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Psychometric properties of the Cognitive Emotion Regulation Questionnaire (CERQ) in Spanish older adults

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ABSTRACT

The Cognitive Emotion Regulation Questionnaire (CERQ) assesses nine cognitive strategies used to cope with negative events. The aim of this study was to generate validity evidences of this instrument in an older Spanish population. The Spanish version of the CERQ (CERQ-S) and self-report scales, measuring psychological well-being, depression and resilience, were administered to 305 older adults aged 65–90 (70.0 ± 4.7) residents in the Autonomous Community of Madrid, Spain. 150 participants completed the 6-month follow-up in April 2020 (during the COVID-19 pandemic). Confirmatory factor analyses supported 9-strategy structure, with an improved fit 27-item version (CERQ-S-27). Generally adequate composite reliability (CR between 0.63 and 0.84) and temporal stability (*ICC* between 0.38 and 0.71; $p < 0.001$) were found. Subscales correlated coherently with measures of depression, well-being and resilience, and *T*-tests indicated different use between older adults who did or did not have depressive symptoms. Multiple linear regression analysis indicated that subscales predicted depressive symptoms ($R^2 = 0.17$; $p < 0.001$) and psychological well-being after six months ($R^2 = 0.21$; $p < 0.001$). Results provided evidences of concurrent, predictive and criterion validity, suggesting that the CERQ-S-27 could be useful for studying use of cognitive emotion regulation strategies among older adults and understanding their influence in ageing and mental health.

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CERQ-S-27; psychometric properties; cognitive coping; emotion regulation; older adults

Introduction

Psychological factors related to resilience and well-being have a recognised importance in achieving positive trajectories in ageing (Faber, 2015; World Health Organization, 2015). One particularly relevant factor is the use of emotion regulation strategies to overcome chronic and acute adversity linked to the ageing process.

Coping refers to the cognitive and behavioural efforts one makes as a response to demands that surpass one's own strengths or resources, appraised as stressful (Lazarus & Folkman, 1984). Efforts to deal with difficult situations can be directed towards managing the situation itself, or the emotions it may elicit (Eisenberg, Fabes, & Guthrie, 1997), the latter being especially important when the demanding situation cannot be modified (e.g. severe illness, the death of a loved one, etc.). Specifically, coping with an emotional experience can be considered a part of the broader concept of emotion regulation, defined as 'the process by which individuals influence which emotions they have, when they have them, and how they experience these emotions' (Gross, 1998, p. 275). In this sense, coping strategies include conscious efforts to regulate one's emotions in the face of stressful situations (Compas et al., 2014).

Following the stress and coping model proposed by Lazarus and Folkman (1984), emotion regulation mediate the impact of adversity on mental health, and can lead to positive psychological states (Folkman, 2008; Folkman & Moskowitz, 2000). In older adults, emotion regulation strategies have been found to hold a strong negative relationship with psychopathology (Li, Theng, & Foo, 2015), and a mediating role on the relationship between life events and well-being (Fernández-Fernández et al., 2020), regardless of mental health decline (Sachs-Ericsson et al., 2019).

Research in older adult populations suggests that older adults have a different way of dealing with emotionally distressing events. Older adults seemingly possess more efficient coping strategies for emotional control (Birditt, 2014; Scheibe & Carstensen, 2010). They report more use of strategies related to accepting, to directing one's attention towards and selecting positive information, and modifying negative situations (Allen & Windsor, 2019). Studies also suggest that the strategies employed become less cognitively challenging and more passive as one ages (Allen & Windsor, 2019), possibly related to the reduction in capacity to integrate cognition and emotion (Heckman & Blanchard-Fields, 2008). However, despite growing research on emotion regulation in older adults, there has been little focus on the purely cognitive strategies. Moreover, although they experience cognitive difficulties linked to ageing (Verhaeghen & Salthouse, 1997) and they frequently have to deal with emotionally demanding life changes (McCarthy et al., 2016), older adults have on average high

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levels of well-being and positive emotional lives (Scheibe & Carstensen, 2010). For all the aforementioned, it is very relevant both to study and to properly evaluate the emotional cognitive strategies used by older adults.

Cognitive emotion regulation strategies are those that monitor, assess and modify emotional states through thought (Thompson, 1994). Gender differences in the use of these strategies have been found across many studies, such the higher tendencies to engage in regulation, and specially rumination, among women (Garnefski et al., 2002; Johnson & Whisman, 2013; Nolen-Hoeksema, 2012; Tamres, Janicki, & Helgeson, 2002). Age differences have also been found, such as a higher reported use of positive refocusing, putting into perspective and acceptance strategies among older adults, compared to younger adults and adolescents (Garnefski & Kraaij, 2006).

