Evidence of validity, reliability and psychometric parameters of the items of the Cognitive Emotion Regulation Questionnaire-Short (CERQ-Short)

Ana Paula de Castro Araujo[1]
Maria José Nunes Gadelha[2]
Rômulo Lustosa Pimenteira de Melo[3]

[1]Federal University of Paraíba (UFPB), João Pessoa, Paraíba, Brasil
[2]Universidade Federal do Rio Grande do Norte
[3]Santa Maria Faculty, Cajazeiras, Paraíba, Brasil

Abstract

The aim of the present study was to evaluate the construct validity, internal consistency and psychometric indicators of the reduced version of the Cognitive Emotion Regulation Questionnaire (CERQ-short). The CERQ-short was adapted and translated to Portuguese prior to its administration to 254 adults, mainly from the state of Paraíba, Brazil. The Difficulties in Emotion Regulation Scale (DERS), the Compulsive Buying Scale (CBS) and a sociodemographic questionnaire were also applied. The original CERQ-short nine-factor structure was preserved. The convergent and discriminant validity, the reliability and the psychometric adequacy concerning item difficulty and item discrimination were also confirmed. The results support the use of this scale for rapid screening and research.

Keywords: Coping Strategies; Stressful events; Factor analysis; Item Response Theory

Evidência de validade, fidedignidade e parâmetros psicométricos dos itens do Questionário Cognitivo de Regulação Emocional-Short (CERQ-Short)

Resumo

O presente estudo teve como objetivo buscar evidências de validade de construto, de consistência interna e indicadores psicométricos dos itens da versão adaptada para o português do Questionário Cognitivo de Regulação Emocional versão reduzida (CERQ-short). Após tradução e adaptação, foi aplicado o CERQ-Short, as escalas de dificuldade em regulação emocional (DERS) e de Compras Compulsivas (CBS), além de um questionário demográfico em uma amostra de 254 adultos, maioria de paraibanos. Verificou-se que a estrutura original de nove fatores do CERQ-Short foi mantida, também foram confirmadas as validades convergente e discriminante, a fidedignidade e a adequação psicométrica dos itens no que se refere à dificuldade e à discriminação dos itens. A escala apresentou evidência para a utilização em rastreio rápido e pesquisas.

Palavras-chave: estratégias de enfrentamento, eventos estressantes, análise fatorial, teoria de resposta ao item

Evidencia de validez, fidedignidad y parámetros psicométricos de los ítems del Cuestionario Cognitivo de Regulación Emocional-Short (CERQ-Short)

Resumen

El presente artículo tuvo como objetivo la búsqueda de evidencias de la validez del construto e indicadores psicométricos de los ítems, de una versión adaptada para el portugués, del Cuestionario Cognitivo de Regulación Emocional, versión reducida (CERQ-short). Inicialmente, fue realizada la traducción y adaptación semántica; posteriormente, fue aplicado el cuestionario CERQ-Short a las escalas de dificultad en regulación emocional (DERS) y de las Compras Compulsivas (CBS), además de un cuestionario demográfico en una muestra de 254 adultos, la mayoría de los paraibanos. Se verificó que la estructura original de nueve factores del CERQ-Short fue mantenida, así como las evidencias de validez del construto, fiabilidad y adecuación psicométrica de los ítems. La escala presentó evidencias para la utilización en rastreo rápido y pesquisas.

Palabras clave: estrategias de enfrentamiento; eventos estresantes; Análisis factorial; teoría de la respuesta al ítem

Introduction

Emotion regulation and cognition

Cognitive regulation of emotions refers to the conscious and cognitive way of dealing with information management that stimulates emotion (Garnefski, Kraaij, & Spinhoven, 2001; Thompson, 2008). In the model elaborated by Gross (1998), modulation of emotions would occur in two configurations: antecedent to the response or focused on it. The "antecedent regulation" would consist in altering how the cognitive

interpretation is designed in order to lessen the emotional impact of a situation before tendencies to emotional responses become active. Based on this idea, Gross (2014) elaborated the modal model in which the cognitive components of the Cognitive Emotion Regulation Questionnaire-Short (CERQ-Short) are aligned (Gross, 2014; Martins, Freire & Ferreira-Santos, 2016).

