Revista Psicologia, Saúde & Doenças
Vol. 25, Nº. 1, 35-44, 2024
Sociedade Portuguesa de Psicologia da Saúde
ISSN 2182-8407
www.sp-ps.pt
https://doi.org/10.15309/24psd250104

PSYCHOMETRIC PROPERTIES OF THE BRIEF COPE IN A SAMPLE OF PORTUGUESE ADOLESCENTS

PROPRIEDADES PSICOMÉTRICAS DO BRIEF COPE NUMA AMOSTRA DE ADOLESCENTES PORTUGUESES

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Abstract: The Brief Cope is validated for Portuguese adults but not for adolescents. The present study aimed to overcome this gap. A sample of 534 portuguese adolescents was collected and split in half to explore the factor structure of the instrument. To do so an Exploratory Factor Analysis (EFA) with Principal Component Analysis was calculated in SPSS and Confirmatory Factor Analysis (CFA) in Amos. Construct validity was explored with correlational analysis with relevant variables such as mental health, self-compassion and hope. Internal consistency was explored with Alpha Cronbach. Although EFA with direct oblimin rotation, forcing the 14 factors, found KMO = .80, and all communalities were above .65, it failed to retain 14 factors. CFA corroborated the original 14- factor (28 items) factor structure. Acceptable local fit (λ = >.50; R^2 > .25) and acceptable model fit ($\chi 2/df$ = 1.80; TLI= .87; CFI = .91; RMSEA = .06, p = .113) were reached. The internal consistency levels ranged between α = .50 (Use of Instrumental Support) and α = .79 (Substance Use). This study found evidence for the validity, reliability and usefulness of Brief Cope for Portuguese adolescents, although further research must examine the psychometric properties of this instrument.

Keywords: Coping, Adolescents, Brief Cope, Mental health, Adaptation, Strategies, Development

Resumo: O Brief Cope está validado para adultos portugueses, mas não para adolescentes. O presente estudo teve como objetivo superar essa lacuna. Foi recolhida uma amostra de 534 adolescentes portugueses e dividida ao meio para explorar a estrutura fatorial do instrumento. Para tanto foi calculada uma Análise Fatorial Exploratória (AFE) com Análise de Componentes Principais no SPSS e Análise Fatorial Confirmatória (AFC) em Amos. A validade de construto foi explorada com análise correlacional com variáveis relevantes como saúde mental, autocompaixão e esperança. A consistência interna foi explorada com alfa de *Cronbach*. Embora a AFE com rotação oblíqua direta, forçando os 14 fatores, encontrou KMO = .805, e todas as comunidades estavam acima de .65, não conseguiu reter 14 fatores. A AFC corroborou a estrutura fatorial original de 14 fatores (28 itens). O ajuste local aceitável (λ = > 0,50; R^2 > 0,25) e o ajuste aceitável do modelo (χ^2/df = 180; TLI = 0,87; CFI = 0,91; RMSEA = 0,06, p = 0,113) foram alcançados. Os níveis de consistência interna variaram entre α = 0,50 (Uso de Suporte Instrumental) e α = 0,79 (Uso de Substâncias). Este estudo suporta a validade, fiabilidade e utilidade do Brief Cope para adolescentes portugueses, embora mais investigação deva examinar as propriedades psicométricas deste instrumento.

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Submetido: 05 de novembro de 2023
Aceite: 19 de dezembro de 2023

Palavras-Chave: Enfrentamento, Adolescentes, Brief Cope, Saúde mental, Adaptação, Estratégias, Desenvolvimento

Coping research stems from the observation that individuals can actively manage stressors and life transactions with different results for their mental health, either preventing trauma and mental illness or attaining mental well-being (Lazarus & Folkman, 1984). Therefore, a significant amount of solid research sustains psychological interventions that aim to build a healthy repertoire of coping strategies. Studies relate coping strategies to personality traits (Carver & Connor-Smith, 2010; Carver et al., 1989), mental well-being and physical well-being (Park & Adler, 2003; Tsenkova et al., 2008), less psychopathology (Karademas, 2007; Zhou et al., 2010), positive emotions (Brissette et al., 2002; Carver & Scheier, 2004; Zhou et al., 2010), life quality (Karekla & Panayiotou, 2011).

