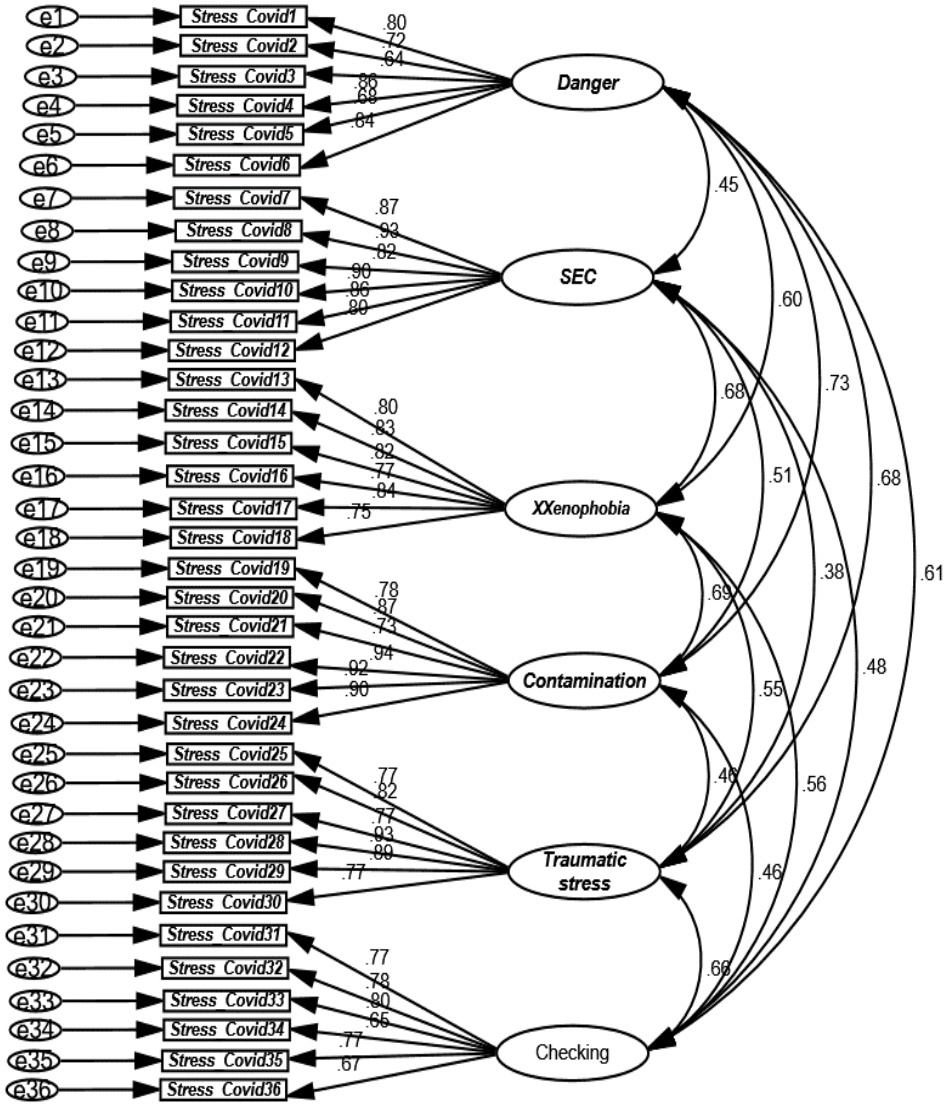

Figure 1: Confirmatory Factor Analysis CSS
Source: Authors' own conception

Discussions

The results of the present study indicate adequate psychometric properties of the translated CSS. Thus, a high internal consistency was

obtained for the 6 scales of the instrument, with Cronbach's alpha coefficients in the range 0.74-0.86.

Factor analysis showed a 5-factor solution, similar to the original version of the instrument (Taylor et al., 202). Statistically significant correlations were obtained between all measured scales of the instrument.