The complexity of emotion regulation has motivated studies seeking to understand the modulation diversity of this process. A basis for this evaluation is the cognitive function. Gross (2014) considers that it

acts in the whole process; before and after the attribution of meanings, leading the individuals to evaluate their ability to manage the situation. Hence, the cognitive function is understood as essential in maintaining people's emotional and psychological balance (Gross, 2014). Under this perspective, cognitions help the individual to manage and/or regulate emotions during and/or after experiencing threatening or stressful events (Garnefski et al., 2001). For these reasons, emotion regulation has a positive effect on the conservation or promotion of mental health and psychological well-being, whereas the deficit in emotion regulation is a predictor for the presence of psychopathological symptoms (Vargas Gutiérrez, & Muñoz-Martínez, 2013; Garnefski & Kraaij, 2016; Garnefski, Rood, Roos, & Kraaij, 2017specific cog- nitive emotion regulation strategies, and present somatic complaints. The sample consisted of 465 adults from the general population. The participants filled in online self- report questionnaires with regard to somatic complaints (SCL-90; Gouveia, Canavarro, & Moreira, 2017; Rocha, 2015; Santana & Gondim, 2016; Castro, Bueno, Ricarte, & Albuquerque, 2017; Coutinho, 2015).

Emotion regulation and assessment tools in Brazil

Various types of instruments can be considered to assess emotion regulation. These instruments are substantiated in theoretical perspectives that depart from different views on emotion control, behavior, and cognition (Zeman & Garber, 1996; Cole, Michel, & Teti, 1994; Thompson, 2008).

In the international context, researches using instruments to measure emotional regulation processes have advanced in recent decades (Sloan & Kring, 2007), whereas in Brazil few available instruments are capable of evaluating it (Miguel, Giromini, Colombarolli, Zuanazzi, & Zennaro, 2016). Several studies conducted in Brazil aimed to evaluate regulation without focusing specifically on cognitive strategies as a means to assess emotion regulation (Batistoni, Ordonez, Silva, Nascimento, & Cachioni, 2013; Bueno, 2013; Cruvinel & Boruchovitch, 2010; Miguel et al., 2016; Reis et al., 2016; Jesus Junior & Noronha, 2008). The concept of conscious, cognitive and emotion regulation is closely related to the concept of cognitive coping. Nonetheless, it includes a mix of cognitive and behavioral strategies. In this sense, a differential in the theoretical perspective of CERQ-Short construction is the assumption that thinking and acting refer to different processes, thus separating nine cognitive strategies from behavioral

strategies (Garnefski et al., 2001; Garnefski, Legerstee, Kraaij, van den Kommer, & Teerds, 2002).

In the Brazilian context, Bueno et al., (2013) verified emotion regulation using a cognitive task, but the authors do not indicate the different types of cognitive strategies (behavioral precedents) employed in the emotion regulation process. In addition, some of the validated instruments in Brazil aim specifically at children or the elderly, such as the studies conducted by Reis et al., (2016) and Batistone (2013), respectively. Regarding the instruments suitable for adults, the Brazilian version of the DERS-36 and DERS-16 scales is the closest to the use of cognitive strategies, but still linked to behavior. In these scales, factors associated with behavior are still used, such as the ability to control impulsive behaviors (impulse) in moments of negative emotion and act according to the desired goals (Coutinho, Ribeiro, Ferreirinha, & Dias, 2009).

In the international scenario, the Cognitive Emotion Regulation Questionnaire (CERQ) has been one of the most used instruments (Jermann et al., 2006; Martin & Dahlen, 2005; Zhu et al., 2008; Medrado, Moretti, Ortiz, & Pereno, 2013). CERQ full version is designed for people aged 12 and older and consists of 36 items subdivided into nine factors, each consisting of four items. CERQ-Short is a shortened version of CERQ and consists of 18 items divided into nine subscales composed of two items (the two best items of each CERQ factor), as described by (Garnefski & Kraaij 2006). According to the authors, development of a short version is important due to its presumed usefulness as a rapid screening tool in psychiatric patients. Besides, CERQ is easily included in large self-report assessments in which time is short.

Items are measured on a Likert scale ranging from 1 (almost never) to 5 (almost always). CERQ-Short scores are obtained by summing the score of the items that compose each factor (ranging from 2 to 10). The higher the subscale score, the more a specific cognitive strategy is used. The psychometric properties of CERQ in its original version were proven effective (Garnefski, Baan, & Kraaij, 2005; Garnefski, Kraaij, & Spinhoven, 2002), reaching Cronbach alpha coefficients above 0.80, in most cases. Moreover, CERQ has shown good factor validity, good discriminative properties, and good construct validity (Garnefski et al., 2002).