Coping can be divided into coping strategies (situational coping) or coping styles (dispositional coping), and has been considered to be adaptative/ non-adaptative depending on whether the coping strategies used benefit adaptation and mental health in the short/long term (Carver & Scheier, 2004). In order to evaluate both situational and dispositional coping, Carver et al., (1989) developed COPE, an instrument based on Lazarus and Folkman (1984) Transactional Model of Stress and Coping and Models of Emotion Regulation. Considering the fact that COPE was extense and had redundancy of items, Carver (1997) later adapted this instrument into a 28-item scale composed of 14 factors, each with 2 items. Subscales measure Humor, Using Emotional Support, Using Instrumental Support, Self-Distraction, Planning, Denial, Religion, Behavioral Disengagement, Active Coping, Self-Blame, Positive Reframing, Substance Use, Venting and Acceptance. The first question of the instrument has the purpose of emotional arousal has asks subjects to recall a recent problem. After that, instructions follow for the items that are part of the questionnaire. Subjects are asked to rank each item into 4 options "0 = I haven't been doing this at all (situational coping)/ I usually don´t do this at all (dispositional coping)"; " 1 = I've been doing this a little bit; I usually do this a little bit "; " 2 = I've been doing this a medium amount; I usually do this a medium amount"; "3 = I've been doing this a lot; I usually do this a lot ". No overall score is extracted from this instrument only total subscale scores.

The Brief-Cope is now available in several countries, although mostly adapted for clinical samples of adults. However, structure varies across studies, and some authors report some psychometric limitations (Nunes, 2021). Although coping is particularly relevant a personal resource for emotion regulation and problem solving in adolescence, the Brief-Cope is not adapted to the Portuguese adolescent population. In this study we aimed to overcome this gap adapting the Brief-Cope in a sample of Portuguese adolescents from the general population.

METHOD

Participants

The current sample is a community sample composed of 504 adolescents, whose data was collected both online and through pencil-and-paper. In this sample, 56% were woman and 44% men. Age ranged from 15 to 18 years old and the mean age was M = 16.50 (SD = 1.23). All the participants had Portuguese nationality In this sample, 55.2% of participants have medium socioeconomic status, 27.2% low socioeconomic status, and 17.7% high socioeconomic status. The current study did not established exclusion criteria. Inclusion criteria were a) age between 14 and 23 years of age, and b) portuguese nationality.

Measures

Demographics. We collected data regarding age, socioeconomic status and gender.

Brief Cope (Carver, 1997; Portuguese version for adults - Pais-Ribeiro & Rodrigues, 2004). The first question of the instrument has the purpose of emotional arousal has asks subjects to recall a recent problem. After that, instructions follow for the items that are part of the questionnaire. Subjects are asked to rank each item into 4 options "1 = I haven't been doing this at all (situational coping)/ I usually don´t do this at all (dispositional coping)"; " 1 = I've been doing this a little bit; I usually do this a little bit "; " 2 = I've been doing this a medium amount; I usually do this a medium amount"; "4 = I've been doing this a lot; I usually do this a lot ". Then 28 items assess coping strategies aggregated in Humor, Using Emotional Support, Using Instrumental Support, Self-Distraction, Planning, Denial, Religion, Behavioral Disengagement, Active Coping, Self-Blame, Positive Reframing, Substance Use, Venting and Acceptance. No overall score is extracted from this instrument only total subscale scores. To adapt the Brief Cope for adolescents we used the Portuguese version for adults from Pais-Ribeiro and Tavares (2004). For the purpose of this study dispositional coping was assessed.

Brief Symptom Inventory (BSI; Derogatis, 1982/1993; Portuguese version Canavarro, 1999). The BSI used 53 items ranked in a 6-point Likert type scale from 0 - Not at all to 4 – Extremely to evaluate psychopathology. Nine dimensions compose psychopathology subscales: somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, psychoticism. For the purpose of this study we used Total Score of Positive Symptoms. The reliability of BSI ranges from α = .62 to α = .80 (Canavarro, 1999).

Mental Health Continuum Short-Form (MHC-SF, Keyes, 2005; 2007; Portuguese version Matos et al., 2010). The MHC-SF evaluates positive mental health or mental well-being in three domains – emotional well-being, psychological well-being and social well-being in 14 items ranked from 0 (Never) to 6 (Always). Internal consistency ranges from α = .80 to α = .85 (Matos et al., 2010).

