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Self-Compassion Scale - Short Form (SCS-SF): evidencias iniciales de validez en Brasil

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ABSTRACT
This study aims at verifying the psychometrical properties of the Self-Compassion Scale-Short Form (SCS-SF) with a sample of 334 Brazilians. The one global factor was the best structure through Exploratory Factor Analysis, while through Confirmatory Factor Analysis, it was the bifactor model, with six specific factors and one global factor. The internal consistency was adequate for the global factor, but low for specific factors. Its total score had a nearly perfect correlation with the long form. The SCS-SF revealed good convergent and discriminative validity and seems to be a concise, reliable and valid analogue to the original SCS in Brazilian samples.

KEYWORDS:
Mental health; Compassion; Measurement; Test validity; Psychometrics.

RESUMO
Este estudo objetiva verificar as propriedades psicométricas da versão brasileira da Self-Compassion Scale-Short Form (SCS-SF) com 334 brasileiros. Um fator global foi a melhor estrutura através da Análise Fatorial Exploratória, enquanto o modelo bifatorial, com seis fatores específicos e um global, foi o melhor através da Análise Fatorial Confirmatória. A consistência interna foi adequada para o fator global, porém baixa para os fatores específicos. O score total teve uma correlação quase perfeita com a forma longa. A SCS-SF revelou boa validade convergente e discriminante e parece ser um análogo válido, conciso e confiável da SCS original em amostras brasileiras.

PALAVRAS-CHAVE:
Saúde mental; Compaixão; Medidas; Validade do teste; Psicometria.

RESUMEN
Este estudio tiene como objetivo investigar las propiedades psicométricas de la Self-Compassion Scale-Short Form (SCS-SF), en una muestra de 334 brasileños. Un factor global fue la mejor estructura en el Análisis Factorial Exploratorio, mientras el modelo bifactorial, con seis factores específicos y uno global, fue la mejor en el Análisis Factorial Confirmatorio. La consistencia interna fue adecuada para el factor global, pero baja para los factores específicos. La puntuación total tuvo una correlación casi perfecta con la forma larga. La SCS-SF demostró buena validez convergente y discriminante y parece ser un instrumento análogo válido, conciso y confiable de la SCS original en muestras brasileñas.

PALABRAS CLAVE:
Salud mental; Compasión; Medidas; Validación de test; Psicometría.

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Self-Compassion (SC) might be defined as sensitiveness to one's own suffering, along with a commitment to relieve or prevent it (Irons & Beaumont, 2017). SC is represented by a kind and tender way to relate to oneself, specially under suffering and tough circumstances, involving the acceptance of hurtful emotional experiences, along with the comprehension that they are part of a bigger human experience (Neff, 2003).

As it can be observed, there are three components to this variable: self-kindness (as opposed to self-judgment), mindfulness (as opposed to over-identification) and common humanity (as opposed to isolation) (Neff & Germer, 2019). The first component concerns love, support, acceptance, and encouragement actions towards oneself when flaws are detected. The second one regards the awareness of internal emotional states and their experience in a clear and balanced way. At last, common humanity refers to the sense of interconnectivity,

perceiving problems and struggles as difficulties that occur in everyone's life, not being an isolated situation, as if the person were apart from the rest of the world. In a nutshell, it means a loving - self-kindness and connected -common humanity- presence -mindfulness (Neff & Germer, 2019).

As a psychological construct that has been pointed out as a wellbeing promoter (Zessin, Dickhauser, & Garbade, 2015), which helps people dealing with negative emotional states, such as anxiety, stress and depression (Körner et al., 2015; Souza, Policarpo, & Hutz, 2020), SC has been highlighted in the literature on mental health and quality of life. Thereby, it has been included in several programs that aim at mental diseases prevention and mental health promotion, such as the Mindful Self-Compassion Program (Neff & Germer, 2013) and the Compassion Focused Therapy (Gilbert, 2009). In order to improve programs' efficacy, concerning SC, and, consequently, quality of life, it is important to have an instrument that is sensitive enough to measure how self-compassionate an individual is.

For the purpose of assessing the SC construct, Neff (2003) developed the Self-Compassion Scale (SCS), a 26-item questionnaire that can be used as a valid instrument for health intervention settings and research aims (Souza & Hutz, 2016). In her original study, Neff (2003) found that the hierarchical model was the best fitting one, consisting of one global factor and six second-order factors. Both positive and negative valence compassion components formed separate factors, resulting in six-subscales that are aligned with the author's theoretical model, that is: self-kindness, self-judgment, common humanity, isolation, mindfulness and over-identification. However, further studies found that the bifactor model, with six specific factors and one global factor, was the best factor structure of the SCS, better than the hierarchical one (Neff, 2016; Neff et al., 2019).