The nine CERQ-short subscales can be classified as adaptive or less adaptive (Garnefski et al., 2001; Garnefski & Kraaij, 2007). There are four less adaptive strategies: 1st) *Self-blame* - refers to thoughts of blaming

oneself for what one has experienced; 2nd) *Blaming others* - related to thoughts that blame others for what one has experienced; 3rd) *Rumination or focus on thought* - referring to the recurrent reconsideration of thoughts associated with negative events, and 4th) *Catastrophizing* - which refers to thoughts of explicitly emphasizing the terror of an experience. The other five strategies are adaptive: 5) *Acceptance* - refers to thoughts of acceptance and resignation in regard to what has been experienced; 6th) *Refocus on planning* - refers to thinking about the steps on how to handle the negative event; 7) *Positive refocusing* - refers to thinking of happy and pleasant thoughts rather than thinking about the actual event; 8) *Positive reappraisal* - refers to thoughts of giving a positive meaning to the event in terms of personal growth, and 9) *Putting into perspective* - refers to thoughts of minimizing the severity of the event or emphasizing its relativity when compared to others events (Garnefski *et al.*, 2001).

CERQ-Short validation studies for English (Garnefski & Kraaij, 2006) and Turkish (Cakmak & Cevik, 2010) versions were performed by gradually reducing items that had the worst effect on the internal consistency of the factors. Both countries arrived at the same items. The English version alphas ranged from 0.68 (self-blame) to 0.81 (positive reappraisal) and all factor loadings exceeded the value of 0.78 (Garnefski & Kraaij, 2006). The Turkish version presented Cronbach alphas ranging from 0.63 (self-blame) to 0.74 (positive reappraisal) and the fit indices for the nine factors were considered acceptable (Cakmak & Cevik, 2010).

Considering the foregoing, at least four reasons justify the validation in Brazil of a new reduced instrument of rapid applicability in assessing emotion regulation from a strictly cognitive perspective, they are: I – the small number of validated instruments in Brazil; II - non-distinction of scales between the use of cognitive and behavioral strategies for emotion regulation (Garnefski *et al.*, 2001; Garnefski, *et al.*, 2002); III - and among the different types of cognitive emotion regulation (Garnefski, *et al.*, 2002); IV - as well as the lack of instruments that can be used in a larger stratum of the population (people over 12 years old) (see Reis *et al.*, 2016; Batistone, 2013). Therefore, the present study aims to search for evidence of construct validity, internal consistency and psychometric indicators of the Portuguese adapted version of the Cognitive Emotion Regulation Questionnaire (CERQ-short).

Therefore, this study expects that: (a) CERQ-short presents adjustment, through Confirmatory Factor Analysis, to the nine factors of its factor structure (Garnefski & Kraaij, 2006); (b) there be found significant correlation between CERQ-Short and the Difficulties in Emotion Regulation Scale (DERS-36) similarly to the comparisons of a previous validation study using the same instrument for convergent validity (Garnefski & Kraaij, 2006). The measurement that assesses difficulties in emotion regulation should be positively associated with less adaptive cognitive emotion regulation strategies and negatively associated with adaptive strategies; (c) there is no correlation or weak correlation between CERQ-Short and Compulsive Buying Scale (CBS). CERQ-Short focus on pre-behavioral factors, whereas CBS is much more restricted to compulsive buying behaviors; (d) the presence of only two items per factor in the CERQ-Short increases its need for good psychometric properties. Thus, the Item Response Theory was used with the Samejima (1968) Graded Response Model. Items are expected to have response thresholds (*j*) that can provide information for the majority of the population, specifically between -2 and +2 thetas – that is to say, for more than 95% of the population since theta scores are standardized in standard deviations. Still due to the few items per factor, high discriminations are desired, particularly higher than 1.70 [Very high (Baker & Kim, 2017)].

Method

Participants

The sample number was established using the minimum criterion of 10 subjects for each item of the instrument, following criteria of Pasquali *et al.*, (2010). The non-probabilistic convenience sampling was chosen as sampling technique. Samples comprised 254 adults, being 76% female, and 67.7% single, ranging from 18 to 59 years of age ($M = 26,51$; $SD = 8,14$), native Brazilians and most of them from the State of Paraíba (78,4%). The educational level averaged 12.71 years ($SD = 2.43$; Minimum of 8 years and Maximum of 22 years).

Instruments

Data for this research were collected through the instrument proposed for the CERQ-short validation process. DERS (Difficulties in Emotion Regulation Scale) was used for convergent validity analysis. Compulsive Buying Scale (CBS) was the instrument used to verify discriminant validity. Finally, a sociodemographic questionnaire was applied.