The present study is the first study of translation and adaptation of the Covid-19 Stress Scales (CSS) on the Romanian population, investigating its psychometric properties. Thus, the present study also contributes to the literature by proposing a version of the scale adapted to a Romanian sample.

But the study has certain limitations. Thus, it is possible that the high gender, age and education disproportion may have influenced to some extent the scores obtained (due to certain socio-cultural considerations, it is possible that women are more prone to stress caused by Covid-19, as compared to men), thus caution is recommended in generalizing the results to certain populations. The questionnaire can be extremely useful in providing information on Covid-19 stress.

References

Ahorsu, D. K., Lin, C.-Y., Imani, V., Saffari, M., Griffiths, M. D., & Pakpour, A. H. (2020). The fear of COVID-19 scale: development and initial validation. *International Journal of Mental Health and Addiction*, *20*(3), 1537–1545. https://doi.org/10.1007/s11469-020-00270-8

Armean, K-A., Popescu, C-A., Armean, S-M., Covaliu, B-F., Armean, P., & Buzoianu, A-D. (2021). Perceived Stress, Burnout and Anxiety and Fear Related To Covid-19 in Romanian Medical Students–Experience from the State of Emergency in Romania. *Acta Medica Transilvanica*, *26*(2), 5–10. https://doi.org/10.2478/amtsb-2021-0022

Bagozzi, R. P., & Edwards, J. R. (1998). A general approach for representing constructs in organizational research. *Organizational Research Methods*, *1*(1), 45–87. https://doi.org/10.1177/109442819800100104

Chung, S., Ahn, M. H., Lee, S., Kang, S., Suh, S., & Shin, Y-W. (2021). The stress and anxiety to viral epidemics-6 items (SAVE-6) scale: a new instrument for assessing the anxiety response of general population to the viral epidemic during the COVID-19 pandemic. *Frontiers in Psychology*, *12*, 669606. https://doi.org/10.3389/fpsyg.2021.669606

Cordoș, A., & Bolboacă, S. D. (2021). Lockdown, Social Media exposure regarding COVID-19 and the relation with self-assessment depression and anxiety. Is the medical staff different? *International Journal of Clinical Practice*, *75*(4), e13933. https://doi.org/10.1111/ijcp.13933

Guan, J., Wu, C., Wei, D., Xu, Q., Wang, J., Lin, H., Wang, C., & Mao, Z. (2021). Prevalence and factors for anxiety during the COVID-19 pandemic among college students in China. *International Journal of Environmental Research and Public Health*, *18*(9), 4974. https://doi.org/10.3390/ijerph18094974

Hinkin, T. R. (1995). A review of scale development practices in the study of organizations. *Journal of Management*, *21*(5), 967–988. https://doi.org/10.1016/0149-2063(95)90050-0

Iliescu, D. (2017). *Adapting tests in linguistic and cultural situations*. Cambridge University Press.

Javed, S. A., & Liu, S. (2018). Evaluation of outpatient satisfaction and service quality of Pakistani healthcare projects: application of a novel synthetic grey incidence analysis model. *Grey Systems: Theory and Application*, *8*(4), 462-480. https://doi.org/10.1108/GS-04-2018-0018

Mokkink, L. B., Prinsen, C. A. C., Bouter, L. M., de Vet, H. C. W., & Terwee, C. B. (2016). The COnsensus-based Standards for the selection of health Measurement INstruments (COSMIN) and how to select an outcome measurement instrument. *Brazilian Journal of Physical Therapy*, *20*, 105–113. https://doi.org/10.1590/bjpt-rbf.2014.0143

Salari, N., Khazaie, H., Hosseinian-Far, A., Khaledi-Paveh, B., Kazeminia, M., Mohammadi, M., Shohaimi, S., Daneshkhah, A., & Eskandari, S. (2020). The prevalence of stress, anxiety and depression within front-line healthcare workers caring for COVID-19 patients: a systematic review and meta-regression. *Human Resources for Health*, *18*, 100. https://doi.org/10.1186/s12960-020-00544-1

Sava, F. A. (2011). Analiza datelor în cercetarea psihologică [Data analysis in psychological research] (second edition, revised). *ASCR*.