The bifactor model brings out a new possibility for the SCS' factor analysis, as it differs substantially from other models. For instance, when assessing single factor, two-factor and six-factor correlated models, there are only two sources from where the items' variance can be attributed: latent factors and error (Halamová et al., 2020). In contrast, the bifactor model allows for a separation between specific factors and general ones, and these types of factor groups coexist, therefore modeling their direct association on individual item responses (Neff et al., 2019; Rodriguez, Reise, & Haviland, 2016).

According to Neff (2016), the theoretical model proposes that the interaction between the specific ways through which each individual responds to its own suffering (which is assessed by the SCS items) leads to a SC state of mind. As a matter of fact, the bifactor Confirmatory Factor Analysis (CFA) approach evidenced a six-group factor and a general factor for the original version of the scale regarding undergraduate, meditators and community adult samples (Neff, Whittaker, & Karl, 2017).

Moreover, studies about the original scale demonstrated that the instrument had a sufficient to good internal consistency of the subscales (Cronbach's alphas varying from .75 to .81) and a high internal consistency of the total scale (Cronbach's alpha = .93), leading Neff (2003, 2016) to affirm that each subscale could be used separately to obtain a component's specific score, as one could also assemble all subscales' scores so that a total score of the SCS could be attained. It is common for the majority of researchers to focus on using only the total score of the questionnaire as an indicator of SC (López et al., 2015; Muris & Petrocchi, 2016).

In addition, the SCS has been employed in order to better understand the correlations of SC with other variables. Studies concerning the role of SC on mental health have investigated its impact on psychopathological indicators (i.e., anxiety, depression and stress). According to a Brazilian research conducted by Souza et al. (2020), 298 adults responded to the SCS and the Depression, Anxiety and Stress Scale - Short Form (DASS-21) and the results showed a significant negative correlation between SC scores and DASS-21 global score ($r = -.59$), as well as with its subscales of depression ($r = -.61$), anxiety ($r = -.44$) and stress ($r = -.49$). These findings are similar to the ones described by Joeng et al. (2017), López, Sanderman and Schroevers (2018) and Raes (2010), highlighting and presenting scientific evidence for the importance of SC and its assessment to assist mental health promotion interventions.

It is also important to point out that there is a short version of the scale. The Self-Compassion Scale-Short Form (SCS-SF; Raes, Pommier, Neff, & Gucht, 2011) comprises 12 items equally divided into six dimensions (i.e., self-kindness, self-judgment, common humanity, isolation, mindfulness and over-identification). This version can be used as an alternative measure for the long form in many populations (Neff, 2016).

The authors suggest the use of the SCS-SF in contexts in which time restrictions make the use of long version less feasible, as in extensive research and in monitoring of treatments in clinical practice (Raes et al., 2011). Reduced versions of self-report instruments also present other advantages, such as simplification of data collection and decrease in missing data and refusal rates (Koczkodaj et al., 2017; Stanton, Sinar, Balzer, & Smith, 2002). Nevertheless, it is important to verify if the reduced version is analogous to the original one. Raes et al. (2011) performed this verification, analyzing the relationship between the SCS and the SCS-SF finding a nearly perfect correlation ($r = .97$), indicating that the reduced version is capable of measuring the interest variable without a substantial loss of information.

Regarding the SCS-SF latent structure, CFA supported the hierarchical model, with six specific factors and a global factor (Raes et al., 2011), as found in the original long form (Neff, 2003) — however, the bifactor model was not tested. As the values of the internal consistency of the SCS–SF subscales were relatively low (Cronbach's alphas mostly $\leq .69$), the authors recommended that using each factor score independently to assess the SC components should be avoided (Raes et al., 2011).

Other studies tested different models of latent structure. A Slovenian study did not support the hierarchical model of the short version (Uršič, Kocjančič, & Žvelc, 2019). Instead, the six-correlated model had the best fit. Uršič et al. (2019) also tested the bifactor model, but it did not converge. The results found by Garcia-Campayo et al. (2014) relating to the scores of a sample of Spanish university students indicated that the six-factor correlated model had a good fit to data, similar to Uršič et al. (2019), but the authors did not disclaim if the hierarchical or the bifactor models were tested.