Cognitive Emotion Regulation Questionnaire (CERQ-short). This instrument consists of 18 items, divided into nine subscales (self-blame; blaming others; acceptance; refocus on planning; positive refocusing; rumination; positive reappraisal; catastrophizing; putting into perspective), each factor consisting of two items answered on Likert scale of 5 points. The higher the score, the greater the use of the factor strategy. The score of each factor is obtained by the sum of the two items belonging to each subscale (Garnefski & Kraaij, 2006).

Initially, translation and back translation of the scale were performed. Firstly, a bilingual Portuguese native speaker translated from English to Portuguese. Then, a bilingual native English speaker retro-translated to the original language, from Portuguese to English. Finally, the two English versions - the first before and the second after the Portuguese translation - were compared by two bilingual native Portuguese speakers to verify possible discrepancies. No differences were found between the terms that could bring bias to the data, since the translations pointed to the same meaning.

For semantic validation, the method indicated by Pasquali *et al.*, (2010) was used, which consists in verifying, a priori, if a small group understands the instrument items. In the present study, this group was formed by four people with complete elementary school educational level, ranging from 29 to 47 years of age, one man and three women. The four participants, isolated from each other, correctly read and explained the items to the researchers (two with doctor degree in psychology, one expert on psychological assessment and the other on Cognitive Behavioral Analysis). Table 1 shows the 18 items in the Brazilian Portuguese version.

Difficulties in Emotion Regulation Scale (DERS). The DERS verifies common levels of emotional deregulation in six domains: non-acceptance of negative emotions, inability to engage in goal-driven behaviors, difficulties in controlling impulsive behavior, limited access to emotion regulation strategies, lack of emotional awareness, and lack of emotional clarity. This instrument consists of 36 items on a 5-point Likert scale, ranging from 1 (almost never applies to me) to 5

Table 1.

Item description of the adapted version of the Cognitive Emotion Regulation Questionnaire-Short (CERQ-Short)

FACTORS	Number	Context
Acceptance	CERQ-S1	I think that I have to accept that this has happened
	CERQ-S5	I think that I have to accept the situation
Positive Reappraisal	CERQ-S3	I think I can learn something from the situation
	CERQ-S8	I think that I can become a stronger person as a result of what has happened
Rumination	CERQ-S2	I often think about how I feel about what I have experienced
	CERQ-S6	I am preoccupied with what I think and feel about what I have experienced
Positive Refocusing	CERQ-S7	I think of pleasant things that have nothing to do with it
	CERQ-S11	I think of something nice instead of what has happened
Catastrophizing	CERQ-S9	I keep thinking about how terrible it is what I have experienced
	CERQ-S17	I continually think how horrible the situation has been
Refocus on Planning	CERQ-S12	I think about how to change the situation
	CERQ-S15	I think about a plan of what I can do best
Putting into Perspective	CERQ-S13	I think it has been too bad compared to other things
	CERQ-S16	I tell myself that there are worse things in life
Self-Blame	CERQ-S4	I feel that I am the one who is responsible for what has happened
	CERQ-S14	I think that basically the cause must lie within myself
Blaming Others	CERQ-S10	I feel that others are responsible for what has happened
	CERQ-S18	I feel that basically the cause lies with others

Source: Research Data (n=254).

(almost always applies to me). For the Brazilian version, internal consistency analyses revealed that the subscales had *Cronbach's alpha* ≥ 0.80 and high factor loadings (≥ 0.54), with good fit of the six factors. However, the Awareness factor, specific to the DERS-36 version, produced a reduced *alpha* (α = 0.67) (Miguel *et al.*, 2016).

Compulsive Buying Scale (CBS). CBS is an instrument that aims to evaluate the main dimensions of compulsive shopping disorder. In the CBS Brazilian version, proposed by Leite, Rangé, Ribas Junior, Fernandez e Silva (2012) using the Varimax extraction method, two factors were found, Buy and Pay, which explained 56% of the total variance of the items. The factors presented *Cronbach's alpha* (α) > 0.7. This is a Likert scale of 1 to 5 of inverted type, i.e., the lower the score, the greater the compulsiveness.

Sociodemographic questionnaire. This instrument was applied to obtain information on age; birthplace; profession; marital status; gender; level of education.

Procedures

After the semantic validation of the CERQ-short, data were collected online and in-person. A form created through *Google docs* was made available as a link for online data collection. Data were used with the participants' consent. This research followed the ethical criteria, being submitted to the ethics committee under protocol number 049865/2017.