Self-compassion scale – adolescents version (SCS) (Neff, 2003; Portuguese version Cunha et al., 2015). It is a 6 dimensional scale composed of 26 items scored in a 5-point Likert-type scale. Self-compassion is divided into self-kindness, mindfulness and common humanity and reversed factors – isolation, overidentification and self-judgement. Each scale functions independently or within a total score. The Portuguese version has good reliability α from α = .70 to α = .79 (Cunha et al., 2015).

Hope-trait scale (HTS) (Snyder et al., 1991; Portuguese version Marques et al., 2014). This instrument is a self-report measure based on Hope theory and measures hope as a trait using 2 factors (Agency and Pathways) and a total score. The scale is composed of 12 items ranked in 8 options. The reliability of the scale ranges from α = .79 to α = .86 (Marques et al., 2014).

Procedure

This study followed a cross-sectional design, and is part of a larger study that aims to study explore the role of mental health literacy in promoting mental health. The Ethics Committee of the Faculty of Psychology and Educational Sciences of the University of Coimbra (May, 2018) and the Ministry of Portuguese Education - Direction of general Education (RN: 0668400001) approved this study. Ethical procedures in data collection respected the collection of informed consent from all participants and their legal tutors (generally their parents). Participants were informed that all data was confidential, anonymous and that they could interrupt their participation any time without any consequence. All data collected is stored anonymously at an institutional data base and professional pen drives accessed only by the researchers team.

Data collection took place during March 2019 and June 2021, after school directors approved the study and legal tutors gave their informed consent. Participants were assessed through paper-and-pencil and online (using the LimeSurvey platform) after being contacted at nationwide high-schools

and professional schools. Four students doing their masters in psychology (Psychology students) and trained in psychological evaluation collected the data.

Data analyses

The data was analyzed using SPSS Statistics Version 23.0 and AMOS 22.00 (IBM corp., 2011) software. Preliminary data analysis (Skweness and Kurtosis, Multicollinearity, Mahalanobis Distance) were performed to examine the adequacy of data.

In order to explore Brief Cope factor structure we used Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). The Maximum Likelihood estimation method guided the CFA. To do so, the sample was randomly split by in half using SPSS software. Internal Consistency was then measured using Cronbach's alpha calculation. Finally, we assessed convergent validity with Pearsons´ Correlations between the Brief Cope and related constructs such as mental well-being, psychopathology, self-compassion and hope.

RESULTS

Exploratory Factor Analysis (EFA)

In the first step, we conducted EFA using Principal Component Analysis (PCA) with Direct Oblimin Rotation, in half of the sample (N = 248). The Keyser Meyer-Olkin (KMO) criteria values suggested that the data was adequate [KMO = .80; χ^2 (378) = 2914.813; p < .001]. Eigenvalues, nevertheless, did not corroborate the original 14-factor structure of Brief Cope. Rather, 22.04% of the variance was explained by a solution of 5 factors, with items exhibiting adequate communalities (> .30). In order to test the original structure, we forced the model to test a 14-factor structure. The eigenvalues suggested that only 6 factors would be retained (59.62%). When looking into the loadings of items, the matrix showed that two factors were clearly identified (with 25 items), but the remaining factors presented either one or no items loading in it.

Given that the EFA failed to corroborate the original 14-factor structure, a CFA was conducted (N= 256).

Confirmatory Factor Analysis

Results suggested the original 14-factor structure presented adequate model fit. The first model replicated the original 14- factor (28 items) factor structure with acceptable local fitness (λ = >. 50, R^2 > 25), and acceptable model fit ($\chi 2/df$ = 1.94, TLI = .85, CFI = .90, RMSEA = .06, p = .113) (Figure 1). Nevertheless, modification indexes suggested correlating errors of items 14 and 28, and 4 and 24. An improved model fit ($\chi 2/df$ = 1.80, TLI= .87, CFI = .91, RMSEA = .06, p = .113) was found.

Internal Consistency

To assess reliability, Cronbach's alpha was calculated, the *Use of Instrumental Support* subscale had the lowest consistency value (α = .51), and the *Substance Use* subscale the highest (α = .80). Overall, all factors presented acceptable internal consistency.

