

# Cognitive Emotion Regulation Questionnaire (CERQ): Confirmatory factor analysis and psychometric properties of the French translation

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## **ABSTRACT**

The main purpose of this study was to validate a French version of the Cognitive Emotion Regulation Questionnaire (CERQ). A sample of 224 young adults completed the French translation of the CERQ and the Beck Depression Inventory II. Exploratory and confirmatory factor analyses showed that a nine-factor model also explained the data collected with the French version. Internal reliability scores for each strategy ranged from .68 to .87. As in the original version, we found that the emotion regulation strategies could be grouped into adaptive and less adaptive cognitive regulation strategies. In addition, we observed that Self-blame and Rumination are key cognitive regulation strategies predicting whether high or low depressive symptoms are reported.

## Introduction

Emotion regulation refers to all the strategies that are used to reduce, maintain, or increase an emotion (Gross, 2001). Emotion regulation strategies are implicated in personality and emotional, cognitive, and social development (including resiliency). When they are biased, they also play a prominent role in the development and maintenance of emotional disorders. In fact, the concept of emotion regulation is very broad and encompasses a wide range of conscious and unconscious physiological, behavioral, and cognitive processes (Gross, 2001). For example, some strategies are implemented at the cognitive level (by thinking) while others involve behavioral interventions (by doing something); many strategies depend on a combination of both cognition and behavior (Parkinson & Totterdell, 1999). It also appears that individuals differ in their use of emotion regulation strategies and that these individual differences have specific affective, cognitive, and social consequences. In particular, Gross and John (2003) showed that emotion regulation strategies that take effect early in the emotion-generation process (such as reappraisal) are associated with more positive emotions, better interpersonal functioning, and greater well-being than strategies that act later (such as suppression).

Recently, Garnefski, Kraaij, and Spinhoven (2001) developed a questionnaire (the Cognitive Emotion Regulation Questionnaire, CERQ) specifically designed to assess the conscious cognitive components of emotion regulation. More specifically, this questionnaire was constructed to

investigate the cognitive processes people tend to use after experiencing negative life events and to better understand how these processes may affect the course of emotional development. The CERQ is a 36-item self-reporting questionnaire with a 5-point Likert response format (from 1 *almost never* to 5 *almost always*). Nine conceptually separate emotion regulation strategies were identified through principal component analyses (with a reliabilities of the nine subscales ranging from .68 to .83): “Acceptance” (having thoughts of acceptance and resignation in regard to what one has experienced; e.g., I think that I have to accept that this has happened), “Positive refocusing” (having positive, happy and pleasant thoughts instead of thinking about threatening and stressful events; e.g., I think of nicer things than what I have experienced), “Refocus on planning” (having thoughts about what to do and how to handle the experience one has had; e.g., I think of what I can do best), “Positive reappraisal” (having thoughts the goal of which is to give a positive meaning to the negative events in terms of personal growth; e.g., I think I can learn something from the situation), “Putting into perspective” (having thoughts that relativize the negative event compared to other events; e.g., I think that it all could have been much worse), “Self-blame” (having thoughts that blame oneself for what one has experienced; e.g., I feel that I am the one to blame for it), “Rumination” (having thoughts about the feelings and thoughts that are associated with negative events; e.g., I often think about how I feel about what I have experienced), “Catastrophizing” (having thoughts that emphasize the negativity of the experience; e.g., I continually think how horrible the situation has been) and “Blaming others” (having thoughts that blame others for what one has experienced; e.g., I feel that others are to blame for it). Garnefski et al. (2001) showed that the nine subscales are highly intercorrelated but that they can be grouped into adaptive and less adaptive regulation strategies. The adaptive strategies are Acceptance, Positive refocusing, Refocus on planning, Positive reappraisal, and Putting into perspective, while the less adaptive strategies are Self-blame, Rumination, Catastrophizing and Blaming others (the a reliabilities for the adaptive and less adaptive strategy groups are .91 and .87, respectively). Garnefski et al. (2001) also showed that people who adopt adaptive strategies report fewer depression and anxiety symptoms than people who use less adaptive strategies. The CERQ has been validated in samples of adolescents (Garnefski et al., 2001) and adults (Garnefski, Legerstee, Kraaij, Van Den Kommer, & Teerds, 2002). The same scale properties were found in both samples except that scores on most subscales were higher for adults. These results were obtained with the original Dutch version of the CERQ. An English version has been developed by the authors of the original version using a back-translation procedure.