Data Analysis

The software AMOS version 22 was used to perform Confirmatory Factor Analysis (CFA). The following fit indices were considered: *ratio $\chi^2/g.l.$, Goodness of Fit Index* (GFI), *Comparative Fit Index* (CFI); *Adjusted GFI (AGFI)*; *Root-Mean-Square Error of Approximation* (RMSEA). Acceptable fits could be considered when values are between 2 and 3 for $\chi^2/g.l$, greater than 0.9 for CFI and GFI, and greater than 0.6 for AGFI. For the RMSEA, it is considered: very good fit; between 0.05 and 0.01, good fit; between 0.05 and 0.10 poor fit and > 0.10 unacceptable fit (Marôco, 2014).

In the analysis of data distribution, items presented values of asymmetry (*sk*) and kurtosis (*ku*), uni and multivariate below 3 and 7, respectively. This could be an indicator of high data deviation from normality (Kline, 2011; Marôco, 2014). Pearson correlation analyses were performed for CERQ-Short and DERS (for convergent validity), and CBS (for discriminant validity). The existence of *outliers* was evaluated by Mahalanobis square distance (D²). Composite

Reliability (FC) was used as an indicator of reliability (internal consistency). Minimum FC criterion of 0.60 was adopted as guided by the discussion proposed by Valentini and Damásio (2016).

After CFA, the parameters of the questionnaire items were estimated with Item Response Theory (IRT) by using the *mirt* package (Chalmers, 2012). Data fit was verified by comparing two TRI models, one of them alternative with constant discrimination (Andrich (1978) *Rating Scale Model*) and the other with variable discrimination (*graded response model* – GRM) (Samejima, 1968). To compare the models, the chi-square (χ2) derived from the comparisons between the likelihood ratios of each model was verified. In case of no statistical significance (p <0.05) due to parsimony, the simplest discrimination model (constant discrimination) was chosen (Andrade, 2014). Lastly, the parameters of difficulty [response thresholds (*j*)] and item discrimination (*a*) were estimated. According to the classification of Baker and Kim (2017) for discrimination, the following parameters were considered: 0.01-0.43 (Very low); 0.35-0.64 (low); 0.65-1.34 (Moderate); 1.35-1.69 (High); and ≥1.70 (Very high). The *Rating Scale Model*-RSM from Andrich (1978) was the IRT model adopted. The criteria adopted as indicatives of unidimensionality were the Loevinger's *H* scalability indices (*H* for each factor and *Hs* for each item), where H≥ 0.54 (Van der Ark, 2008).

Results

Factorial Structure Confirmation

The instrument fit indicators, with a nine-factor structure, similar to the original version of Garnefski and Kraaij (2006) are shown in Table 2. In the model, all CERQ-Short items had high factor loadings (λ≥0.5) and adequate individual reliability (R2≥0.25), except for item 18 (R2 = 0.17). The presence of *outliers* was verified and since their removal did not cause changes to the fit indices, we opted for its permanence.

Internal Consistency (FC)

Reliability indices [composite reliability (FC)] reveal values greater than 0.6, except for the "putting into perspective" factor (FC = 0.57).

Discriminant and convergent validity

Convergent validity was assessed by correlations between CERQ-Short and DERS-36. The results revealed that the unsuitable cognitive strategies for emotional regulation of the CERQ-Short

Table 2.
Presentation of fit indices for the factor structure of the CERQ-Short scale

	Fit Indices				
	$\chi2/df$	GFI	AGFI	CFI	RMSEA (interval of 90%)
Nine factors	1.62	0.93	0.88	0.95	0.05 0.05-0.5

Notes. χ^2 = chi-square. *df* = degree of freedom. GFI = Goodness-of-Fit Index. AGFI = Adjusted Goodness- of-Fit fit. CFI = Comparative Fit Index. RMSEA = Root-Mean-Square Error of Approximation. CI90% = 90% Confidence Interval. ECVI = Expected Cross-Validation Index. * p < 0.001.

were statistically and positively correlated with greater difficulties of emotion regulation in DERS-36 (in descending order): catastrophizing, rumination, self-blame and blaming others. In addition, cognitive strategies for emotion regulation classified as adaptive in the CERQ-Short - refocus on planning, positive reappraisal, and positive refocusing - were negatively correlated with difficulties in emotion regulation. For all correlations, see Table 3.

Regarding the discriminant validity assessed from comparison with another instrument, when assessed by factors, CERQ-Short and CBS questionnaires seem to establish a level of correlation. However, as shown in the Refocus on Planning factor of CERQ-Short, there is a weak negative correlation that could indicate that in this assessment the greater the planning, the lower the compulsiveness. Other relationships to be considered are those of the Catastrophizing factor (CERQ-Short), these relationships indicate that the higher the catastrophizing, the greater the compulsiveness. The relationship was positively weak, as shown in Table 3. There was no correlation between the instruments in their total.

