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Psychometrics Properties of Pandemic Coping Scale (PCS)

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Abstract

The COVID-19 pandemic and its preventive methods related to social isolation and quarantine have pointed to a huge change in global behavior. The perception of the hazards of the virus and contamination, as well as obligatory routine changes have impacted negatively on the well-being and mental health of people. To handle this context, humans adopt strategies to cope and deal with the hazards and daily situations. However, there is a lack of studies and instruments which measure practical coping in COVID-19 Pandemics. Thus, this paper presents the development and evidence validity of the Pandemic Coping Scale (PCS), which is a two-factor instrument (Problem-Solving and Self-Protection Attitudes) that presented adequate psychometric measures (CVC > 80; RMSEA= 0,08, CFI = 0,94, TLI= 0,90; CR > 80). It is hoped that this scale may be useful and help professionals in the world to evaluate practical coping strategies during pandemics.

Keywords: coping; mental health; pandemics; covid-19.

Resumo

Propriedades Psicométricas da Escala de Enfrentamento em Pandemia (EEP). A pandemia do COVID-19 e seus métodos preventivos relacionados ao isolamento social e a quarentena, apontaram para uma enorme mudança no comportamento global. A percepção dos perigos do vírus, bem como as mudanças obrigatórias de rotina, impactou negativamente no bem-estar e na saúde mental das pessoas. Para lidar com esse contexto, o ser humano adota estratégias para enfrentar e lidar com os perigos e situações cotidianas. No entanto, faltam estudos e instrumentos que meçam o enfrentamento prático em Pandemias de COVID-19. Assim, este artigo apresenta o desenvolvimento e as evidências de validade da Escala de Enfrentamento em Pandemia (EEP), instrumento de dois fatores (Atitudes de Resolução de Problemas e Autoproteção) que apresentou medidas psicométricas adequadas (CVC > 80; RMSEA = 0,08, CFI = 0,94, TLI = 0,90; CR > 80). Espera-se que essa escala possa ser útil e ajudar profissionais do mundo a avaliar estratégias práticas de enfrentamento durante pandemias.

Palavras-chave: enfrentamento; saúde mental; pandemia; covid-19.

Resumen

Propiedades Psicométricas de la Escala de Afrontamiento a la Pandemia (EAP). La pandemia de COVID-19 y sus métodos preventivos relacionados con el aislamiento social y la cuarentena, apuntaron a un gran cambio en el comportamiento global. La percepción de los peligros del virus, así como los cambios de rutina obligatorios, impactaron negativamente en el bienestar y la salud mental de las personas. Así, los seres humanos adoptan estrategias para enfrentar los peligros y situaciones cotidianas. Sin embargo, faltan estudios e instrumentos que midan el afrontamiento práctico en las pandemias de COVID-19. Así, este artículo presenta el desarrollo y las evidencias de validez de la Escala de Afrontamiento a la Pandemia (EAP), un instrumento de dos factores (Resolución de Problemas y Actitudes de Autoprotección) que presentó medidas psicométricas adecuadas (CVC > 80; RMSEA = 0,08, CFI = 0,94, TLI = 0,90; RC > 80). Se espera que esta escala pueda ser útil a evaluar estrategias prácticas de afrontamiento durante pandemias.

Palabras clave: afrontamiento; salud mental; pandemia; covid-19.

Social distance and quarantine, resulting from the coronavirus (COVID-19) pandemic, are a threat to the mental health and well-being of individuals in general (Brooks et al., 2020; Fernández et al., 2020; Rubin & Wesley, 2020; Shepherd, Garey, & Zvolensky, 2020). Goyal et al. (2020) indicate that the COVID-19 context favors the development of mental disorders and intensifies disorders already diagnosed. Factors such as the gap of treatment and prevention strategies, high rate of contagious and deaths and the depletion of economic performance in all the world has contributed to the increasing stress levels and likelihood of dysfunctional psychological symptoms (Kar, Kar, & Kar, 2021).