Studies indicate that the use of these strategies is related to psychopathology and well-being across cultures and age (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Garnefski & Kraaij, 2006; Megreya, Latzman, Al-Attiyah, & Alrashidi, 2016; Potthoff et al., 2016; Zhu et al., 2008). Psychological distress and emotional problems such as depression and anxiety are related to the use of those strategies defined as maladaptive such as catastrophizing or rumination, as well as by the lack of use of adaptive-defined strategies, especially positive reappraisal, in young, adult and clinical populations (Garnefski, Kraaij, & Spinhoven, 2001; Garnefski et al., 2002; Garnefski & Kraaij, 2006). A relationship between blaming others or oneself and depression was observed in children and adults but resulted insignificant in an older population. Instead, older adults who used more acceptance, strategy combining thoughts of passive resignation with thoughts of calm acceptance, reported higher levels of depression (Garnefski & Kraaij; 2006; Kraaij, Pruymboom, & Garnefski, 2002).

The Cognitive Emotion Regulation Questionnaire (CERQ) by Garnefski et al. (2001), is the first and currently only instrument that separates cognitive regulation strategies from behavioural ones. It evaluates the conscious use of nine different cognitive emotion regulation strategies: *self-blame*, attributing the responsibility of happened to one's self; *acceptance*, accepting and resigning oneself to what happened; *rumination*, thinking incessantly about everything related to the event; *positive refocusing*, thinking about happy experiences rather than what happened; *refocus on planning*, thinking about plans to handle the event; *positive reappraisal*, considering the positive aspects of the event in terms of personal growth; *putting into perspective*, downplaying the severity of the event by comparing it to previous situations; *catastrophizing*, overemphasising the unpleasantness of the event; and *blaming others*, putting the blame of what happened on others (Garnefski et al., 2001).

The instrument was translated to Spanish by Domínguez-Sánchez, Lasa-Aristu, Amor, and Holgado-Tello (2013), validated first in students, and later by Chamizo-Nieto, Rey, and Sánchez-Álvarez (2020) in adolescents. However, no empirical evidence of its validity in older adults has been provided.

Given the implications of cognitive emotion regulation on ageing, a solid and conceptually pure instrument to measure the use of these strategies would prove invaluable for research of the cognitive coping processes underlying emotion regulation and their adaptive qualities in older adults. For this reason, the aim of this study is to generate new empirical evidences on the validity and reliability of the CERQ in a Spanish older adult sample.

Materials and methods

Participants and procedure

The sample compromised 305 older adults from the Autonomic Community of Madrid, Spain, living in the community, aged between 65 and 90 years old ($M = 70.02$; $SD = 4.67$), of which 65.25% were men. The participants had different educational levels, ranging from no studies (1.6%) to having a doctor's degree (5.2%), and different marital statuses, though the majority of the participants were married (71.5%). Most participants (78.7%) reported sufficient economic resources to face each day adequately. Of these, 150 participants took part in the second wave of the study after a follow-up period of six months. All participants gave their written informed consent and completed the assessments through computer-assisted web interviews (C.A.W.I. system). The study was approved by the Ethics Committee of the Universidad Francisco de Vitoria (registration number: 34/2019) and the principles of the Helsinki Declaration (59th General Assembly of the World Medical Association, Seoul, October 2009) for research involving human beings were followed.

Instruments

Cognitive Emotion Regulation Questionnaire. The CERQ-S is the Spanish adaptation (Domínguez-Sánchez et al., 2013) of the Cognitive Emotion Regulation Questionnaire (CERQ; Garnefski et al., 2001). It measures the use of cognitive strategies to regulate emotions after a stressful or negative life event. It includes 36 items with a Likert-type response option (1 = *almost never*; 5 = *almost always*), grouped into nine subscales: self-blame, acceptance, rumination, positive refocusing, refocusing on planning, positive reappraisal, putting in perspective, catastrophizing and blaming others. High scores on each subscale suggest greater use of that particular strategy. The internal consistency of each subscale ranged between alphas of .68 and .81 in the original validation (Garnefski et al., 2001), similar to those later obtained in the Spanish translation, between 0.61 and 0.89 (Domínguez-Sánchez et al., 2013).

Psychological well-being

Psychological well-being was measured the Spanish adaption of the D. van Dierendonck version of Carol Ryff's Psychological Well-Being Scales (PWBS; Díaz et al., 2006; Van Dierendonck, 2004; Ryff, 1989). These scales measure well-being from a eudaemonic perspective, linked to human potential rather than hedonic happiness, across 29 Likert-type items (0 = *totally disagree*; 5 = *totally agree*) divided into six scales: purpose in life, mastery of the environment, positive relationships, self-acceptance, autonomy, and personal growth. High scores on the scales suggest high levels of psychological well-being. Reliability indices in the Spanish adaptation of this scale, range between

Cronbach's alpha values of 0.68 and 0.83. In this study, we used the global scale score, of which excellent reliability values were obtained (0.92 in both waves).

Depressive symptoms

Levels of depression were evaluated using the Centre for Epidemiologic Studies Depression Scale (CES-D) created by Radloff (1977) and adapted to Spanish by Soler et al. (1997). This self-report scale measures the frequency of depressive symptoms experienced in the last week, through 20 items with four Likert-type response options (0 = *rarely or never, less than 1 day*; 3 = *all the time, 5–7 days*). High scores on this scale indicate a higher level of depression. In this study, we used the total scale score, of which a high reliability index (alphas of 0.89 and 0.87 in the first and second waves, respectively) was obtained, similar to the Spanish adaptation (Soler et al., 1997).