On the whole, these results suggest that the CERQ constitutes a useful way of understanding cognitive regulation strategies and their relationships with emotional problems, in both adolescents and adults. We, therefore, decided to develop a French version of the CERQ and to confirm its factorial structure in a sample of adults. We also aimed to further investigate the links between the CERQ and the severity of depressive symptomatology by using an instrument (the Beck Depression Inventory II, BDI-II) specifically designed to evaluate depressive symptoms.

## Materials and Methods

### PARTICIPANTS

The sample consisted of 230 young community volunteers. Six subjects had a missing value for one item of the CERQ and all the results presented in the following sections are calculated for the remaining 224 participants (113 females and 111 males). Ages ranged from 18 to 37 years, with a mean age of 26.19 ( $SD = 4.37$ ) and a mean number of years of education of 15.42 ( $SD = 2.51$ ). Twenty-two percent of the participants had a medium level of education (9 years of obligatory schooling with 1 to 3 additional years of study), 78% had a high level of education (university or high school). The mean BDI-II score was 7.95 ( $SD = 6.75$ ). The administration of the CERQ and the BDI-II was part of a larger evaluation process including other questionnaires and cognitive tasks. All participants were tested individually.

### MEASURES

#### **Cognitive Emotion Regulation Questionnaire (CERQ)**

The CERQ (Garnefski et al., 2001) is a 36-item scale designed to evaluate the cognitive aspects of emotion regulation. The questionnaire is introduced by the following sentences, which are written at the top: "Everyone gets confronted with negative or unpleasant events now and then and everyone responds to them in his or her own way. With the following questions, you are asked to indicate what you generally think, when you experience negative or unpleasant events." The items must be rated on a 5-point Likert scale ranging from 1 (*almost never*) to 5 (*almost always*). The French version of the CERQ was developed with a back-translation procedure. One bilingual French-English person translated the English version of the CERQ into French. Another French-English bilingual person then translated that translation back into English. Discrepancies emerging from this back-translation were discussed and adjustments to the French translation of the CERQ were made.

#### **Beck Depression Inventory II (BDI-II)**

The BDI-II is a widely used tool for assessing the severity of depressive symptomatology. The French version that was used in this study was established by Éditions du Centre de Psychologie Appliquée (1998) and has shown strong reliability and validity proprieties in both clinical (depressed) and nonclinical samples.

### PROCEDURE

All participants were tested individually after giving their consent in writing. The questionnaires were completed anonymously and no compensation was given for participation.

## Results

### FACTORIAL STRUCTURE OF THE FRENCH VERSION

The first 10 eigenvalues of the principal component analysis were 7.51, 4.53, 2.86, 2.10, 1.83, 1.54, 1.35, 1.21, 1.14, and 0.91. The first nine eigenvalues were greater than one, suggesting that nine

factors should be extracted. A MAP test (Velicer's Minimum Average Partial test) conducted on the correlation matrix also recommended extracting nine factors (O'Connor, 2000). A parallel analysis suggested extracting six factors (O'Connor, 2000). As two out of three extraction methods indicated that we should retain the expected number of factors, a factor analysis with nine factors was computed and subjected to an oblimin rotation to allow for correlations among factors. The sums of the squared loadings were 3.13 (Positive reappraisal), 2.73 (Refocus on planning), 2.37 (Positive refocusing), 2.24 (Blaming others), 2.14 (Putting into perspective), 2.13 (Rumination), 2.06 (Self-blame), 1.84 (Catastrophizing), and 1.75 (Acceptance). The nine-factor solution explained 56.7% of the variance. The maximum loading of each item was found on the predicted factor, except for Items 19 and 20. The saturation of Item 8 on its factors was  $< .30$ . Loadings on the expected factor are reported in Table 1.