Throughout the globe, some preventive methods to avoid the spreading of the virus have been implemented by countries, such as: handwashing, alcohol in gel and masks use, and social distance/isolation, i.e., quarantines (World Health Organization [WHO], 2020). C. Wang et al. (2020) stated that the achievement of correct information about covid-19 and effective handwashing negatively impact anxiety and depression symptoms. On the other hand, previous evidence suggests that quarantined subjects had higher levels of psychological distress showing more anger, anxiety, depression, hopelessness and fear of contagion (Brooks et al., 2020; Fernández et al., 2020; Rogers, Shepherd et al., 2020). The covid-19 pandemic has impacted people's lives in many aspects, whether individual (all kinds of fear - of the unknown, illness, death, isolation, uncertainty about the future, physical and financial insecurity) or at a social level (economic recession, educational limitations, unemployment) and ended up becoming recurrent stressors in the daily lives of the population (Calina et al., 2021; Grossman, Benjamin-Neelon, & Sonnenschein, 2020). Furthermore, it has changed people's lifestyles, those who have shown an increase in risk behaviors and decision-making (Malta et al., 2020).

Coping strategies are an attempt to manage suffering and lead the individual to adapt to a stressful event (Rettie & Daniels, 2021). In a pandemic context, two main types of coping strategies are implemented by people. The first is the general coping style which can be defined as cognitive and behavioral management patterns to an internal or external demand that is recognized. The second strategy is practical coping which represents the likelihood of executing a behavior during pandemic periods (Guo, Feng, Wang, & Ijzendoorn, 2020). Based on these concepts, Guo et al. (2020) identified that cognitive and prosocial behaviors were associated to less mental health problems and the lockdown impacts in mental health must not be underestimated in which the adoption of treatments in cognitive coping behaviors can help on the depletion of the maleficent implications of the pandemics.

The subjects' psychosocial and physical health are influenced by sociodemographic factors, stressful events and personal resources, which include, for example, personality, perceived control, etc (Fernández et al., 2020; Yıldırım, Geçer, & Akgül, 2021). Individuals who are not able to efficiently regulate their emotions are more prone to stress and more vulnerable to life's situational changes (Buecker et al., 2020; Gubler, Makowski, Troche, & Schlegel, 2020). Therefore, it is necessary to implement coping strategies to handle the adverse context, in order to prevent increasing disorders, reduce suffering and care for health (Viana & Lira, 2020).

Even with all the studies about the effects of the coping strategies and the impacts of pandemics and lockdown strategies in mental health, at the present moment, it is found a literature gap of instruments, in Brazil and in others countries in the world, which assess specifically the level of coping styles during pandemics. Currently, it can be noted that some studies related to this construct in pandemics have used some instruments to collect data in this context, such as: online surveys or free texts (Hensen et al., 2021; Kar et al., 2021). Some of them present a lack of psychometrics properties and its classification norms. However, on the other hand, there are also validated instruments in coping used in pandemic context, such as: Simplified Coping Style Questionnaire (SCSQ) which provides two measures named by emotion-focused coping and problem-focused coping. Its internal consistency presented adequate (Cronbach's alpha > 0.80) in both domains and in full scale (Guo et al, 2020); Practical Coping Behavior scale which presents 12 items concerning specific coping behaviors (Guo et al, 2020); Lockdown Questionnaire C/C Covid-19 that is a 9 factors scale with 41 items which assess the relation of isolation to different cognitive strategies of emotion regulation. Its adjustment model indexes were adequate in which RMSEA = 0.04 and TLI = 0.96 (Fernandéz Cruz et al., 2020).

In brazilian context, it may be noted that, at this moment, there is no instrument which evaluates practical coping style during pandemic and social isolation, due to the novelty of the coronavirus and its implications in society. Observing this demand, the authors

of this paper conducted a literature review about the theme and some coping-based instruments, and made the decision to develop a new Coping Scale with the intention of evaluating some aspects of practical coping strategies used in pandemic context that were not directly evaluated in other literature reviewed instruments. It is necessary to highlight that it was also offered classification norms to the brazilian population with the intention to help professionals and researchers to promote a quick screenning of this construct and choose the most fitable intervention for people.

Based on that, the Coping Pandemic Scale (PCS) was developed and built to be a two factor scale aimed at evaluating the levels of adoption of problem-solving and self-protection attitudes and strategies to deal with COVID-19 pandemic. Based on this, the aim of this paper is to present the psychometric properties of the PCS and its norms to the Brazilian population, as well.

Methods

Type of Study

This is an exploratory and psychometric study conducted in a sample composed of people from the North, Midwest, South, Southeast and Northeast, i.e., all the geopolitics regions of Brazil. The data were collected following three steps: firstly, expert analysis for obtaining a measure of clarity/relevance from the scale. This result is related to the content validity analysis; secondly, the scale's model and its reliability were computed intending to provide evidence of validity based on the internal structure; and further, normative data for the Brazilian sample was computed, based on percentile, mean and standard deviation.