Resilience

Resilience, understood as the disposition to cope with stress in a highly adaptive manner, was assessed with the Brief Resilient Coping Scale (BRCS; Sinclair & Wallston, 2004) validated with Spanish older adults (Tomás, Meléndez, Sancho, & Mayordomo, 2012). This 4-item scale has a 5-point Likert response format (1 = *it does not describe me at all*; 5 = *it describes me very well*). The internal consistency reported by the Spanish validation with older adults was high and almost identical to that found in the present study (0.85 and 0.83 in the first and second waves, respectively).

Data analysis

Preliminarily, it was verified that missing values appeared to be *completely missing at random* (MCAR). Of the 317 initial participants, 12 individuals presented missing data, so since 5% of missing values were not exceeded, the reliability of the results would not be compromised (Graham, 2009). Thus, following the recommendation of Garson (2012), it was decided to eliminate those cases with missing values (*listwise deletion*), with a final sample of 305 participants. Additionally, multivariate normality assumption was tested, obtaining a standardised Mardia's coefficient of 30.28 that showed non-normal data.

The factor structure (factorial validity) of the CERQ was explored by confirmatory factor analysis (CFA) via SEM methodology, testing both the 9-factor structure found by the authors of the original scale (model 1; Garnefski et al., 2001) and other structures proposed in several studies with Spanish samples (Domínguez-Sánchez et al., 2013; Holgado-Tello, Amor, Lasa-Aristu, Domínguez-Sánchez, & Delgado, 2018). Such alternative structures explored were: a second order structure with 36 items, in which 5 of the 9 factors were simultaneously included in a latent variable of adaptive strategies, whereas 4 factors were integrated in a latent variable of maladaptive strategies (model 2); a first order structure and 9 factors similar to the original but with 27 items in total (model 3); a second order structure similar to model 2 but with 27 items (model 4); and, finally, a 2-factor first-order structure (one representing adaptive strategies and the other less adaptive) and 18 items in total (model 5). Due to multivariate non-normality, the Satorra-Bentler χ^2 was used as a robust goodness-of-fit statistic (S-B χ^2; Satorra & Bentler, 1994), which corrects the value of the statistic when the data do not follow a normal distribution, also providing robust standard errors (Byrne, 2013). The robust maximum likelihood estimation method was used, because various studies have shown that it is an adequate method when there are variables with five or more categories, which can be treated as if they were continuous (DiStefano & Morgan, 2014; Rhemtulla, Brosseau-Liard, & Savalei, 2012). Thus, the goodness of fit of this five models was evaluated by: (i) the S-B χ^2, its degrees of freedom (df), and p values; (ii) the Comparative Fit Index (CFI) and the Tucker-Lewis Index (TLI), as incremental fit indices; and the (iii) the Root Mean Square Error of Approximation (RMSEA) with its 90% confidence interval (CI). An adequate model fit was defined as S-B χ^2 p value $\geq$ 0.05, CFI $\geq$ 0.92, TLI $\geq$ 0.92, and RMSEA $\leq$ 0.07 (Hair, Black, Babin, & Anderson, 2014). To evaluate whether a model significantly improves the fit of another competing (nested) model (i.e. 1st order versus 2nd order models), the chi-square scaled difference test was used (Satorra & Bentler, 2001), with p value $\leq$ 0.05 indicating significant improvements in the overall fit. Concurrently, the local adjustment of the model was assessed through the item's individual reliability (R^2) and the standardised factor loadings (λ), with R^2 values $\geq$0.50 and $\geq$0.25, as well as λ values $\geq$0.70 and $\geq$0.50, indicating good and acceptable local adjustment, respectively (Hair et al., 2014; Marôco, 2010).

Subsequently, the CFA-based reliability was tested using the composite reliability (CR), because in SEM Cronbach's alpha can overestimate or underestimate the true reliability (Garson, 2012). CR values $\geq$0.70 are considered adequate (Hair et al., 2014). In addition, the CERQ test-retest reliability was explored in those respondents who participate in the 6-month follow-up (n = 150), using the intraclass correlation coefficient (ICC). ICC values between 0.40 and 0.75 represent fair to good test-retest reliability, while values $\geq$0.75 indicate excellent test-retest reliability (Fleiss, 1999).

Later, in addition to reporting descriptive statistics, possible gender differences in the use of the different strategies evaluated by CERQ were explored using a t-test, following previous psychometric studies with the CERQ in several population groups (Garnefski, Teerds, Kraaij, Legerstee, & van den Kommer, 2004; Garnefski & Kraaij, 2006). These differences and descriptive statistics were also analysed for the rest of the study variables (age, depressive symptoms, psychological well-being and resilience). To quantify the magnitude of these differences Cohen's d was calculated, with values of 0.80, 0.50, and 0.20 indicating large, medium, and small effect sizes, respectively (Cohen, 1988).

Convergent and discriminant validity were assessed by bivariate Pearson correlations between the CERQ subscales and related variables (i.e. depressive symptoms, psychological well-being and resilience). Otherwise, to analyse predictive validity, multiple linear regression analyses were performed to test if depression and well-being (second wave) could be predicted from previous CERQ subscales scores (first wave). Null hypotheses were rejected at a 0.05 significance level.