Table 1. *Exploratory Factor Analysis – Complete item pool and factor loadings (N= 248)*

Items		Factors					
English version (Carver, 1997 – situational coping)	Portuguese version (adapted from Pais Ribeiro & Rodrigues (2004) dispositional coping)	1	2	3	4	5	6
1. I've been trying to get advice or help from other people about what to do.	1.Peço conselhos e ajuda a outras pessoas para enfrentar melhor a situação.	.63					
2. I've been making jokes about it.	2.Enfrento a situação levando-a para a brincadeira.					.53	
3. I've been turning to work or other activities to take my mind off things.	3.Refugio-me noutras atividades para me abstrair da situação.						.52
4. I've been trying to come up with a strategy about what to do.	4.Tento encontrar uma estratégia que me ajude no que tenho que fazer.	.55					
5. I've been saying to myself "this isn't real."	5.Digo a mim próprio(a): "Isto não é verdade".		.54				
6. I've been trying to find comfort in my religion or spiritual beliefs.	6.Tento encontrar conforto na minha religião ou crença espiritual.	.41					
7. I've been getting emotional support from others.	7.Procuro apoio emocional de alguém (família, amigos).	.59					
8. I've been giving up the attempt to cope.	8.Desisto de me esforçar para obter o que quero.		.76				
9. I've been concentrating my efforts on doing something about the situation I'm in.	9.Concentro os meus esforços para fazer alguma coisa que me permita enfrentar a situação.	.64					
10. I've been criticizing myself.	10.Faço críticas a mim próprio(a).				.56		
11. I've been trying to see it in a different light, to make it seem more positive.	11.Tento analisar a situação de maneira diferente, de maneira a torná-la mais positiva.	.53					
12. I've been using alcohol or other drugs to make myself feel better.	12.Refugio-me no álcool ou noutras drogas (comprimidos etc) para me sentir melhor.		.69				
13. I've been expressing my negative feelings.	13.Fico aborrecido(a) e expresso os meus sentimentos (emoções).	.50					
14. I've been accepting the reality of the fact that it has happened.	14.Tento aceitar as coisas tal como elas estão a acontecer.	.51					
15. I've been looking for something good in what is happening.	15.Procuro algo positivo em tudo o que está a acontecer.	.64					
16. I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.	16.Faço coisas para pensar menos na situação, tal como ir ao cinema, ver TV, ler, sonhar, ou ir às compras.	.45					
17. I've been expressing my negative feelings.	17.Sinto e expresso os meus sentimentos (emoções) de aborrecimento.	.55					
18. I've been learning to live with it.	18.Tento aprender a viver com a situação.	.63					
19. I've been getting comfort and understanding from someone.	19.Procuro o conforto e compreensão de alguém.	.58					
20. I've been using alcohol or other drugs to help me get through it.	20.Uso álcool ou outras drogas (comprimidos) para me ajudar a ultrapassar os problemas.		.77				
21. I've been giving up trying to deal with it.	21.Simplesmente desisto de tentar atingir o meu objetivo.		.77				
22. I've been refusing to believe that it has happened.	22.Recuso-me a acreditar que isto esteja a acontecer desta forma comigo.		.66				
23. I've been thinking hard about what steps to take.	23.Penso muito sobre a melhor forma de lidar com a situação.	.52					
24. I've been trying to get advice or help from other people about what to do.	24.Peço conselhos e ajuda a pessoas que passaram pelo mesmo.	.63					
25. I've been praying or meditating.	25.Costumo rezar ou meditar.	.39					
26. I've been blaming myself for things that happened.	26.Costumo culpar-me pelo que está a acontecer.		.53				
27. I've been making fun of the situation.	27.Costumo enfrentar as situações com sentido de humor.	.48					
28. I've been taking action to try to make the situation better.	28.Costumo tomar medidas para tentar melhorar a minha situação (desempenho).	.67					