Psychometric Parameters of the items via Item Response Theory

Observing the unidimensionality criterion, six factors presented scalability indices above those indicated in the literature (Van der Ark, 2008), with highest index, H = 0.73, in the Catastrophizing factor. Items 9 and 17 of this same factor presented the highest Hs (both 0.73). Items 7 and 11 were the ones with the lowest Hs index (both, 0453). The corresponding average of the factors was 0.533.

Discrimination and difficulty of items.

Parameters of the items generated by IRT are described in Table 3. They considered the

unidimensionality and adjustment of data to the Andrich (1978) RSM model (shown in the data analysis topic). Regarding the response thresholds, three factors present the average of the first threshold (j_1) below the value of -2 on the scale of θ. Only two factors exceed the average of 0 on the second threshold (j_2) (self-blame and blame others). In the third threshold (j_3), only one factor exceeded the value of 1. In the fourth threshold (j_4), only one factor exceeded 1.5, with five factors above the value of 1. Thus, in general, the thresholds were in the theta range from -2 to 1.5.

Regarding the discrimination of items (*a*), six items (which in this case represent the discrimination of factors) presented high discrimination and three showed very high discrimination. The highest discrimination was for the Catastrophizing factor (*a* = 2.84) and the lowest for Positive Refocusing factor (*a* = 1.55). See table 4.

Discussion

The present study aimed to search for evidence of construct validity, internal consistency and psychometric indicators of the items of the Portuguese adapted version of the Cognitive Emotion Regulation Questionnaire (CERQ-short). According to index values indicated by Marôco (2014), CFA showed good fit for the CERQ-Short nine-factor model. Factor loadings were high and reduced reliability was observed for only one factor. These findings confirm the study's assumption in which nine factors of two items remained, pointing to good validity for the Brazilian sample.

Convergent validity was established from the correlations of CERQ-Short with DERS-36. Overall, the correlation was moderate between CERQ-Short e DERS-36. Therefore, convergent validity can be accepted since there are conceptual distinctions

Table 3.
Pearson correlation between CERQ-Short factors. DERS-36 factors. and CBS factors

CERQ-Short	DERS-36							CBS		
	Non-acceptance	Goals	Impulse	Awareness	Strategies	Clarity	DERS-Total	Buying	Pay	CBS Total
Refocus on Planning	-0.019**	-0.20**	-0.25*	0.37**	-0.30**	-0.09	-0.18**	-0.22**	-0.18**	-0.23**
Positive Refocusing	-0.09	-0.16*	-0.16*	0.24**	0.15*	0.05	-0.09	-0.14*	-0.11	-0.14*
Rumination	0.28**	0.32**	0.25**	0.26**	0.33**	0.25**	0.39**	0.09	0.00	0.05
Positive Reappraisal	0.16*	-0.19*	-0.20**	0.24**	-0.27**	-0.08	-0.18**	-0.16**	-0.10	-0.16*
Catastrophizing	0.54**	0.50**	0.54**	-0.04	0.63**	0.40**	0.61**	0.35**	0.12	0.27**
Putting into Perspective	0.03	-0.04	-0.09	0.28**	-0.10	0.03	0.08	-0.08	-0.13*	-0.12
Self-Blame	0.30**	0.25**	0.30**	0.00	0.31**	0.18**	0.32**	-0.01	0.10	0.15*
Blaming Others	0.27**	0.24**	0.21**	0.12	0.29**	0.23**	0.31**	0.10	0.11	0.12
Acceptance	0.08	0.00	-0.06	0.15*	-0.02	0.13*	0.5*	-0.02	-0.13*	-0.08
CERQ-Short Total	0.27**	0.19**	0.14*	0.39**	0.19**	0.28**	0.32**	-0.02	-0.08	0.30

Source: Research data (n=254).

Note. **. Correlation is significant at level 0.01 (bilateral); *. Correlation is significant at level 0.05 (bilateral). DERS-36- Convergent correlations. CBS- Divergent correlations.

adopted by CERQ-Short and DERS-36 instruments, even including emotion regulation. From our point of view, these differences do not diminish the relevance of the convergent validity evidence, because despite assessing emotional regulation in the face of negative events, DERS-36 proposes to verify the difficulty of such regulation. In addition, although closely linked to cognitive coping, DERS-36 does not dissociate cognitive and behavioral coping strategies as the CERQ-Short does, which would explain the lower correlations (Garnefski et al., 2001 ; Garnefski et al., 2002; Garnefski & Kraaij, 2006).