Participants

The complete study obtained a sample composed of 764 participants from all five regions of Brazil. The first step counted with six expert judges to evaluate the content of the scale developed. All experts presented a clinical and academic experience of at least 5 years in the neuropsychology, cognitive psychology field, construction and validation of instruments. Moreover, the second and the third step of the study was composed of 758 participants from all the five regions of Brazil (Table 1), self-referring their gender as male or female, with ages in 18 to 87 years old (M = 34.09; SD = 13.03).

Table 1. *Descriptive analysis of the sample*

Characteristic	N	%
Gender		
Male	208	27.4
Female	550	72.6
Region		
North	26	3.4
Northeast	504	66.5
Midwest	6	0.8
Southeast	176	23.2
South	46	6.1
Schooling		
Non-Higher Education	288	38.0
Higher Education	470	62.0

Procedures

The evidence of validity based on the content of the scale was the first procedure to be computed, intending to have suggestions about the clarity and relevance of the coping items developed to the scale. Therefore, the statistical procedure to obtain a quantitative value about the expert judgments was the Content Validity Coefficient (CVC). Similarly, it was provided with a space for qualitative suggestions, in the case of the experts having insights that could improve the relevancy or clarity of the items developed. Each expert had 30 days to respond to the evaluation of the scale and return it to the authors. Based on these procedures, the researchers may have specifics and total feedback about the item's competence.

Furthermore, the informed consent term and the scale were introjected in google forms platform to promote the online collection of data. The participation in this procedure demanded the reading and signing of the informed consent term on the first online protocol page. Thus, after the participation agreement, the participants were directionated to the second protocol page, i.e., the page with the PCS items, being allowed to answer the scale items about their perception of coping levels in pandemic situations.

Instruments

The Pandemic Coping Scale (PCS): It is a scale developed to measure the level of coping skills used in pandemic situations. Initially, the PCS was developed based on pratical coping theory (Guo et al, 2020) and was building to extract two factors (Problem-Solving and Self-Protection Attitudes) and 21 items, adopting the likert

scale response in which 0 = strongly disagree; 1 = disagree; 2= nor agree neither disagree; 3= agree; 4= strongly agree. The responders should answer the assertives based on their behavior during the pandemic period.

Data Analysis Procedures and Criteria

The Analyses and the plots of this paper were computed by R programming, version 4.0.3 (R Core Team, 2020) and Factor Software, version 11.04.02 to windows (Ferrando & Lorenzo-Seva, 2017). Moreover, the measurement criteria used for evidence validity based on content was the CVC according to Yusoff s study (2019), whose CVC value above 0.83 suggests an acceptable agreement of experts about the clarity, understanding and relevance of the item's content.

Firstly, all inverted items were converted to positive measures. Further, preliminary analyses were conducted to suggest the possibility to compute a factor analysis and the number of its factors. Thus, the criteria used were Kaiser-Meyer-Olkin above 0.70 and significant bartlett test ($p < 0.05$), according to the stats of Damásio (2012); and Optimal Parallel analysis to extract the number of factors from the data collected about the scale (Timmerman & Lorenzo-Seva, 2011). Moreover, exploratory factor analysis was computed, adopting the loading factors above 0.3 (Samuels, 2017), polychoric matrices and Robust Diagonally Weighted Least Squares (RDWLS) as an extraction method of the EFA (Asparouhov & Muthen, 2010), Robust promin rotation method (Lorenzo-Seva & Ferrando, 2019); Root Mean Square Error of Approximation (RMSEA) below 0.08; Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) above 0.90 (J. Wang & Wang, 2019); Construct Replicability by Generalized H indexes of H-Latent and H-Observed (Ferrando & Lorenzo-Seva, 2018); Item Response Theory parameters of discrimination and thresholds (Reckase, 1985); and composite reliability was conducted to provide evidence about the homogeneity of item scale (Valentini & Damásio, 2016).

Based on the normality analysis test results on data, comparative methods such as Kruskal Wallis and Mann-Whitney test for independent samples were computed to analyze the scale`s domains extracted among the groups of gender, region, schooling and aging. Further, descriptive statistics, such as mean, standard deviation and percentile values were computed to provide norms of the scale developed.

Ethics Statement

The Ethics committee of the Psychology Institute of the Federal University of Bahia approved all the procedures of this study (under CCAE code: 33563720.1.0000.5686) and written informed consent was obtained from all participants.

