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Cognitive emotion regulation and psychopathology across cultures: A comparison between six European countries

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Abstract

Use of cognitive emotion regulation strategies in response to stressful life events varies by country, though research has been limited to comparisons between American and Asian cultures. This study aimed to compare six European countries to investigate cross-cultural differences in the use of cognitive strategies and test if the relationship between specific strategies and psychopathology varies across countries. Data arrays were collected from the Netherlands, Hungary, Spain, Italy, Portugal and Germany (N=1553) and cross-cultural measures of cognitive emotion regulation using the Cognitive Emotion Regulation Questionnaire (CERQ) were included. Measures of depression and anxiety were also included. Results showed significant differences on all the subscales of the CERQ. Most notably, there were differences on strategies that have been linked to symptoms of psychopathology; overall northern European countries (Germany and Netherlands) made less use of strategies such as rumination, catastrophizing, and other-blame, when compared to southern and eastern European countries (Spain, Italy, Portugal, and Hungary). The direction of the relationships between specific strategies and symptoms of psychopathology was consistent across countries. Although there were cross-cultural differences in the use of cognitive strategies, the consistent relationship between strategies and psychopathology across countries supports the idea of a trans-cultural approach to treating psychopathology.

Keywords: cognitive emotion regulation, CERQ, cross-cultural differences, coping, depression, anxiety, psychopathology, treatment

Cognitive Emotion Regulation and Psychopathology across Cultures: A Comparison

between Six European Countries

1. Introduction

Cognitive emotion regulation can be viewed as the cognitive way of handling

emotionally arousing information (Thompson, 1994) and refers to the cognitive part of

coping (Garnefski, Kraaij, & Spinhoven, 2001). Research shows that there are cross-cultural

differences in cognitive emotion regulation, however, studies have been limited to comparing

cultural extremes such as European American and East Asian cultures—as a result, much less

is known about the differences in emotion regulation between different European countries

(De Leersnyder, Boiger, & Mesquita, 2013; Matsumoto, Yoo, & Fontaine, 2008; Wong,

2009). The present study examined differences between six European countries so as to better

understand if, and how, less extreme cultural differences might contribute to variations in

cognitive emotion regulation. Furthermore, the study aimed to examine whether the

relationship between specific cognitive strategies and symptoms of psychopathology are

consistent across countries.

Nine conceptually distinct cognitive emotion regulation strategies can be

distinguished: self-blame, other-blame, rumination, catastrophizing, putting into perspective,

positive refocusing, positive reappraisal, acceptance, and planning (e.g. Garnefski et al.,

2001). Self-blame includes thoughts that relate to blaming yourself for a traumatic or

stressful event. Other-blame is the process of blaming others for what happened to yourself.

Acceptance includes thoughts of coming to terms with an experience or resigning yourself to

what has happened. Refocus on planning means that one is thinking about practical steps to

take to cope with a negative event. Positive reappraisal means that one is trying to see a

negative event in terms of personal growth. Putting into perspective means that you are

marginalizing the seriousness of the event. Catastrophizing includes thoughts that

overemphasize the terror of an experience (Garnefski & Kraaij, 2006a; Garnefski et al., 2001).

A number of studies have shown that there is a strong relationship between the use of certain cognitive strategies and psychopathology (Ehring, Fischer, Schnülle, Bösterling, & Tuschen-Caffier, 2008; Ehring, Tuschen-Caffier, Schnulle, Fischer, & Gross, 2010; Garnefski & Kraaij, 2006b; Garnefski et al., 2001; Garnefski, Teerds, Kraaij, Legerstee, & van den Kommer, 2004; Garnefski et al., 2002; Joormann & Gotlib, 2010). Other strategies such as positive reappraisal have been shown to be protective against psychopathology (Gross, 1998; John & Gross, 2004; Ochsner, Bunge, Gross, & Gabrieli, 2002). In general, there is evidence that cognitive strategies are a promising target for treating symptoms of psychopathology (Berking & Lukas, 2015), however to date there have not been any studies examining whether the relationship between specific cognitive strategies and psychopathology is consistent across countries. It is warranted to study cross-cultural differences in order to determine whether treatment recommendations could be universal, or whether they need be adapted to specific cultural needs.