Correlations between the versions CERQ four items per factor and DERS-36 were found in a study conducted in Portugal by Martins, Freire and Ferreira-Santos (2016). This study also revealed similar results in which the Catastrophizing factor also had the

strongest correlation with DERS-36 ($r = 0.50$). The strongest correlations with DERS-36 were due to two less adaptive factors (catastrophizing and rumination) of CERQ-Short. These results contribute to confirm a convergence between the instruments, since the use of less adaptive strategies is closely associated with difficulties in emotion regulation (Garnefski & Kraaij, 2006). The lack of correlation with the putting into perspective factor would be explained by the characteristic of the strategy, since thoughts of minimizing the severity of the event or emphasizing its relativity when compared to other events are considered adaptive and would not configure something evaluated by DERS-36. (Garnefski et al., 2001).

The correlation between CERQ-Short and CBS was verified for discriminant validity. The CERQ-Short and CBS questionnaires did not show strong correlation

Table 4.
Parameter description of CERQ-Short items

Factor	Items		Response Thresholds			
		j_1	j_2	j_3	j_4	a
Acceptance	CERQ-S1	-1.41	-0.14	0.65	1.57	2.18
	CERQ-S5	-1.42	-0.30	0.49	1.24	2.18
M		-1.41	-0.22	0.57	1.41	
SD		0.009	0.112	0.115	0.233	
Refocus on Planning	CERQ-S12	-2.30	-1.32	-0.53	0.42	2.32
	CERQ-S15	-2.37	-1.35	-0.58	0.44	2.32
M		-2.33	-1.34	-0.56	0.43	
SD		0.043	0.021	0.034	0.008	
Positive Refocusing	CERQ-S7	-1.18	-0.26	0.52	1.36	1.55
	CERQ-S11	-1.20	-0.17	0.76	1.65	1.55
M		-1.19	-0.22	0.64	1.51	
SD		0.012	0.057	0.167	0.203	
Rumination	CERQ-S2	-2.34	-0.81	-0.27	0.78	1.68
	CERQ-S6	-2.842	-1.467	-0.634	0.402	1.68
M		-2.59	-1.14	-0.45	0.59	
SD		0.352	0.461	0.255	0.270	
Positive Reappraisal	CERQ-S3	-2.44	-1.49	-0.68	0.01	2.41
	CERQ-S8	-2.11	-0.98	-0.33	0.55	2.41
M		-2.27	-1.23	-0.51	0.28	
SD		0.234	0.359	0.247	0.385	
Catastrophizing	CERQ-S9	-1.13	-0.16	0.42	1.01	2.85
	CERQ-S17	-1.09	-0.21	0.34	1.05	2.85
M		-1.11	-0.18	0.38	1.03	
SD		0.029	0.033	0.056	0.031	
Putting into Perspective	CERQ-S13	-1.94	-0.85	0.24	1.21	1.67
	CERQ-S16	-2.06	-0.97	-0.29	0.57	1.67
M		-2.00	-0.91	-0.02	0.89	
SD		0.085	0.081	0.381	0.455	
Self-Blame	CERQ-S4	-0.95	0.10	0.88	1.43	2.64
	CERQ-S14	-1.149	-0.011	0.839	1.50	2.64

(Continued)

Table 4.
Parameter description of CERQ-Short items (Continuation)

		Response Thresholds				
M		-1.05	0.04	0.86	1.47	
SD		0.140	0.083	0.034	0.050	
Blaming Others	CERQ-S10	-0.30	0.85	1.83	2.96	2.66
	CERQ-S18	-0.02	1.02	1.94	2.76	2.66
M		-0.16	0.93	1.89	2.86	
SD		0.197	0.123	0.077	0.143	

Note. a=Alpha, Discriminant*; j₁, j₂, j₃, j₄*= Response thresholds; M= Mean; SD= Standard Deviation.

levels. The few statistically significant correlations revealed magnitudes considered weak or moderate (Tabachnick & Fidell, 2013). The moderate correlation found between Catastrophizing and Buying, for example, can be explained since the use of less adaptive strategies can result in typically anxious, impulsive and psychiatric behaviors (Berking & Wuppermann, 2015; Garnefski, Van Rood, & Roos)., 2017).

As part of the objective of this work, IRT analyses were performed to estimate the parameters of the scale items. Considering the unidimensionality and data adjustment to the RSM model (Andrich, 1978), difficulty parameters of the items presented indices that tend to be endorsed by the population with the least emotion regulation (Baker & Kim, 2017). Blame others was the factor that presented the greatest difficulty. As a result, approximately at θ=1, a discrimination with fewer errors initiates, and, therefore, it is not a factor that discriminates well people with θ below 0. Baker and Kim (2017) established that the ability of items to discriminate adults with different θ can be considered high and very high. Besides, according to Baker and Kim (2017), most polytomous measures have high or very high discrimination, due to the choice of answers. At this point, other contexts should be considered, such as sample size and whether the scale will be used in a very specific extract of a population. In large samples and/or samples that have very similar characteristics (specific contexts), there is a greater chance of encountering subjects with close thetas and, therefore, greater need for high discrimination rates (Cavalcanti, Melo, Medeiros, Santos, & Gouveia, 2016).