Finally, criterion validity was tested by performing comparisons (*t*-tests) in the CERQ subscales between older adults with depressive symptomatology (CES-D scores $\geq$ 16) and those older adults with no depressive symptomatology (CES-D scores $<$ 11), according to cut-off points previously used in Spanish older populations (Latorre et al., 2013).

All analyses were carried out using IBM SPSS version 22.0 (Armonk, NY, USA), except SEM analyses, for which EQS version 6.2 (Encino, CA, USA) was employed.

Results

Confirmatory factor analysis

In line with the author's proposal (Garnefski et al., 2001), we grouped the 36 items into nine dimensions forming model 1: self-blame (items 1, 10, 19 and 28); acceptance (items 2, 11, 20 and 29), rumination (items 3, 12, 21 and 30); positive refocusing (items 4, 13, 22 and 31); refocus on planning (items 5, 14, 23 and 32), positive reappraisal (items 6, 15, 24 and 33); putting into perspective (items 7, 16, 25 and 34); catastrophizing (items 8, 17, 26 and 35); and blaming others (items 9, 18, 27 and 36). The results of the CFA showed a slightly unsatisfactory adjustment of model 1 (Table 1), with some items exhibiting inadequate R^2 and λ values. Following the second order factor model proposed in the Spanish adaption with adult population (Domínguez-Sánchez et al., 2013) we grouped strategies of the first model into two latent variables, forming model 2: more adaptive strategies (acceptance, positive refocusing, refocus on planning, positive reappraisal and putting into perspective) and less adaptive strategies (self-blame, rumination, catastrophizing and blaming others). The adjustment of model 2 was also unsatisfactory, failing to provide empirical support for a second order structure. Furthermore, when models 1 and 2 were compared, the overall fit of the second was significantly lower than the first (chi-square scaled difference = 130.25, df = 26, $p < 0.001$).

We then tested model 3, a reduced 27-item version (with three items per factor, removing items 5, 6, 7, 8, 19, 20, 21, 27 and 31 from the original scale) developed by Holgado-Tello et al. (2018) in Spanish adults. An excellent adjustment was found (Table 1), all items obtaining adequate R^2 and λ values (Figure 1). To explore the adequacy of classifying strategies into more or less adaptive, and considering the good fit of the previous model, we tested a 27-item model in which more adaptive and less adaptive strategies were each grouped into a higher order factor (model 4). Although the adjustment of the model 4 was satisfactory (Table 1), when it was compared with model 3 (which seems to be more parsimonious), it was verified that the overall fit of model 3 significantly improved the fit of the second (chi-square scaled difference = 134.03, df = 26, $p < 0.001$).

Finally, a shorter version of 18 items (grouped into two first-order factors, one more adaptive and the other less adaptive; model 5) that obtained acceptable properties in the Spanish population (Holgado-Tello et al., 2018) was tested, obtaining a very poor fit in this case (Table 1).

In sum, the 27-item structure (model 3; CERQ-S-27) showed the best adjustment, improving the overall fit of the original version (model 1; CERQ-S-36) (Table 1).

Reliability

The psychometric characteristics of Model 3 (CERQ-S-27) were studied (reliability indices are shown in Table 2). Adequate composite reliability scores for subscales were generally obtained; though slightly below adequate values for rumination and putting into perspective were obtained in the second wave. Interclass correlation coefficients were significant, and all subscale test-retest values, except self-blame which was slightly lower, ranged between fair and good.

Comparisons between men and women

Differences between men and women in CERQ-S-27 subscales were generally insignificant (Table 3), except for a higher use of self-blame and positive refocusing reported among men, with a small effect size. We also analysed our sample for gender differences in age, depression, psychological well-being and resilience: men were significantly older (small effect size) and had fewer depressive symptoms (medium-small effect size) than women, and no other significant differences were found.

Concurrent validity

For convergent and divergent validity, we calculated bivariate Pearson correlations between each CERQ-S-27 subscale and the scores on depressive symptoms, psychological well-being, and resilience instruments measured in the same period of time (Table 4). In the first wave, those who reported higher use of rumination, catastrophizing and blaming others, and low use of acceptance, positive refocusing, refocus on planning, positive reappraisal, and putting into perspective, reported significantly more depressive symptoms and significantly less psychological well-being. In the second wave, scores in positive reappraisal, catastrophizing and blaming others maintained their significant relationships with both depressive symptoms and psychological well-being; rumination only with depressive symptoms; and acceptance, positive refocusing and refocus on planning only with psychological well-being. In the second wave, self-blame became inversely correlated with psychological well-being. As for resilience, in both waves significant direct correlations were found between acceptance, positive refocusing, refocus on planning, positive reappraisal, and putting into perspective, and a significant inverse correlation with use of catastrophizing. Strongest correlations were found between positive reappraisal, on one hand, and depressive symptoms, psychological well-being and resilience; also, between refocus on planning and resilience; and catastrophizing and depressive symptoms.