Bratt and Fagerström's (2019) study attempted to verify the latent structure for the SCS-SF in a Swedish older adults' sample through CFA, but none of the models tested showed an acceptable fit to data. The two-factor model did not show an acceptable fit in the CFA, but it had an acceptable fit in the Principal Component Analysis (PCA). The authors did not provide any recommendations regarding the SCS-SF.

Hayes, Lockard, Janis and Locke (2016) did not replicate the original SCS-SF factor analysis results, as the model that fit data the best was a two-factor correlated model. In this model, all negatively worded items

loaded on the first factor and all positively worded items loaded on the second factor (named by the authors as Self Disparagement and Self Care, respectively).

Although the SCS-SF has been widely used in different countries to investigate SC, its latent structure still does not have a homonymous model fit. The majority of studies that employed the SCS-SF have not yet tested the bifactor model's applicability, which was found by Neff (2016) and Neff et al. (2019) as the best model of the SCS. Moreover, it is still unknown whether this reduced version is a reliable and valid analogue of the original SCS in the case of Brazilian samples. Thus, the objective of the present study is to verify the psychometrical properties of the Brazilian version of the SCS-SF.

Methods

Participants

In this study, a convenience sample was used, being composed of 334 Brazilian university students, 262 undergraduate students, 38 master students and 34 doctoral students. The age ranged between 18 and 60 years ($M = 26.02, SD = 8.46$). Most of the participants were female ($n = 251$).

Instruments

The Self-Compassion Scale (SCS), constructed by Neff (2003) and adapted to Brazilian samples by Souza and Hutz (2016) was employed. The long version comprised 26 items, in which the participants are instructed to indicate, in a scale from 1 (almost never) to 5 (almost always), how often they act in the given manner. The items are divided into six factors, according to the conceptualization of the SC construct. Scores may be calculated by each factor individually or a global score after inverting the negative items' scores (i.e., self-judgment, isolation and over-identification). The Self-Compassion Scale - Short Form (SCS-SF) compasses 12 items of the 26 original ones, that is, items 6, 26, 14, 13, 15, 12, 9, 25, 2, 10, 1, and 11 from the long version. In this study, participants responded to the long version of the instrument (i.e., SCS) and not to the short version (i.e., SCS-SF). The items related to the SCS-SF were selected from SCS responses and then analyzed.

In order to verify convergent criterion validity, the Depression, Anxiety and Stress Scales - Short Form (DASS-21) by Lovibond and Lovibond (1995), adapted to Brazilian samples by Vignola and Tucci (2014) was

applied. It is a self-report instrument composed of 21 items equally divided among the subscales Depression, Anxiety and Stress. The respondent must inform how much each of the sentences was applied to one's reality during the last week. The answers are given in a Likert-type scale of 4 points, from "Did not apply at all" (0) to "Applied to a lot of or most of times" (3). It is possible to identify three specific factors (i.e., depression, anxiety, and stress) and a global factor (negative affectivity) to the latent structure of DASS-21, although the global factor is responsible for the greatest part of the explained common variance (Zanon et al., 2020). In the present study, the values of Cronbach's alpha were: depression ($\alpha = .92$), anxiety ($\alpha = .88$), stress ($\alpha = .89$), and negative affectivity ($\alpha = .95$).

The DASS-21 was chosen to be used as convergent validity for two reasons: (1) there were no other validated instruments identified that measured SC in Brazilian populations, and (2) the literature about the relation between SC and negative affectivity (criteria variable) is extensive, which allows comparisons. Furthermore, it gives way to observing and comparing the correlations that the long and short-versions might have with an external variable.

In order to verify divergent criterion validity, the Social Desirability Scale by Marlowe-Crowne - Short Version was utilized. Cross-culturally adapted to Brazilian samples by Ribas, Seidl-de-Moura and Hutz (2004), the questionnaire aims at measuring the participants' tendency to answer the presented questions biasedly, taking into consideration what is more socially accepted or approved. It is composed of 13 items that portray culturally desirable, but unlikely, behaviors, in which the subjects must indicate whether each item describes them or not (true or false). The answer given in each sentence is analyzed and turned into a "0" or "1" score, according to an answer key provided by the authors. The total score of the scale is obtained by the simple sum of the individual scores. The higher the score, the higher the tendency the participant shows to answer the presented questions biasedly. The short version exhibited a $KR20 = .70$ and a very strong correlation with the entire scale ($r = .90$, $p < .001$) at the cross-cultural adaptation to Brazilian samples (Ribas et al., 2004). In the present study, the value of Cronbach's alpha was .62.