Most studies on cross-cultural differences in emotion regulation have focused on comparisons between European American and East Asian cultures (Matsumoto, Yoo, & Fontaine, 2008; Matsumoto, Yoo, & Nakagawa, 2008; Wong, 2009), while research comparing Western cultures has been more limited (Haga, Kraft, & Corby, 2009). One study that examined differences in emotion regulation found that collectivist cultures tended to have higher scores on suppression when compared to individualistic cultures (Matsumoto, Yoo, & Fontaine, 2008). They also found a relationship between emotion regulation and country-level indices of both positive and negative adjustment (Matsumoto, Yoo, & Fontaine, 2008). More recently, local students from Hong Kong were compared with exchange students from North America (Wong, 2009). American students made more use of positive reappraisal

and acceptance, whereas students from Hong Kong made more use of strategies such as self-blame, other-blame, and catastrophizing. One study explored cross-cultural differences in the use of cognitive reappraisal and expressive suppression in a sample of 489 students from universities in Norway, Australia, and the United States (Haga et al., 2009). Differences were found in the use of both strategies across gender, age and culture. Moreover, cognitive reappraisal was predictive of levels of positive well-being outcomes, while the use of expressive suppression lead to increased levels of negative well-being outcomes across counties. In conclusion, there seems to be clear evidence that people from different cultures vary in the extent to which they use specific cognitive emotion regulation strategies. At the same time the results suggest a stable pattern of relationship between specific strategies and symptoms of psychopathology. Thus far, there have been no studies comparing systematic differences in cognitive emotions regulation in comparable samples across different European countries.

In the past 6 years, the CERQ has been translated into Spanish, French, German, Portuguese, Hungarian and Italian and studies in peer-reviewed journals have been published (Spanish; Domínguez-Sánchez, Lasa-Aristu, Amor, & Holgado-Tello, 2011; French; Jermann, Van der Linden, d'Acremont, & Zermatten, 2006; German; Loch, Hiller, & Witthöft, 2011; Portuguese; Martins, Freire, & Ferreira-Santos, in press; Romanian; Per & Miclea, 2011). The current study aimed to collect the data arrays of European studies that used the CERQ and to compare them with regard to cognitive emotion regulation and any relationships to depression and anxiety. Young adult samples were included because many of the studies across Europe were conducted amongst this age group. The research questions were "To what extent do European countries differ in the use of specific cognitive strategies?"; and "To what extent are the relationships between specific strategies and symptoms of psychopathology consistent across countries?". Samples from the following

countries were included: Netherlands, Hungary, Spain, Italy, Portugal and Germany. All data sets included the CERQ and measures of depression and/or anxiety.

Our hypotheses were as follows: (1) there are differences in the use of cognitive strategies across countries– this hypothesis was explorative in nature; (2) the relationships between specific cognitive strategies and symptoms of depression and anxiety are consistent across countries. More specifically, we predicted for depression that (2a) the cognitive strategies catastrophizing, self-blame, rumination and other-blame would be associated with higher depression scores, whereas (2b) positive reappraisal would be associated with decreased levels of depression scores. For anxiety we predicted that (2c) the strategies catastrophizing, self-blame and rumination would be associated with higher anxiety scores, whereas (2d) positive reappraisal would associated with decreased levels of anxiety. Hypothesis 2a-2d were based on previous research indicating a stable pattern of associations between specific cognitive strategies and symptoms of psychopathology (i.e. depression and anxiety) (Garnefski et al., 2001).

2. Method

2.1 Procedures

An electronic database (Web of Science) was searched for references of the original CERQ paper by Garnefski, Kraaij and Spinhoven (2001) and studies conducted in Europe were filtered out. Studies from eight countries were identified (i.e. The Netherlands, Hungary, Spain, Italy, Portugal, Germany, Switzerland, and Romania) and authors were contacted and invited to collaborate on this project. All countries except of Romania responded to the invitation. The authors were then asked to apply the eligibility criteria before submitting their existing data arrays for secondary analysis. The submitted data arrays included participants between the ages of 18 and 40 who had a secondary school degree or higher. This also included individuals who were currently studying at the university or higher

vocational education, as well as those who had already completed a university or higher vocational education degree. Switzerland had to be excluded because their data did not provide sufficient information about the degree of education. Six countries contributed to the final pool of studies: The Netherlands, Hungary, Spain, Italy, Portugal and Germany.

2.2 Participants

Although data arrays from six independent studies contributed to this study, all samples were general population samples that were comparable in terms of age and educational background. This section provides a summary of the original samples per country before eligibility criteria were applied. The Dutch sample consisted of 317 undergraduate psychology students who completed a series of electronic questionnaires as part of their course requirements. The Hungarian sample consisted of 261 graduate and postgraduate students who completed a series of written questionnaires during various seminars and lectures. The Spanish sample consisted of 615 university students who responded to an email invitation to complete an online survey. The Italian sample consisted of 377 individuals from the general population who had responded to advertisements requesting potential volunteers for a psychological study. The Portuguese sample consisted of 397 university students who participated after lectures using pencil and paper questionnaires. The German sample consisted of 414 randomly selected individuals from the general population, who received the questionnaires via mail.