**Table 1** - Exploratory and confirmatory loadings for all items on their expected factor

Scale name	Items	Exploratory analysis	Confirmatory analysis
Acceptance	I2	0.81	0.78
	I11	0.80	0.84
	I20	0.32	0.24
	I29	0.47	0.53
Positive refocusing	I4	0.73	0.65
	I13	0.80	0.75
	I22	0.85	0.83
	I31	0.59	0.73
Refocus on planning	I5	0.86	0.75
	I14	0.98	0.84
	I23	0.49	0.59
	I32	0.59	0.69
Positive reappraisal	I6	0.73	0.74
	I15	0.53	0.66
	I24	1.04	0.83
	I33	0.87	0.93
Putting into perspective	I7	0.37	0.67
	I16	1.05	0.77
	I25	0.52	0.78
	I34	0.58	0.76

Self-blame	I1	0.70	0.71
	I10	0.79	0.82
	I19	0.24	0.45
	I28	0.85	0.84
Rumination	I3	0.70	0.65
	I12	0.71	0.71
	I21	0.63	0.54
	I30	0.55	0.68
Catastrophizing	I8	0.24	0.27
	I17	0.76	0.81
	I26	0.63	0.62
	I35	0.72	0.81
Blaming others	I9	0.78	0.74
	I18	0.75	0.73
	I27	0.61	0.65
	I36	0.75	0.74

**Table 2** - Cronbach's  $\alpha$ s and mean scores (and standard deviations) for subscales. The mean for each subscale is composed of four items

Subscale	Alpha	Mean
Acceptance	0.68	12.62 (3.43)
Positive refocusing	0.83	10.21 (3.74)
Refocus on planning	0.81	15.24 (3.37)
Positive reappraisal	0.87	14.44 (3.99)
Putting into perspective	0.83	13.04 (4.06)
Self-blame	0.78	10.44 (3.21)
Rumination	0.74	11.84 (3.65)
Catastrophizing	0.68	6.81 (2.80)
Blaming others	0.80	7.83 (2.73)

Cronbach's  $\alpha$  ranges from .68 to .87 (see Table 2). Thus, Acceptance and Catastrophizing had acceptable internal reliability (.68), and the other subscales had good (> .70) to very good (> .80) internal reliability. Means and standard deviations for each subscale are also reported in Table 2.

When scores for men and women were compared, only the score for the “Putting into perspective” strategy was significantly lower for men than for women,  $t(222) = 2.33, p = .02$ .

In order to test how well the identified model of the original version of the CERQ fits the French translation, a confirmatory factor analysis (CFA) with the maximum likelihood (ML) method was performed on the variance-covariance matrix (Jöreskog & Sörbom, 2003). Goodness of fit was tested with  $\chi^2$  (a nonsignificant value corresponds to an acceptable fit). But  $\chi^2$  are known to increase with sample size and degree of freedom (Schermelleh-Engel, Moosbrugger, & Müller, 2003). For these reasons, the  $\chi^2$  was complemented by examining other indices that depend on a conventional cut off. Hu and Bentler (1999) have recommended the use of two fit indices: The Standardized Root Mean Square Residual (SRMR) and the Root Mean Square Error of Approximation (RMSEA). The combination of these two indices is valuable because the SRMR is sensitive to the misspecification of the factor covariance (latent model), whereas the RMSEA is sensitive to the misspecification of the factor loadings (measurement model). The Comparative Fit Index (CFI) was also reported to allow comparison with previous studies. Schermelleh-Engel et al. (2003) consider that an SRMR between 0 and 0.05 indicates a good fit and one between 0.05 and 0.10 an acceptable fit. An RMSEA between 0 and 0.05 indicates a good fit and one between 0.05 and 0.08 an acceptable fit. A CFI between 0.97 and 1.00 indicates a good fit and one between 0.95 and 0.97 an acceptable fit. Results for the nine-factor CFA showed the following fit indices:  $\chi^2(558) = 974.79, p < .01$ ; SRMR = 0.075; RMSEA = 0.056; and CFI = 0.94. The SRMR and RMSEA suggest that the latent and the measurement models, respectively, are acceptable. However, the CFI of 0.94 falls just under the acceptable cut-off (0.95). Globally, these fit indices indicate that the nine-factor model is acceptable.