Procedures

After the approval of the project by the Ethics in Research Committee of the institution to which this study pertains, an online questionnaire was created, containing the Written Informed Consent Form (WICF) and the instruments of this research. The invitation to participate in this project was made through social media ads (i.e., Facebook) and e-mails to university professors, requesting the forwarding of the virtual questionnaire link to their students.

Data Analysis

Statistical software IBM SPSS (version 22) was employed to analyze the data obtained in the study. After the reversion of negative items' scores, multivariate and univariate distribution analysis were performed in order to verify data distribution.

Additionally, the software Factor Analysis (version 10.10.01) was used to execute the Exploratory Factorial Analysis (EFA). A polychoric correlation matrix and the Robust Diagonally Weighted Least Squares (RDWLS) extraction method with Promin rotation were applied. The decision about the number of factors to be retained was performed by Hull's method for factors' retention (Lorenzo-Seva, Timmerman, & Kiers, 2011). The Generalized H index (G-H index), a factorial structure replicability method, was also obtained. High G-H index values (i.e., $\geq .80$) suggest a well-defined latent variable, which is more likely to be stable across studies, whereas low G-H index values (i.e., $< .80$) suggest a poorly defined latent variable, which is likely to change across studies (Hancock & Mueller, 2000).

A Confirmatory Factorial Analysis (CFA) was performed in the JASP software (version 0.13.0.0) with the aim of comparing the latent structure adjustment of different models described in literature. Regarding chi-square's (χ^2) statistical significance, the lower its value is, the better chances are that covariance matrices observed in the sample and estimated by SEM are not equal; thus, the higher χ^2's p-value (ideally not-significant), the more supported is the tested model (Hair, Black, Babin, Anderson, & Tatham, 2008). The adjust indexes used and their respectively cutoff points were: χ^2, the lower its value is, the better is the adjust; $\frac{\chi^2}{df} < 2.0$; Comparative Fit Index (CFI) $> .90$; Tucker-Lewis Index (TLI) $> .90$; Root Mean Square Error of

Approximation (RMSEA) $< .10$; Standardized Root Mean Square Residual (SRMR), the closer the value is to zero, the better is the adjust (see Byrne, 2016; Hair et al., 2008).

Internal consistency was calculated by Cronbach's alpha coefficient. It is suggested that alpha values over .70 show an acceptable reliability (see Zanon & Hauck Filho, 2015). In order to verify if the short-version is capable of measuring the interest variable without a substantial loss of information, a linear correlation between the SCS and the SCS-SF was performed.

To assess indicators of convergent criterion validity, linear correlations between the SCS-SF and DASS-21's scores were verified. As suggested by Munro (2011), a moderate and negative correlation ($-.50 \geq r \leq -.69$) is expected because the two scales measure related (but not identical) and opposite aspects of mental health. Linear correlations between the SCS-SF and DASS-21's scores were also compared with correlation between the SCS and DASS-21's scores to verify if there are differences between the long and short versions regarding related variables.

In order to seek discriminative validity evidence, bivariate correlations of items and total scores of the SCS-SF with Social Desirability scores were performed. Moderate-high correlations of the SCS-SF with Social Desirability measure would indicate that respondents are not answering with complete honesty, but according to what is socially desirable (Costa & Hauck Filho, 2017; Kwak, Holtkamp, & Kim, 2019). In contrast, low correlations between them indicate that Social Desirability is not a primary factor explaining the SCS-SF answers, suggesting low or non-response bias.

Results

The multivariate distribution analysis of the SCS-SF's scores showed their abnormality: Kolmogorov-Smirnov coefficient's value was $.092$ ($p < .001$), and Shapiro-Wilk coefficient's value was $.97$ ($p < .001$). However, the scores' univariate distribution analysis revealed the values for asymmetry $< \pm 1.2$ and for kurtosis $< \pm 1.1$, which does not describe an extreme violation of normality (Tabachnick & Fidell, 2018).