Items 1 and 5 (Acceptance); 12 and 15 (Refocus on Planning); 3 and 8 (Positive Reappraisal); 9 and 17 (Catastrophizing); 4 and 14 (Self-Blame); 18 and 10 (Blaming Others), presented discriminations higher than 2. These items vary at midpoint of theta with amplitude of more than two points, indicating good discrimination in a range that reaches most of the population. This proves the possibility of using this instrument, or at least the majority of these factors, in researches comprising samples with quite different θ.

The ICC of items 1, 3, 4, 5, 10, 12, 15, 17, 18 demonstrate a change in the type of response due to the θ of the respondents. This indicates that for these items all answers (1 - Almost never; 2 - Sometimes; 3 - About half the time; 4 - Most of the time; 5 - Almost Always) are likely to be chosen by the participants depending on their level of θ, demonstrating good adequacy of the number of options for the item.

Semantics of the nine items were compared with the best performance, for instance: 4: "I feel that I am solely responsible for what happened" (Self-Blame factor); 17: "I always think about how horrible the situation was" (Catastrophizing factor); 10: "I think others are responsible for what happened" (Blaming Others factor); 12: "I think about how to change the situation" (Refocus on Planning), and the three with the lowest psychometric accuracy, 2: "I often think about how I feel about what happened to me" (Rumination factor); 14: "Basically, I believe I must be the cause of what happened" (Self-Blame factor); 16: "I tell myself that there are worse things in life", the findings revealed that the content of the best items is more objective and directly related to the cognitive strategy of the factor. However, the three items with lower performance revealed to be slightly longer or with statements elaborated less directly to the cognitive strategy. For example, item 16 possibly has an

indirect relation to the factor, because unlike the other items that directly refer to one aspect of cognition, it suggests a behavior - speech.

Final Considerations

Data presented here demonstrated mostly good or very good properties for the analyzed instrument. The nine-factor structure was confirmed, in addition to good composite reliability, indications of convergent and discriminant validity, and expected difficulty and discrimination indices. Therefore, CERQ-Short is a viable instrument in the use of Cognitive Emotion Regulation in adults for screening and research purposes. However, this evidence does not imply that there is no need for future improvements in the scale. For future studies, a verification of the criterion validity (predictive and concurrent) is suggested, as well as investigations that seek correlations with other constructs, such as psychopathological symptoms.

In the present study, participants were sampled in a non-randomly way since most of them were from the Northeast region of Brazil. The sample of participants in this study was selected in a non-random way, being mostly from the Northeast region in Brazil. Further research should be conducted with this shortened version of the instrument widening the representative study samples. Besides, increasing the number of items in each factor would be a benefit in future studies because only two items could compromise content validity.

The objectives of this study were achieved, since it provides a rapid assessment tool for verification of Cognitive Emotion Regulation using cognitive strategies for the Brazilian population. The development of a short version is considered important due to its presumed usefulness as a rapid screening tool in psychiatric patients and easier inclusion in large self-report assessments where space is scarce.

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About the authors:

Ana Paula de Castro Araujo
Degree in Psychology from Santa Maria Faculty. Master's Degree Candidate in Cognitive Neuroscience and Behavior, Federal University of Paraíba (UFPB)
ORCID: https://orcid.org/0000-0003-1538-0643
E-mail: anacastropsico@hotmail.com

Maria José Nunes Gadelha
Bachelor (2011), Master (2013) and Doctor (2016) Degrees in Psychology from Universidade Federal do Rio Grande do Norte. Adjunct Professor at Federal University of Rio Grande do Norte (UFRN)
ORCID: https://orcid.org/0000-0001-5420-6766
E-mail: nunesgadelha@hotmail.com

Rômulo Lustosa Pimenteira de Melo
Bachelor (2011), Master (2014) and Doctor (2018) Degrees in Psychology from State University of Paraíba. Psychology Teacher at Santa Maria Faculty.
ORCID: https://orcid.org/0000-0003-0722-2944
E-mail: romulo.psiq@gmail.com

Contact:

504 BR-230, s/n, Bairro Cristo Rei
Cajazeiras-PB
CEP: 58900-000