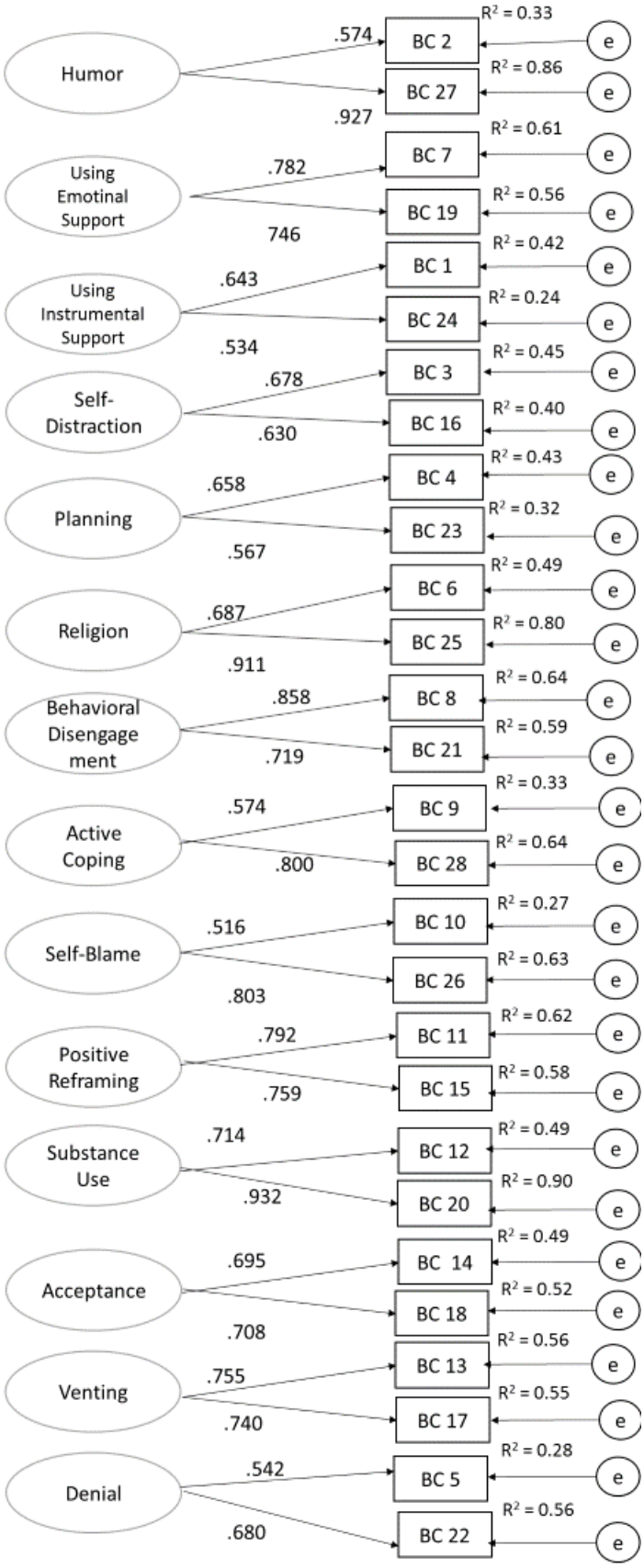

Figure 1. *Factorial structure of Brief Cope*

Table 2. Means (*M*), Standard-Deviation (*SD*) and Alpha Cronbach (α) for each subscale (*N*= 256)

Variable	*M*	*SD*	*α*
1.Humor	2.64	1.62	.69
2.Using Emotional Support	3.21	2.67	.74
3.Using Instrumental Support	2.86	1.99	.51
4.Self-Distraction	3.31	2.21	.60
5.Planning	3.61	1.97	.54
6.Denial	1.89	2.14	.56
7.Religion	1.56	3.08	.77
8.Behavioral Disengagement	1.60	2.27	.76
9.Active Coping	3.16	2.08	.63
10. Self-Blame	3.00	2.59	.59
11. Positive Reframing	3.02	2.61	.75
12. Substance Use	.50	2.05	.80
13. Venting	2.57	2.30	.72
14. Acceptance	3.37	2.16	.67

Construct Validity

Finally, convergent and divergent construct validity was examined through Pearson Coefficients with related constructs, such as mental well-being, psychopathology, self-compassion and the scores of Pathways and Agency subscales. All constructs were significantly correlated in the expected directions with most Coping subscales. Only Denial and Active Coping were significantly related with psychopathology. Venting was not correlated with any other construct.

DISCUSSION

Although the use of coping is of most relevance in the context of adolescent development, adaptation and mental health, the Brief Cope, a widely used instrument to measure situational and dispositional coping, is not validated to adolescents in most countries, including in Portugal.