Predictive validity

We performed a stepwise multiple linear regression analysis to weigh the potential unique contribution of each

Table 1. Goodness of fit indices for the models assessed.

Models assessed	*S-B* χ^2	*df*	*p*	*CFI*	*TLI*	*RMSEA*	*RMSEA 90% CI*
Model 1. 9-factor and 1st order 36-item	894.250	558	< 0.001	0.912	0.901	0.045	[0.039–0.050]
Model 2. 9-factor and 2nd order 36-item	1046.649	584	< 0.001	0.879	0.870	0.051	[0.046–0.056]
Model 3. 9-factor and 1st order 27-item	376.457	288	< 0.001	0.967	0.960	0.032	[0.022–0.040]
Model 4. 9-factor and 2nd order 27-item	525.218	314	< 0.001	0.922	0.912	0.047	[0.040–0.054]
Model 5. 2-factor and 1st order 18-item	612.081	134	< 0.001	0.686	0.641	0.108	[0.100–0.117]

Note. S-B χ^2 = Satorra-Bentler robust chi-square statistic; df = degrees of freedom; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; RMSEA = Root Mean Square Error of Approximation; RMSEA 90% CI = 90% confidence interval of the Root Mean Square Error of Approximation.

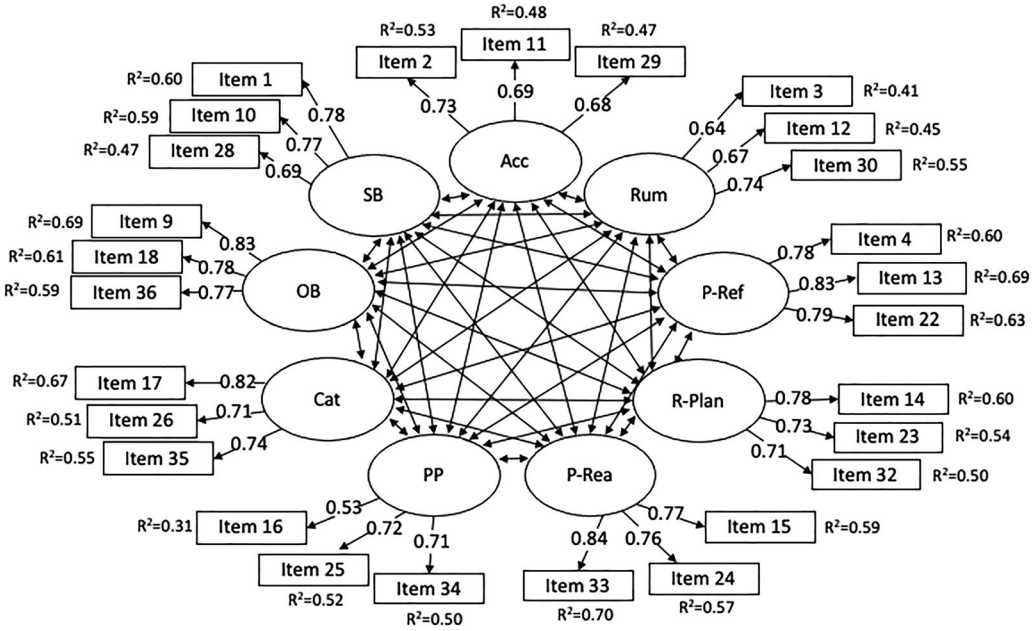

Figure 1. Complete standardised model for the 27-item Spanish version of the Cognitive Emotion Regulation Questionnaire (CERQ-S-27; Model 3) in older adults. SB = Self-blame; Acc = Acceptance; Rum = Rumination; P-Ref = Positive Refocusing; R-Plan = Refocus on planning; P-Rea = Positive Reappraisal; PP = Putting into perspective; Cat = Catastrophizing; OB = Other blame. For readability purposes, covariance values between subscale latent factors were included in Table 2.

Table 2. Internal consistency, test-retest reliability and latent correlations among subscales for CERQ-S-27 (Model 3).

	First wave		Second wave									
CERQ-S-27 subscales	*M (SD)* n = 305	*CR*	*M (SD)* n = 150	CR	ICC	Latent correlations 2	3	4	5	6	7	8	9
1. Self-blame	6.93 (2.85)	0.79	6.14 (2.61)	0.74	0.38**	0.29	0.49	0.39	0.29	0.29	0.32	0.20	−0.03
2. Acceptance	11.02 (2.86)	0.74	10.81 (3.04)	0.84	0.60**		0.29	0.50	0.63	0.72	0.70	0.01	−0.00
3. Rumination	7.43 (2.67)	0.73	7.38 (2.31)	0.64	0.60**			0.24	0.42	0.13	0.18	0.75	0.49
4. Positive refocusing	9.02 (3.21)	0.84	9.03 (2.93)	0.84	0.58**				0.49	0.74	0.49	−0.05	0.10
5. Refocus on planning	9.98 (3.09)	0.78	9.91 (2.95)	0.80	0.59**					0.67	0.52	0.04	0.13
6. Positive reappraisal	9.74 (3.32)	0.83	9.31 (3.12)	0.81	0.71**						0.61	−0.19	0.01
7. Putting into perspective	10.11 (2.91)	0.70	10.07 (2.76)	0.63	0.55**							−0.22	0.07
8. Catastrophizing	5.69 (2.57)	0.80	6.11 (2.70)	0.80	0.58**								0.59
9. Blaming others	5.54 (2.53)	0.84	6.23 (3.29)	0.93	0.52**								

Note. *M* = Mean average; *SD* = Standard Deviation; *CR* = Composite Reliability score; *ICC* = Intraclass Correlation Coefficient; $^{**}p < 0.01$.