In order to test whether the distinction between adaptive and less adaptive strategies fit the data, a second CFA was computed on the variance-covariance matrix. Each strategy was defined by the respective items, as in the previous CFA, but two second-order factors were added. The first one was defined by the five strategies supposed to be adaptive: Acceptance, Putting into perspective, Positive refocusing, Refocus on planning, and Positive reappraisal. The second one was defined by the four strategies supposed to be less adaptive: Rumination, Catastrophizing, Self-blame, and Blaming others. Results of the second-order CFA are:  $\chi^2(584) = 1042.76, p < .01$ ; SRMR = 0.088; RMSEA = 0.059; and CFI = 0.94 (loadings are reported in Table 1). The SRMR and RMSEA suggest that the latent and the measurement models, respectively, are acceptable. However, the CFI of 0.94 again falls just under the acceptable cut-off (0.95). These fit indices show that the model that distinguishes between adaptive and nonadaptive strategies is acceptable. Adaptive and less adaptive strategies were negatively correlated,  $r = -.34, t(222) = -4.34, p < .01$  (standardized solution). The squared multiple correlation was .18 for Acceptance, .27 for Positive refocusing, .57 for Refocus on planning, .75 for Positive reappraisal, and .67 for Putting into perspective. Thus, Positive reappraisal best represents the adaptive strategies. The mean score for the adaptive regulation strategies (20 items) was 65.54 ( $SD = 13.18$ ) and the Cronbach's  $\alpha$  was .89. The squared multiple correlation was .34 for Self-blame, .45 for Rumination, .77 for Catastrophizing, and .09 for Blaming others. Thus, Blaming others did not represent the less adaptive strategies very well, while Catastrophizing represents them best. The mean score for the less adaptive regulation strategies (16 items) was 36.92 ( $SD = 8.54$ ) and the Cronbach's  $\alpha$  was .82. The internal reliability of both subscales was very good ( $> .80$ ).

## RELATIONSHIP BETWEEN DEPRESSION AND EMOTION REGULATION STRATEGIES

Pearson's correlations between the BDI-II score and the CERQ subscales were calculated (Table 3). Pearson's correlations are measures of effect size and a value  $> .10$  indicates a small effect size,  $> .30$  a medium effect size, and  $> .50$  a large effect size. A value  $< .10$  is considered as a negligible effect (Cohen, 1988). Estimates of effect size are reported within their 95% confidence interval (see Table 3).

The five adaptive strategies were negatively correlated with the depression score and the four less adaptive strategies were positively correlated with the depression score. The effects of the five adaptive strategies were all of small size. The effects of the less adaptive strategies were medium-sized, except for Blaming others, which had a negligible effect size. In order to identify the strategies that best predicted depression symptomatology scores, we computed a regression on the BDI-II score with the nine regulation strategies entered as predictors. Predictors were then ordered according to their absolute  $t$ -value (Howell, 1998, p. 612). Starting with the highest absolute  $t$ -value, we found the following order: Rumination,  $t(214) = 2.94, p < .01$ ; Self-blame,  $t(214) = 2.80, p < .01$ ; Positive reappraisal,  $t(214) = -1.68, p = .09$ ; Acceptance,  $t(214) = -1.62, p = .11$ ; Catastrophizing,  $t(214) = 1.21, p = .23$ ; Refocus on planning,  $t(214) = -1.13, p = .26$ ; Positive refocusing,  $t(214) = -0.87, p = .38$ ; Putting into perspective,  $t(214) = 0.80, p = .42$ ; and Blaming others,  $t(214) = -0.37, p = .71$ . Thus, the most important predictors are two less adaptive strategies: Rumination and Self-blame.

**Table 3** - Pearson's correlations between the BDI-II and the CERQ at 95% Confidence Interval.

Subscale	BDI-II	$t$	$p$	lower	upper
Acceptance	-.12	-1.86	.06	-.25	.01
Positive refocusing	-.20**	-3.06	<.01	-.32	-.07
Refocus on planning	-.16*	-2.38	.02	-.28	-.03
Positive reappraisal	-.25**	-3.82	<.01	-.37	-.12
Putting into perspective	-.18**	-2.66	<.01	-.30	-.05
Self-blame	.36**	5.74	<.01	.24	.47
Rumination	.32**	5.01	<.01	.20	.43
Catastrophizing	.29**	4.50	<.01	.16	.40
Blaming others	.07	0.98	.33	-.07	.20
Adaptive strategies	-.26**	-3.99	<.01	-.38	-.13
Less adaptive strategies	.39**	6.26	<.01	.27	.49

Note. Degree of freedom is 222 for all the correlations; \* $p < .05$ , \*\* $p < .01$ ; lower and upper are the bounds of the 95% confidence interval.