In reference to the EFA, Kaiser-Meyer-Olkin (KMO) test presented an index of .90, and Bartlett's test of sphericity result was $\chi^2(66) = 2042$ ($p < .001$), therefore indicating a very good sample fit to data for the

factorialization of the SCS-SF. Hull's method suggested a retention of one factor (Table 1). Factor loadings varied between .49 and .77 in the only factor of the SCS-SF (Table 2). The G-H index value was .91, which indicates the single factor as a well-defined latent variable, which is more likely to be stable across studies.

Table 1.
Hull method for selecting the number of common factors of the SCS-SF

Number of Factors	Goodness-of-fit values	df	Scree Test Values
0	.000	66	.000
1	.935	54	16.434*
2	.987	43	6.827
3	.994	33	.000

Note. Goodness-of-fit index: Robust CFI (Comparative Fit Index). Method for dimensions extraction: RDWLS. df = degrees of freedom. *Advised number of common factors: 1.

Table 2.
Factor Structure of the Self-Compassion Scale – Short Form generated by the EFA

Original Scale's Item	Scale's Item in Portuguese	Factor loading	BCa Confidence Interval
1. When I fail at something important to me I become consumed by feelings of inadequacy [SCS 6]	1. Quando eu falho em algo importante para mim, fico totalmente consumido por sentimentos de incompetência.	.766	(.700 – .825)
2. I try to be understanding and patient towards those aspects of my personality I don't like [SCS 26]	2. Tento ser compreensivo e paciente com os aspectos da minha personalidade dos quais não gosto.	.624	(.527 – .710)
3. When something painful happens I try to take a balanced view of the situation [SCS 14]	3. Quando algo doloroso acontece, tento ver a situação de forma equilibrada.	.723	(.649 – .787)
4. When I'm feeling down, I tend to feel like most other people are probably happier than I am [SCS 13]	4. Quando fico "pra baixo", sinto que a maioria das pessoas é mais feliz do que eu.	.681	(.584 – .751)
5. I try to see my failings as part of the human condition [SCS 15]	5. Tento entender meus defeitos como parte da condição humana.	.707	(.606 – .765)
6. When I'm going through a very hard time, I give myself the caring and tenderness I need [SCS 12]	6. Quando estou passando por um momento realmente difícil, eu me dou o apoio e o cuidado de que preciso.	.743	(.673 – .806)
7. When something upsets me I try to keep my emotions in balance [SCS 9]	7. Quando algo me deixa aborrecido, tento buscar equilíbrio emocional.	.718	(.640 – .776)
8. When I fail at something that's important to me, I tend to feel alone in my failure [SCS 25]	8. Quando eu falho em algo importante para mim, costumo me sentir muito sozinho nessa situação.	.601	(.483 – .697)
9. When I'm feeling down I tend to obsess and fixate on everything that's wrong [SCS 2]	9. Quando fico "pra baixo", não consigo parar de pensar em tudo que está errado comigo.	.725	(.638 –.790)
10. When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people. [SCS 10]	10. Quando percebo que fui inadequado, tento lembrar que a maioria das pessoas também passa por isso.	.488	(.363 – .585)
11. I'm disapproving and judgmental about my own flaws and inadequacies [SCS 1]	11. Sou realmente crítico e severo com meus próprios erros e defeitos.	.511	(.393 – .627)
12. I'm intolerant and impatient towards those aspects of my personality I don't like [SCS 11]	12. Sou intolerante e impaciente com os aspectos de que não gosto na minha personalidade.	.557	(.435 – .643)

Note. BCa confidence interval = bias-corrected and accelerated bootstrap 95% confidence intervals for loading values. Between [ ] is the X^{th} item in the full SCS.

Regarding the CFA, five models were tested based on the literature: single factor, two-correlated factors, six-correlated factors, hierarchical, with six specific factors and one global factor, and bifactor, with six specific factors and one global factor. The only model to present a non-significant χ^2 was the bifactor one (Table 3), which confirms, at the same time, the presence of the global factor suggested by the EFA (i.e., SC) and of the six theoretical components of the construct (i.e., self-kindness, mindfulness, common humanity, self-judgment, over-identification, and isolation). This model also showed some very good adjustment indexes, as it can be seen.