Table 3. CERQ-S-27 scores: *T*-test results for men-women comparison.

	Men $n = 199$		Women $n = 106$				
CERQ-S-27 subscales, age, depressive symptoms and psychological well-being at first wave	M_{men}	SD_{men}	M_{women}	SD_{women}	*t*	*p*	Cohen's d
Self-blame[a]	7.15	3.09	6.53	2.29	1.99	0.05	0.22
Acceptance	11.07	2.87	10.92	2.84	4.52	0.65	0.05
Rumination	7.33	2.74	7.63	2.52	−0.95	0.34	−0.11
Positive refocusing[a]	9.29	3.35	8.52	2.89	2.10	0.04	0.24
Refocus on planning	10.09	3.17	9.79	2.95	0.79	0.43	0.10
Positive reappraisal	9.92	3.26	9.40	3.41	1.33	0.19	0.16
Putting into perspective	10.22	2.92	9.92	2.89	0.83	0.41	0.10
Catastrophizing	5.58	2.62	5.90	2.49	−1.01	0.31	−0.12
Blaming others	5.57	2.66	5.47	2.29	.33	0.74	0.04
Age[a]	70.47	4.91	69.16	4.07	−2.49	0.01	0.28
Depressive symptoms[a]	9.82	7.72	13.02	10.99	−2.66	0.01	−0.36
Psychological well-being[a]	100.98	17.24	98.70	22.21	0.92	0.36	0.12
Resilience[a]	15.07	3.03	14.79	3.63	−0.66	0.59	0.09

Note. M = mean average; SD = standard deviation; *t* = Student's *t* statistic.
aEqual variances not assumed.

Table 4. Pearson correlations (r) between CERQ-S-27 and measures of depression, well-being and resilience in older adults.

CERQ-S-27 subscales	Depressive symptoms		Psychological well-being		Resilience	
	1st wave $n = 305$	2nd wave $n = 150$	1st wave $n = 305$	2nd wave $n = 150$	1st wave $n = 305$	2nd wave $n = 150$
Self-blame	0.11	0.05	−0.05	−0.20*	0.09	0.02
Acceptance	−0.28**	−0.14	0.34**	0.21**	0.38**	0.33**
Rumination	0.32**	0.32**	−0.20**	−0.10	−0.02	0.09
Positive refocusing	−0.27**	−0.12	0.29**	0.16*	0.36**	0.31**
Refocus on planning	−0.17**	0.06	0.28**	0.23**	0.38**	0.43**
Positive reappraisal	−0.37**	−0.21*	0.43**	0.23**	0.54**	0.41**
Putting into perspective	−0.15**	0.00	0.17**	0.11	0.19**	0.29**
Catastrophizing	0.42**	0.42**	−0.31**	−0.29**	−0.16**	−0.18*
Blaming others	0.26**	0.25**	−0.22**	−0.17*	−0.02	−0.11

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

Table 5. Multiple linear regression of the independent associations of the CERQ-S-27 subscales at first wave with depressive symptoms and psychological well-being at first wave ($n = 305$) and second wave ($n = 150$).

	Depressive symptoms				Psychological well-being			
	1st wave		2nd wave		1st wave		2nd wave	
	β	Δ Adj. R^2	β	Δ Adj. R^2	β	Δ Adj. R^2	β	Δ Adj. R^2
Step 1		0.03*		<0.01		<0.01		<0.01
Gender	0.21*		0.12		−0.12		−0.06	
Age	0.10		0.10		−0.08		−0.07	
Step 2		0.31**		0.17**		0.26**		0.21**
Self-blame	0.16*		0.05		−0.16*		−0.16	
Acceptance	−0.27**		−0.10		0.15		0.15	
Rumination	0.21*		0.22*		−0.11		−0.11	
Positive refocusing	−0.11		−0.17		0.04		0.11	
Refocus on planning	0.05		0.07		0.19*		0.27**	
Positive reappraisal	−0.18		−0.19		0.27**		0.13	
Putting into perspective	0.04		−0.01		−0.05		−0.04	
Catastrophizing	0.21*		0.16		−0.13		−0.11	
Blaming others	0.02		−0.04		−0.07		−0.02	

Note. β = standardised Beta coefficient; Δ Adj. R^2, change in adjusted R^2 with significance levels on F-change.
*$p < 0.05$.
**$p < 0.01$.

subscale, measured in the first wave, in the prediction of depressive symptoms and psychological well-being, measured after six months (second wave). Gender and age were included as control variables (results shown in Table 5), but no significant influence was found. For both depressive symptoms and psychological well-being, a considerable amount of variance was explained by the use the different strategies. The only significant predictor of more depressive symptomatology after six months was the higher use of rumination, while the only significant predictor of higher levels of well-being was the higher use of refocus on planning.