Results

Study 1

Psychometrics Properties of PCS

The Content Validity Coefficient of the Scale (Table 2) suggested an adequate index in general to content analysis related to item's relevance to scale, its understanding and pertinence of the construct indicated. Two items were excluded because they presented a CVC level below the cut-off criteria used in this study (CVC > 0.83).

Table 2. *Content validity coefficient of PCS items*

Items of the Scale	CVC	CVC Updated
1- I try to understand what the pandemic is about	0.92	0.92
2- I have been utilizing social isolation to do things I couldn't do because of the routine	0.98	0.98
3- I try to keep a different routine in my daily	0.88	0.88
4- I have avoided watching the news about the pandemic	1.00	1.00
5- I have only come out of social isolation when it is very necessary. as I understand the importance of this.	1.00	1.00
6- I have taken the possible precautions to avoid being contaminated (constantly handwashing. wearing a mask. sanitize the environment and hands with alcohol)	0.90	0.90
7- I try to keep in touch with friends and family even at a distance	1.00	1.00
8- I tend to think that this pandemic situation will result in something good in the end	0.90	0.90
9- When I feel anguished. I avoid doing something I like to distract myself at this moment (Focus in regulate the emotion).	0.85	0.85
10- When I feel scared during the pandemic. I try to take a deep breath and relax.	0.94	0.94

continue...

Table 2. Continuation

Items of the Scale	CVC	CVC Updated
11- Despite the recommendations. I've been leaving home. because I can't stand to be isolated anymore.	0.89	0.89
12- I have been eating in an unhealthy and unbalanced way	0.88	0.88
13- I do not rely on my family and friends in times of vulnerability during the pandemic	0.90	0.90
14- I think that as I'm not from the risk group. I don't need to worry about it (the pandemic)	0.89	0.89
15- I don't talk and I don't want to know more about the pandemic/social isolation	0.96	0.96
16- I have tried to stay active by doing physical activity even at home	0.95	0.95
17- I have been trying to talk to people close to me.	0.99	0.99
18- I have slept irregularly during the pandemic/social isolation	0.97	0.97
19- During the pandemic. I try to get involved in some pleasurable activities (reading. watching TV. listening to music...)	0.95	0.95
20- I take care of my sleep quality	0.77	-
21- I think the coronavirus is just a flu and has a low fatality rate.	0.79	-
Total CVC	0.92	0.93

After these procedures, the PCS containing 19 items was run in a Brazilian adult sample, Obtaining 758 participants of this step of validity evidence. Before the computing of the factor analysis, the Kaiser-Meyer-Olkin and significant Bartlett test were executed to analyze the capacity of conducting a factor analysis with the data collected, in which the results indicated an adequate KMO (0.72) and Bartlett Test (2870.9; $p < 0.01$).

The Optimized Parallel Analysis suggested the retention of two factors from the scale items. However, the Exploratory Factor Analysis computed suggested seven items presented factor loadings below 0.30. Thus, these inadequate items were excluded, and a new Exploratory Factor Analysis was conducted with the remaining items in which remained with the suggestion of a two factors model (Table 3), with a positive weak inter-factors' correlation (r = -0.17) and a total explained variance of 47.86%. On the same hand, the Unidimensional Congruence (UniCo = 0.76; CI = 0.72 – 0.83), Explained Common Variance (ECV = 0.56; CI = 0.51 – 0.60) and Mean of Item Residual Absolute Loadings (MIREAL = 0.38; CI = 0.32 – 0.42) indexes suggested none evidences of unidimensionality on the scale (Ferrando & Lorenzo-Seva, 2018).

Table 3. *Factor analysis. reliability and construct replicability*

	Factors			Threshold			
Item	Problem-Solving	Self-Protection	a	d1	d2	d3	d4
02	0.52		0.62	-1.75	-1.25	-0.61	0.29
05		-0.89	-2.15	-4.66	-3.33	-2.11	-0.12
06		-0.54	-0.69	-3.13	-2.71	-2.42	-1.41
07	0.36		0.39	-1.98	-1.56	-1.15	-0.26
08	0.46		0.52	-1.17	-0.61	0.15	0.85
09	0.77		1.22	-3.28	-2.40	-1.27	0.02
10	0.67		0.93	-2.31	-1.63	-0.59	0.33
11		0.95	2.86	-0.19	-1.63	3.00	5.03
14		0.49	0.56	1.21	1.86	2.28	2.65
16	0.48		0.46	-0.86	-0.39	-0.03	0.51
17	0.58		0.71	-2.55	-1.89	-1.06	-0.10
19	0.67		0.92	-2.99	-2.36	-1.65	-0.58
E.V (%)	27.13	20.73					
C.R	0.79	0.73					
H-Latent	0.83	0.93					
H-Observed	0.83	0.81					

Note. a = item discrimination of the main item factor; d = thresholds (item difficult parameter); E.V% = Explained Variance of the model; C.R = Composite reliability; H-latent and H-Observed = G-H Index (Generalized H index).