Table 3.
Adjust indicators generated by the CFA for different latent structure models to the SCS-SF

Study	Model	χ^2 (*p*)	Df	CFI	TLI	RMSEA (LO90–HI90)	SRMR
Raes et al. (2011)							
	Hierarchical (English)	175.50 (NI)	48	.97	NI	.080	.077
	Hierarchical (Dutish)	104.99 (NI)	48	97	NI	080	.070
Uršič et al. (2019)							
	Single factor	421.82 (NI)	54	.76	NI	.12 (.11 – .13)	.08
	Two-correlated factors	276.25 (NI)	53	.86	NI	.10 (.09 – .11)	.06
	Six-correlated factors	95.84 (NI)	39	.96	NI	.06 (.04 – .07)	.04
	Hierarchical	278.07 (NI)	48	.85	NI	.10 (.09 – .12)	.07
Garcia-Campayo et al. (2014)							
	Six-correlated factors	NI	NI	.94	NI	.07 (NI)	.05
Hayes et al. (2016)							
	Single factor	1525.46 (<.001)	.54	.72	.66	.19 (NI)	.11
	Two-correlated factors	339.57 (<.001)	53	.95	.93	.08 (NI)	.05
	Hierarchical	1191.73 (<.001)	48	.78	.70	.10 (NI)	.10
Bratt and Fagerström (2019)							
	Single factor	374.454 (<.001)	54	688	.619	.103 (.094 – 144)	NI
	Two-correlated factors	273.231 (<.001)	53	.821	.777	.079 (.069 – 090)	NI
	Six-correlated factors	81.546 (<.001)	39	.789	.789	.044 (.031 – .058)	NI
Current study							
	Single factor	371.064 (<.001)	54	.784	.736	.133 (.120 – .146)	.092
	Two-correlated factors	130.213 (<.001)	53	.950	.930	.066 (.052 – .080)	.049
	Six-correlated factors	80.341 (<.001)	39	.972	.952	.056 (.039 – .074)	.040
	Hierarchical	245.094 (<.001)	48	.866	.815	.111 (.097 – .125)	.086
	Bifactor	**33.342 (.186)**	**27**	**.996**	**.989**	**.027 (.000 – .053)**	**.020**

Note. χ^2 = chi-square. df = degrees of freedom. CFI = Comparative Fit Index. TLI = Tucker-Lewis Index. RMSEA = Root Mean Square Error of Approximation. LO90 = RMSEA 90% CI lower bound. HI90 = RMSEA 90% CI upper bound. SRMR = Standardized Root Mean Square Residual. NI = Not informed.

Reliability analysis revealed that the Cronbach's coefficient alpha (α) was .87 for the global factor, which surpasses the cutoff point used. However, most of the specific factors' reliability indicated by the CFA was under the cutoff point: self-kindness ($\alpha = .59$), mindfulness ($\alpha = .73$), common humanity ($\alpha = .56$), self-judgment ($\alpha = .63$), over-identification ($\alpha = .75$), and isolation ($\alpha = .64$).

The short and long versions presented a linear correlation value near to one that was significant ($r = .97$, $p < .001$), which indicates that the SCS-SF is capable of measuring SC without loss of information in comparison to the SCS. The correlations between the two versions of the SCS's global scores and the symptoms measured by the DASS-21 are presented in Table 4. As presented, the correlations have a moderate magnitude, and that confers a good convergent validity to the instruments. Besides that, there were no significant differences in the comparison of the correlations between the factors of the DASS-21, SCS and SCS-SF (differences were under .02).

Table 4.
Correlations between the SCS, the SCS-SF and depressive, anxiety and stress symptoms

SCS's version	Symptoms	Correlation
Long version's global score	Depression	-.65**
	Anxiety	-.52**
	Stress	-.59**
	Negative Affectivity	-.66**
Short version's global score	Depression	-.64**
	Anxiety	-.50**
	Stress	-.57**
	Negative Affectivity	-.64**

Note. ** $p \leq .01$

Correlations between the SCS-SF's items and social desirability indicated negligible positive coefficients, varying from $r = .11$ (item 6) to $r = .27$ (item 10), and the correlation between SCS-SF's global score and social desirability revealed a low positive coefficient ($r = .31$), according to Dancey and Reidy (2018) guidelines. Therefore, the SCS-SF showed to have good discriminative validity, since social desirability is not a primary explaining factor to the SCS-SF answers, indicating low or non-response bias (Costa & Hauck Filho, 2017; Kwak et al., 2019).

Discussion

The present study aimed at investigating the psychometrical properties of the SCS-SF in a sample composed of Brazilian university students, through the latent structure analysis employing EFA and CFA, internal consistency analysis, comparison with the SCS, convergent and discriminative criterion validity. Although this instrument has been employed around the world to measure SC, it was unknown whether this reduced version is a reliable and valid analogue of the original SCS in the case of Brazilian samples.