Criterion validity

Comparing older adults with depressive symptomatology to those without depressive symptomatology, the use of acceptance, positive refocusing, and positive reappraisal was significantly higher among those with no symptomatology, with a medium effect size; while catastrophizing, rumination and blaming others was significantly higher among those with depressive symptomatology, the first with a large effect size and the other two with a medium one (Table 6).

Discussion

In earlier studies, strong empirical evidence has been found for the psychometric properties of the CERQ-S in Spanish students and adolescents (Chamizo-Nieto et al., 2020; Domínguez-Sánchez et al., 2013) and the briefer 27-item and 18-item versions (Holgado-Tello et al., 2018). In the present study, psychometric properties were tested in a general Spanish older adult population sample. Our results showed generally similar psychometric properties to the original Spanish versions and supported the adoption of the shorter CERQ-S-27 version.

The results of the CFA shows that when those models that group some strategies as adaptive and others as non-adaptive (models 2 and 4) are compared with similar models in which no such grouping is made (models 1 and 3), the results show a significantly better fit of this second type of models. In this vein, model 5 is the one that makes a more marked division between adaptive and non-adaptive strategies and, consequently, is the one that gets the poorest fit. Thus, in line with the theoretical proposal (Garnefski et al., 2001), the CFA provided evidence that the CERQ-S measured 9 different strategies, structure that obtained an excellent model fit for the briefer 27-item version (model 3) proposed by Holgado-Tello et al., 2018, improving the original 36-item version. This shorter version implied the removal of nine items, including some poorly fitting items which had also proved problematic in previous studies with other populations: item 20, 'I think that I cannot change anything about it', focuses more on passive resignation than the other more active acceptance items (Chamizo-Nieto et al., 2020; Ireland, Clough, & Day, 2017; Jermann, Van der Linden, d'Acremont, & Zermatten, 2006;

Table 6. Mean differences in cognitive emotion regulation strategies depending on participants' depressive status at first wave ($n = 305$).

	Non-depressive symptoms group ($n = 229$)		Depressive symptoms group ($n = 79$)				
CERQ-S-27 subscales	M	SD	M	SD	*t*	*p*	Cohen's d
Self-blame	6.76	2.79	7.48	2.98	−7.91	0.057	−0.25
Acceptance	11.32	2.84	10.11	2.72	3.26	0.001	0.43
Rumination	7.02	2.49	8.68	2.82	−4.90	<0.001	−0.64
Positive refocusing	9.41	3.24	7.86	2.86	3.97	<0.001	0.49
Refocus on planning	10.13	3.16	9.54	2.85	1.45	0.149	0.19
Positive reappraisal	10.21	3.20	8.32	3.26	4.46	<0.001	0.59
Putting into perspective	10.21	3.01	9.82	2.58	1.04	0.302	0.13
Catastrophizing	5.17	2.20	7.26	2.96	−5.67	<0.001	−0.87
Blaming others	5,19	2,23	6,60	3,07	−3.68	<0.001	−0.57

Note. M = mean average; SD = standard deviation; *t* = Student's *t*.

Medrano, Moretti, Ortiz, & Pereno, 2013); item 8, 'I often think that what I have experienced is much worse than what others have gone through', has a connotation of social comparison, which may be interfering with its fit in the catastrophizing scale (Chamizo-Nieto et al., 2020; Garnefski & Kraaij, 2007; Jermann et al., 2006; Medrano et al., 2013); and items 19, 'I think about the mistakes I have made in this matter', and 21, 'I want to understand why I feel the way I do about what I have experienced' had been pointed out in the original Spanish adaption (Domínguez-Sánchez et al., 2013), possibly because a cultural bias may have influenced the meaning, tapping into constructive reflection rather than blame attribution (self-blame) or a reiterative thought (rumination). Evidence supporting the use of a briefer 27-item version has also been found in the Italian adaption (Balzarotti, Biassoni, Villani, Prunas, & Velotti, 2016), since it optimises the instruments psychometric properties and administration through the assessment of each cognitive strategy with three strong items (Holgado-Tello et al., 2018).

The CERQ-S-27 proved generally reliable in the older Spanish adult population. The subscales had an adequate internal consistency, though rumination and putting into perspective subscales obtained slightly lower than adequate reliability in the second wave. These results may be related to the time period in which the second measurement was taken, April 2020, in the middle of an increasing spread of the COVID-19 global pandemic. This context specially affected the older adult population, on one hand, because of the suppression of social interaction, isolation of homes and other actions taken; on the other hand, because they were a high-risk age group, and death rates were highest amongst this population (Chen, 2020; Plagg, Engl, Piccoliori, & Eisendle, 2020). A study on the impact of the early stages of the pandemic on Spaniards found that over a third of the population had moderate or severe psychological symptoms (Rodríguez-Rey, Garrido-Hernansaiz, & Collado, 2020). Participants may have answered the questionnaire under higher levels of emotional distress, slightly compromising the internal consistency of some subscales that had been answered consistently in the first wave. Results also reflected adequate temporal stability after six months, as found in previous studies after two months (Domínguez-Sánchez et al., 2013) and after a year (Garnefski & Kraaij, 2007), in all strategies except self-blame. Even though the second measurement did not specify on the coping of the COVID-19 situation, it is possible that participants answered with this situation in mind rather than other negative life events which may have been considered when the first measurement had been taken. Seeing as the selection of coping strategies depend on the stressful stimuli (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986), it would be logical to assume that older persons would make different use of self-blame in a situation such as a global pandemic.