Based on the theory used to develop the scale and covariance pattern of the 12 remaining items analyzed, the factors' scale were named by problem-solving and self-protection atitudes domains. The model's scale adjustment indexes suggested adequate measures, according to the criteria established for this study (RMSEA = 0.08, CFI = 0.94, TLI = 0.90). Additionally, the construct replicability indexes suggested a high likelihood of stability of the manifestation of the factors extracted in future studies using the scale. Moreover, the composite reliability measures were computed to analyze the internal consistency of the full scale and its factors extracted. According to the criteria used by this analysis and its results, it has been suggested that the scale presents an adequate homogeneity among the items (Total CR = 0.88). Further, to analyze the IRT parameters, the inverse items were converted, allowing the analysis of the difficult and discrimination. On this direction, the items of the scale varied low to strong in discrimination parameter (a = 0.39 to 2.86) and manifested in a hierarquical pattern of categories score in its threshold, i.e., difficult ITR's parameter (Table 3).

Study 2

Norms of PCS to Brazilian Population

Percentile and average and standard deviation norms were calculated for both factors extracted by the EFA results (Table 4). Both factor scores are calculated by the sum of the items. It should be informed that the items 05 (I have only come out of social isolation when it is very necessary, as I understand the importance of this.) and 06 (I have taken the possible precautions to avoid being contaminated (constantly handwashing, wearing a mask, sanitize the environment and hands with alcohol) should be converted in invert measures before calculated the sum of the self-protection attitudes. Thus, high scores in problem-solving factor means high likelihood to envolving in productive activities which helps to deal with emotional and functional stress and problems caused by COVID-19. On the other hand, low scores in self-protection factor means a strong likelihood to avoid attitudes in which can increase the probability of be infected by COVID-19 (Table 4).

Table 4. *Classifications of Pandemic Coping Scale*

General Norms	Problem-Solving	Self-Protection
M	23.61	4.40
SD	4.96	2.72
05 Pct	15.00	9.00
25 Pct	20.00	6.00
50 Pct	24.00	4.00
75 Pct	27.00	3.00
95 Pct	31.00	0.00

Note. *M* = Mean; *SD* = Standard Deviation; Pct = Percentile.

Likewise, comparative methods were implemented to analyze possible difference mean scores among gender, schooling and region groups in both factors scale. The Welch Two Sample *t*-test suggested significant mean differences by gender in which female group presented better scores in Problem-Solving (t = 4.02; df = 389.427; p < 0.01; d = 0.32). However, none significant difference was found in Self-Protection attitudes by gender (t = -0.89; df = 376.321; p <0.37; d= 0.07). In relation to schooling groups, significant difference were found in both factors where Non-Higher Education presented higher scores in Problem-Solving (t = -2.06; df = 611.101; p = 0.04; d= -0.15) and Higher Education presented better score in Self-Protection attitudes fator (t = -2.01; df = 630.333; p = 0.05; d = -0.15). A Kruskal-Wallis test was conduted with Region groups among PCS factors. However, there were found no significant difference among the groups (p > 0.05).

Table 5. *Specific classifications of the PCS to schooling, region and gender*

	Problem-Solving		Self-Protection	
Schooling <0.05	NHE	HE	NHE	HE
M	23.14	23.90	4.15	4.55
SD	4.92	4.97	2.63	2.76
05 Pct	14.35	15.00	8.65	9.00
25 Pct	20.00	21.00	6.00	6.00
50 Pct	24.00	25.00	4.00	4.00
75 Pct	27.00	27.00	2.00	3.00
95 Pct	30.00	31.00	0.00	0.00

continue...