This study is the first to contribute to fill the gap in the knowledge on the psychometric structure of the portuguese version of the Brief Cope for adolescents, using a Portuguese community sample. Our findings from EFA did not support the 14-factor model. Nonetheless, results from the CFA showed an appropriate model fit for the proposed 14-factor structure. Additionally, the Brief Cope presented reliability, convergent validity with related constructs. These results are consistent with other findings from Portuguese older samples (Brasileiro et al., 2016; Nunes et al., 2021; Oldberg, 2021; Pais-Ribeiro & Rodrigues, 2004).

As expected, most subscales were significantly correlated with mental well-being, hope and self-compassion which corroborates the importance of adequate coping strategies for mental well-being promotion. In this study, only Denial and Active Coping were related to psychopathological symptoms. This finding raises the question of whether coping has a stronger effect in mental well-being promotion or in mental illness prevention. Nevertheless, it would be important to explore this result replicating the study with larger samples, especially clinical samples, and with longitudinal designs that allowed for a more accurate study of the temporal relationship between different dimensions of coping and mental health.

The limitations of this study should be acknowledged: 1) we did not measure temporal stability, 2) our instruments were mainly self-report measures, and 3) the reliability of some subscales were low. Future studies should replicate these findings and overcome these limitations with larger samples and using different moments for temporal stability assessment.

Table 3. Pearson correlations between all variables (*N*= 256)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Humor	-	.06	.05	.28**	.15*	.05	-.03	.09	.22**	.12	.33**	.15*	.07	.18**	.10	-.05	.19*	.25**	.15
2. Using Emotional Support		-	.57**	.26**	.41**	.14**	.26**	-.10	.42**	.12*	.30**	-.05	.41**	.28**	.29**	-.10	.37**	.32**	.11
3. Using Instrumental Support			-	.18**	.34**	.13*	.24**	-.03	.34**	.06	.30**	.06	.36**	.25**	.21**	-.06	.34**	.28**	.14
4. Self-Distraction				-	.44**	.21**	.11	.01	.34**	.17**	.41**	.00	.21**	.29**	.06	.08	.39**	.38**	.07
5. Planning					-	.07	.17**	-.24**	.63**	.00	.48**	-.09	.25**	.45**	.29**	-.06	.51**	.44**	.29**
6. Denial						-	.21**	.42**	.03	.25**	.00	.27**	.20**	-.01	-.14*	.21**	-.02	-.01	-.17*
7. Religion							-	.12*	.20**	.16**	.17**	.26**	.14*	.05	.08	-.01	.05	.06	.01
8. Behavioral Disengagement								-	-.23**	.38**	-.20**	.45**	.10	-.18**	-.30**	.09	-.45**	-.32**	-.34**
9. Active Coping									-	.01	.53**	.01	.23**	.45**	.35**	-.00	.46**	.50**	.23**
10. Self-Blame										-	-.12*	.23**	.22**	.02	-.36**	.15*	-.27**	-.16*	-.63**
11. Positive Reframing											-	.00	.09	.46**	.43**	-.02	.49**	.47**	.48**
12. Substance Use												-	.02	-.03	-.15*	.06	-.18*	-.07	-.09
13. Venting													-	.24**	.12	.00	.13	.04	-.01
14. Acceptance														-	.27**	-.00	.46**	.41**	.28**
15. Mental Well-Being (MHC-SF)															-	-.10	.55**	.34**	.64**
16. Psychopathology (BSI)																-	-.05	-.06	-.04
17. Hope Pathways (HTS)																	-	.73**	.41**
18. Hope Agency (HTS)																		-	.32**
19. Self-Compassion (SCS)																			-

Note. *$p < 0.05$; ** $p < 0.01$

The Portuguese version of Brief Cope is a valid and reliable measure to assess the use of coping as style or strategy in adolescence. This tool can be used with adolescents for prevention or intervention purpose, or for research. However, researchers should carefully examine the psychometric properties of the instrument when using it with not yet studied samples.

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AUTHOR'S CONTRIBUTION

Mariana Maia de Carvalho: Study conceptualization; Design; Material; Data collection; Data analysis; Writing of the original draft; Writing – review and editing.
Maria da Luz Vale-Dias: Study conceptualization; Design; Writing – review and editing.
Sérgio Carvalho: Study conceptualization; Design; Material; Data collection; Data analysis; Writing – review and editing.

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