Secosan, I., Virga, D., Crainiceanu, Z. P., Bratu, L. M., & Bratu, T. (2020). Infodemia: another enemy for Romanian frontline healthcare workers to fight during the COVID-19 outbreak. *Medicina*, *56*(12), 679. https://doi.org/10.3390/medicina56120679

Shah, S. M. A., Mohammad, D., Qureshi, M. F. H., Abbas, M. Z., & Aleem, S. (2021). Prevalence, psychological responses and associated correlates of depression, anxiety and stress in a global population, during the coronavirus disease (COVID-19) pandemic. *Community Mental Health Journal*, *57*(1), 101–110. https://doi.org/10.1007/s10597-020-00728-y

Spitzer, R. L., Kroenke, K., & Williams, J. B. (2006). Generalized anxiety disorder 7-item (GAD-7) scale. *Archives of internal medicine*, *166*(10), 1092-1097. https://doi.org/10.1001/archinte.166.10.1092

Stănculescu, E. (2021). Fear of COVID-19 in Romania: Validation of the Romanian version of the fear of COVID-19 scale using graded response model

analysis. *International Journal of Mental Health and Addiction*, *20*(2), 1094-1109. https://doi.org/10.1007/s11469-020-00428-4

Taylor, S., Landry, C. A., Paluszek, M. M., Fergus, T. A., McKay, D., & Asmundson, G. J. G. (2020). Development and initial validation of the COVID Stress Scales. Journal of Anxiety Disorders, 72, 102232. https://doi.org/10.1016/j.janxdis.2020.102232

Terwee, C. B., Bot, S. D. M., de Boer, M. R., van der Windt, D. A. W. M., Knol, D. L., Dekker, J., Bouter, L. M., & de Vet, H. C. W. (2007). Quality criteria were proposed for measurement properties of health status questionnaires. *Journal of Clinical Epidemiology*, *60*(1), 34-42. https://doi.org/10.1016/j.jclinepi.2006.03.012

Thompson, B. (2004). *Exploratory and confirmatory factor analysis: Understanding concepts and applications*. Washington, DC, 10694.

Vindegaard, N., & Benros, M. E. (2020). COVID-19 pandemic and mental health consequences: Systematic review of the current evidence. *Brain, Behavior, and Immunity*, *89*, 531–542. https://doi.org/10.1016/j.bbi.2020.05.048

World Health Organisation. (2020). *Coronavirus disease (COVID-19) pandemic*. World Health Organisation. https://www.who.int/europe/emergencies/situations/covid-19

Wong, T. W., Yau, J. K. Y., Chan, C. L. W., Kwong, R. S. Y., Ho, S. M. Y., Lau, C. C., Lau, F. L., & Lit, C. H. (2005). The psychological impact of severe acute respiratory syndrome outbreak on healthcare workers in emergency departments and how they cope. *European Journal of Emergency Medicine*, *12*(1), 13–18. https://doi.org/10.1097/00063110-200502000-00005

Xiong, J., Lipsitz, O., Nasri, F., Lui, L. M. W., Gill, H., Phan, L., Chen-Li, D., Iacobucci, M., Ho, R., & Majeed, A. (2020). Impact of COVID-19 pandemic on mental health in the general population: A systematic review. *Journal of Affective Disorders*, *277*, 55–64. https://doi.org/10.1016/j.jad.2020.08.001

Zhong, J., Zhong, C., Qiu, L., Li, J., Lai, J., Lu, W., Wang, S., Zhong, J., Zhao, J., & Zhou, Y. (2021). Risk and protective factors for anxiety during COVID-19 pandemic. *BMC Public Health*, *21*(1), 1–12. https://doi.org/10.1186/s12889-021-11118-8