Table 5. Continuation

	Problem-Solving					Self-Protection				
Region	N	NE	Mw	SE	S	N	NE	MD	SE	S
M	23.77	23.74	21.33	23.54	22.67	5.23	4.26	2.83	4.80	4.09
SD	4.37	5.00	4.80	5.02	4.65	2.22	2.60	2.31	2.97	3.01
05 Pct	16.75	15.00	15.50	15.00	15.25	8.00	9.00	5.75	10.00	8.00
25 Pct	21.25	21.00	20.00	20.00	21.00	7.00	6.00	4.50	7.00	5.00
50 Pct	23.00	25.00	20.50	24.00	23.00	5.50	4.00	2.50	5.00	4.00
75 Pct	27.00	27.00	24.00	27.00	26.00	4.00	2.00	1.25	3.00	2.00
95 Pct	31.00	31.00	27.25	31.00	28.00	2.00	0.00	0.25	0.00	0.25
Gender <0.05		Male		Female		Male			Female	
M		22.47		24.04		4.54			4.34	
SD		4.75		4.98		2.70			2.72	
05 Pct		14.00		15.00		9.00			9.00	
25 Pct		19.00		21.00		6.00			6.00	
50 Pct		23.00		25.00		4.00			4.00	
75 Pct		26.00		27.00		3.00			2.00	
95 Pct		29.00		31.00		0.00			0.00	

Note. *M* = Mean; *SD* = Standard Deviation; Pct = Percentile; N = North; NE = Northeast; Mw = Midwest; SE = Southeast; S = South; NHE = Non- Higher Education; HE = Higher Education

Discussion

The PCS was developed to assess individual levels of coping strategies executed during pandemics and social isolation. The scale presented an adequate two factor model which provides a total and specific (Problem-Solving and Self-Protection attitudes) scores of coping. The factors extracted by the factor analysis items were associated with the literature of coping strategies in pandemics (Guo et al, 2020).

During the development of the first version of the scale, i.e., PCS 21 items, it could be noted the exclusion of inadequate items which presented measures below the cut-offs on the different sources of validity investigated in this study. This process is related to the validity evidence whose scale developer executes a variety analysis to gather evidence about if the instrument is adequate in its content and construct and consistent in its items. Based on these results, inferences of the relation of the construct in human behavior can be made based on a cumulative knowledge evaluated and gathered (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 2014).

Furthermore, this study presented norms based on the data collected by a sample from all the regions of Brazil with a range of 18 to 90 years old. Based on the voluntary sample available, and the whole context of data collection in pandemics, this paper promoted general norms. However, it is suggested in future studies the analysis of item bias (Differential Item Functioning) of the scale to understand the need of adaptation or anchoring vignettes in the items by different groups. Thus, it is suggested, in the future, more studies with different types of sociodemographic and regional characteristics to increase the robustness of the PCS norm. It can be informed that, the actual classification was computed using percentile and mean and standard deviation, because it allows to calculated z-score.

The PCS can have a relevant impact on society, as knowing how the person is behaving in a distress context of pandemics and social isolation can provide support to understand which are the most effective strategies and help professionals to implement coping-based intervention strategies. Consequently, by using them it will be possible to protect the individual's health, since previous research indicates that effective coping strategies contribute to general health protection (Yıldırım et al., 2021).

The main limitation of this study was the possible bias of the results caused by the sample collected. These can be related to the social inequality presented in Brazil, in which, in social isolation context, people with higher socioeconomic status could have more opportunities to work from home and access electronic devices/internet to respond to research and questionnaires,

during a pandemic moment. Thus, even offering norms to brazilian population, must be highlighted precautions to be taken when used them in people, because of the possibility of response bias, caused by the bubble of participants collected in this study, it may not reflect the reality of the manifestation of practical coping strategies in pandemics in some vulnerable groups of Brazil. It is also important, to future studies, to equalize the quantity of data from sample by regions of Brazil and aging groups, intending to obtain more fitable scores to these populations.

Even though, Hensen et al. (2021) stated about this situation and possible limitations caused by the adaptations of methods and acquisition of data during pandemics. It was reinforced that even with these limitations, methods such as: online surveys had to be run during pandemics to allow the continuation of research.

Nevertheless, intending to dilute possible bias, it is suggested the collection of new responses in paper and pencil approach and the same online instrument in future studies, and to compute a DIF analysis among the different data collection approaches and groups, during and after the social isolation quarantine by pandemics, to understand the necessity of adaptation of the scale and promotion of new norms that may be more generalized to the most part of brazilian population.

Conclusion

The PCS is a two factor scale developed to assess the level of the use of coping strategies during pandemics and social isolation. Its indices suggested an adequate adjustment and its norms can help professionals in mental health to monitor patients on the coping construct.

Declarations

Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Competing Interests

The authors declare they have no financial interests.

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