Gender differences were generally insignificant, though men reported slightly more use of self-blame and positive refocusing, contrasting with findings from other studies, where women consistently reported significantly higher use rumination (Nolen-Hoeksema, 2012), catastrophizing and positive refocusing (Garnefski et al., 2004; Garnefski & Kraaij, 2006). These results may be related to the sample used since we have a high male representativity (65.2%). Further research should be undertaken with a larger and more representative sample.

Evidence of concurrent validity was obtained by correlating subscales with resilience, depressive symptomatology and psychological well-being. As found in previous studies, responding to stressful situations with emotional regulation strategies such as positive refocusing and positive reappraisal is linked to having more resilience (Kay, 2016; Troy & Mauss, 2011). Likewise, subscale scores correlated with measures of depressive symptomatology and psychological well-being in the same direction as found in previous studies: more use of positive refocusing, refocus on planning, positive reappraisal and putting into perspective was correlated with lower levels of depression and higher levels of psychological well-being, while more use of rumination, catastrophizing and blaming others was linked to higher levels of depression and lower levels of psychological well-being, as found in the general Spanish and Italian population (Balzarotti et al., 2016; Domínguez-Sánchez et al., 2013). Moreover, the use of theoretically negative-focused strategies (i.e. catastrophizing, blaming others and ruminating) was higher among the older adults that presented depressive symptomatology, while the use of positive-focused strategies (i.e. acceptance, positive refocusing and positive reappraisal) was higher among those that did not; and the frequency of rumination and refocus on planning use predicted depressive symptoms and psychological well-being after six months respectively, providing evidence of the predictive and criterion validity of the CERQ-S-27 scale among older adults. Although conclusions on causal direction cannot be drawn, it is clear that the reported use of cognitive emotion regulation strategies through this questionnaire is related to depression and well-being.

On the other hand, the acceptance subscale did not positively correlate with depression as previously found among older adults (Kraaij et al., 2002) and general Spanish population (Domínguez-Sánchez et al., 2013). Instead, this strategy correlated negatively with depressive symptoms, possibly due to the elimination of the item 20, 'I think that I cannot change anything about it', leaving the acceptance and resignation scale tilted towards calm acceptance, a strategy found to play a more adaptive role in dealing with stressful events (Garnefski et al., 2001).

As for correlations between subscales and depressive symptoms or well-being during the COVID-19 pandemic, some strategies became insignificant while the self-blame subscale became negatively correlated to well-being. As previous studies have pointed out, a strategy that is appropriate to cope with one type of life event experienced may be ineffective for dealing with another (Garnefski, Baan, & Kraaij, 2005). These results are in line with what was found in the CFA, suggesting that cognitive emotion regulation strategies, although related, are independent of each other and that classifying them as more or less adaptive can be problematic (Domínguez-Sánchez et al., 2013; Medrano et al., 2013; Schäfer et al., 2018).

Analysing the results globally, it is observed that the strategy that is most closely related to higher levels of well-being and psychological adjustment is cognitive reappraisal, which is precisely the one with the greatest temporal stability in the older adult population. This could suggest that, depending on how useful they prove to be throughout the life experience, there are certain strategies that are more strongly established in the emotional patterns of the older adults. In contrast, other strategies (such as self-blame, which is negatively associated with well-being, though less strongly) show less temporal stability and their use could depend more on how the situation itself is momentarily evaluated by the older adult. However, this hypothesis should be tested in future studies.

The sample of this study is limited to non-institutionalised older adults of the Community of Madrid, and it would be interesting to further investigate psychometric properties of the CERQ-S-27 among other Spanish older adult populations. Another limitation of this study is the use of self-reported evaluations for all measures, which may have caused some bias. Other measures evaluating similar constructs, such as structured interviews, may help to obtain a more realistic estimation of the extent to which cognitive emotion regulation strategies are applied in reality. Not controlling the reason for dropout was also a study limitation, as was the occurrence of the COVID-19 pandemic which may have presented confounding factors intervening in the validation process.

In conclusion, the process of obtaining validity evidences of a cognitive emotion regulation scale in Spanish older adult populations was deemed of particular importance because of the implications of these processes in ageing and older adult's well-being. The present study provided evidence of the construct validity and internal consistency of the CERQ-S-27 in Spanish older adults. The relationship between the strategies measured and depression and well-being, and the predictive strength of rumination and refocus on planning provide evidence of this instrument's solid criterion validity.

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The authors report no conflict of interests.

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