Concerning the latent structure, EFA recommended the extraction of a single factor, in which all 12 items presented significant loading factors (i.e., $\geq .49$). In order to test the adequacy of different models, CFA was performed and indicated the bifactor model, with six specific factors and one global factor, as the best latent structure of the SCS-SF to data. These results collaborate with those found by international studies of the long version of the SCS (Neff, 2016; Neff et al., 2019).

Different studies have been investigating different adequacy models for the SCS-SF. Although this action is extremely important to find the model that best adequates to data, the bifactor model, with six specific factors and one global factor, seems to be the best of them – although it did not converge in the Slovenian study (Uršič et al., 2019). Thereby, investigations that aim at analyzing the latent structure of this instrument must include the bifactor model, in order to try to overcome it, which was not done by Bratt and Fagerström (2019), Garcia-Campayo et al. (2014), Hayes et al. (2016) and Raes et al. (2011).

The reliability calculated through Cronbach's alpha was placed above the cutoff point used for the global score of the SCS-SF, indicating good internal consistency. International studies have already revealed similar results (e.g., Garcia-Campayo et al., 2014; Raes et al., 2011; Uršič et al., 2019). The good internal consistency results suggest that the reliability of the rating scale has not been deteriorated by the scale item reduction.

Although CFA has demonstrated the presence of six specific components of SC, the reliability of most of these factors was low - possibly due to the reduced number of items in each of them (see Bratt & Fagerström, 2019; Hair et al., 2008). Therefore, as Raes et al. (2011) proposed, we, too, suggest that only the global factor

should be calculated when employing the SCS-SF and, if the researcher or clinician is interested in assessing accurately the specific components of SC, the long version of the SCS should be used.

A nearly perfect correlation between the global scores of the long and reduced version of the SCS indicates that it is possible to measure the SC construct with 12 items without a significant loss in comparison with the 26-items scale, just as found by Raes et al. (2011). Regarding the criterion validity, the SCS-SF revealed good convergent and discriminative validity when the correlations with psychopathological indicators (i.e., DASS-21 scores) and social desirability, respectively, are analyzed. Correlations with psychopathological indicators showed very few differences between the long and reduced versions of the scale and similar to the ones found by national and international studies (Joeng et al., 2017; López, et al., 2018; Raes, 2010; Souza et al., 2020). The low correlation between the SCS-SF and social desirability, on the other hand, demonstrates that respondents are answering with honesty, and not according to what is socially desirable (Costa & Hauck Filho, 2017; Kwak et al., 2019) – although the internal consistency of the measure of social desirability was below expectations in the current study.

In summary, SC is a psychological construct that has been pointed out as a well-being promoter, which helps people to deal with negative emotional states, such as anxiety, stress and depression. The SCS-SF reduced the number of rating scale items to 46.15% (from 26 to 12), making over 50% of collected data unnecessary, which tends to demand less time from the participant to complete data collection, decreasing missing data and refusal rates. At the same time, reducing the number of items did not burden psychometrical properties. The SCS-SF seems to be a concise, reliable and valid analogue of the original SCS in the case of Brazilian samples, and it can be effectively and efficiently used as an economical alternative to the full SCS.

However, some limitations encountered need to be taken into consideration. Firstly, participants responded to the long version of the instrument (i.e., SCS) and not to the short version (i.e., SCS-SF). The items related to the SCS-SF were selected from SCS responses and, then, analyzed. Although the wording of the items is the same, there is no way to guarantee that participants would respond in the same way if they only responded to the SCS-SF, mainly because the serial position of items is different. In this case, context effect should be

considered because measurement can change the measure (Knowles, 1988; Schwarz, 1999). So, future studies applying only the items of SCS-SF will need to corroborate the results found by the present one.

Besides that, the convenience sampling, therefore a non-probability sampling, formed exclusively by university students, mostly feminine, might make generalization to the population a more difficult process. It is suggested that future studies investigate the SCS-SF's validity in wider Brazilian samples, combining them with different characteristics from those that presented here, such as focusing on adolescents, adults with low schooling, elderlies, and, mostly, clinical samples.

Although there are some limitations, it is believed that the evidence found in this study represents a contribution to the advance in SC's investigation in Brazilian studies, and it is expected to encourage the use of the SCS-SF in future studies about mental health.

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