## Discussion

The main purpose of this study was to validate the factorial structure of the French translation of the CERQ in a non-clinical sample. The results of this study show that the nine-factor structure that underlies the original CERQ version was replicated in an adult sample with the French translation. The fit indices confirmed that the nine-factor model was appropriate to explain the French data. At the subscale level, the reliability scores are acceptable for Acceptance and Catastrophizing and are good to very good for the other subscales. The  $\alpha$ s that were obtained in this study are comparable to those obtained in the original version. The lowest  $\alpha$ s were found for Acceptance and Catastrophizing. One possible explanation for the relatively low  $\alpha$  for the Acceptance strategy could be that items related to thoughts of acceptance (e.g., I think that I have to accept that this has happened) and resignation (e.g., I think that I cannot change anything about it) are mixed up within this factor. From a clinical viewpoint, acceptance is considered to be an adaptive strategy (Bishop et al., 2004) whereas passive resignation is a less adaptive coping strategy because people experience a sense of helplessness in the face of a situation that cannot be changed. As for the low internal reliability of the Catastrophizing factor, loadings indicate that Item 8 (“I often think that what I have experienced is much worse than what others have experienced”) is only weakly linked to this factor. In the factor description provided by the authors of the original version, catastrophizing refers to “thoughts of explicitly emphasizing the terror of an experience” (Garnefski et al., 2001, p. 1316). Item 8 deals more with thoughts of social comparison than thoughts related to the evaluation of a situation. This discrepancy may have contributed to the relatively low internal validity of this factor. Moreover, this study has also shown that, as in the original version, cognitive regulation strategies can be divided into two theoretically separate types of strategies: Adaptive and less adaptive regulation strategies. Internal reliability coefficients for these two groups of strategies were very good and also comparable to those of the original version.

The value of the CERQ is that it enables clinicians and researchers to measure a wide variety of cognitive strategies for emotion regulation with a single questionnaire. Thus, relationships between these cognitive regulation strategies can be explored and linked to psychopathological manifestations. For example, depression and dysphoria are considered to constitute a difficulty in regulating the increase in negative emotions (e.g., sadness) and the decrease in positive emotions (e.g., happiness) (Gross & Munoz, 1995). From this perspective, the results of the present study showed that Rumination and Self-blame best predict high depression scores. These findings confirm previous research that had identified the same strategies in relation to depressive symptomatology (Garnefski et al., 2001, 2002). Garnefski et al. (2002) also identified Positive reappraisal and Catastrophizing as predictors related to depression scores. Rumination as a cognitive response to negative events has been shown to be a predictor of depressive symptoms and their severity as well as of the length of depressive episodes (Nolen-Hoeksema & Morrow, 1993; Nolen-Hoeksema, Morrow, & Fredrickson, 1993). The use of Self-blame as a regulation strategy when confronted with negative events can be related to the attributional theory of depression, which states that depressives have the tendency to attribute the causality of negative events internally whereas they attribute the causality of positive events to others (negative attributional style; Abramson, Metalsky,



& Alloy, 1989). Our results are in accordance with findings that show that individuals with a negative attributional style have greater depressive reactions to all life stressors (Kwon & Laurenceau, 2002).

To summarize, this study showed that the French version of the CERQ is well explained by a nine-factor structure (the nine different types of cognitive regulation strategies), as well as by a secondary two-factor structure (the adaptive and less adaptive regulation strategies), as had originally been found by Garnefski et al. (2001). Moreover, this study confirmed that certain cognitive coping strategies (such as Self-blame, Rumination) are especially linked to the presence of depressive symptoms. Nevertheless, as these results were obtained in a nonclinical sample, additional studies should be conducted to further validate the French CERQ in a clinical context. A psychological intervention among depressed people targeting these emotion regulation strategies in particular could be especially interesting.

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