2.3 Materials

2.3.1 Cognitive Emotion Regulation

CERQ. The Cognitive Emotion Regulation Questionnaire measures cognitive emotion regulation strategies in response to stressful or traumatic live events (CERQ; Garnefski, Kraaij, & Spinhoven, 2001). It consists of 36 items, measuring 9 conceptually distinct cognitive strategies, each of which is measured by 4 items. The nine strategies are: self-

blame, other-blame, rumination, catastrophizing, putting into perspective, positive refocusing, positive reappraisal, acceptance, and refocus on planning. Answers are given on a 5-point Likert scale ranging from 1 (*almost never*) to 5 (*almost always*). Previous studies have reported good internal consistency and validity of the subscales, with Cronbach's Alpha coefficients between .68 and .86 (Garnefski et al., 2002).

2.3.2 Depression/Anxiety

Across the different studies researchers made use of different measures of depression and anxiety. All except of one of the questionnaires were comparable with regards to how they measured depression and anxiety. Overall scores of each measure were used in the subsequent analysis. Here is a list of the questionnaires including information about the countries that made use of the individual measures.

BDI-II. This questionnaire was used in the Dutch, the Spanish and as a short version in the Hungarian sample. The Beck Depression Inventory II (BDI-IIBeck, Steer, Ball, & Ranieri, 1996) consists of 21 items and measures self-reported depressive symptoms. Participants respond on a 4-point Likert scale ranging from 0 to 3. Studies reported good internal reliability with Cronbach's Alpha coefficients of .90 (Segal, Coolidge, Cahill, & O'Riley, 2008).

PHQ-9. This questionnaire was used in the German sample as a measure of depression. The Patient Health Questionnaire (PHQ; Kroenke, Spitzer, & Williams, 2001) is a measure for the screening and intensity rating of psychological disorders. It includes a 9-item module that measures depressive symptoms on a 4-point Likert scale, ranging from 0 (*not at all*) to 4 (*every day*). Studies reported good internal consistency and test-retest reliability (alpha -.88; *r*: .81-.96) (Kroenke et al., 2001).

SCL-90. This questionnaire was used in the Dutch data set, as a measure of anxiety. The Symptom Checklist-90 has nine subscales assessing a broad scale of psychological

problems (SCL-90; Derogatis & Cleary, 1977). Answers are given on a 5-point Likert scale, ranging from 1 (*not at all*) to 5 (*very much*). Subscale scores were calculated by summing the corresponding items. Studies found Cronbach's Alpha coefficients ranging from .82 to .93 for depression and .71 to .91 for anxiety.

BSI. This questionnaire was used in the Portuguese data set, as a measure of depression and anxiety. The Brief Symptom Inventory (BSI; Derogatis & Spencer, 1993) is a 53-item self-reported scale that uses a 5 point Likert scale to assess psychological symptoms of distress and psychiatric disorders . Studies using the BSI found good levels of internal reliability with an average rating above .7 for the scales. Test-retest reliability ranged between .68 and .91 (Derogatis & Spencer, 1993).

2.3.3 Anxiety

STAI. This questionnaire was used in the Hungarian and Spanish sample. The State-Trait Anxiety Inventory (STAI; Spielberger, 1993) consists of 20 trait-related anxiety items and 20 state-related anxiety items. For our purpose we made use of the state-related items. Studies found internal consistency coefficients ranging from .86 to .95 (Spielberger, 1993).

ASI. This questionnaire was used in the German sample. The Anxiety Sensitivity Index-3 (ASI; Kemper, Ziegler, & Taylor, 2009) measures harmfulness and consequences of anxiety symptoms with eighteen 5-point items (0=*do not agree* to 4=*strongly agree*). The scale was reported to have high reliability (alpha between .75 and .86) (Osman et al., 2010).

3. Results

3.1 Cross-cultural differences in Cognitive Emotion Regulation

Information on the sample characteristics can be found in Table 1. Descriptive statistics for the CERQ can be found in Table 2. A one-way ANOVA showed that countries differed significantly in terms of age, $F(5,1553)=144.11$, $p<.001$ and gender, $F(5,1553)=3.90$, $p<.01$. To determine whether these differences could confound further analysis, we calculated

correlations between the dependent variables and these demographic variables. There was a correlation between gender and rumination r (two-tailed)=-.06, p<.05, age and refocus on planning r (two-tailed) =.11, p<.001, age and positive reappraisal r (two-tailed) =.10, p<.001, and age and putting into perspective r (two-tailed)=.07, p<.01. To control for these effects we included gender and age as covariates in all the subsequent analysis.

A statistically significant MANOVA effect was found for country, Pillai's Trace=.40, F (9, 1470)=14.20, p<.001, and age F (9, 1470)=4.71, p<.001. As shown in Table 2, statistically significant differences were found in each of the ANOVAs, indicating that there was one or more mean difference between countries on each of the nine coping strategies. Post-hoc analysis (Tukey's method) showed that there were at least two significant post-hoc tests per subscale (p<.05) (table available upon request).

Table 1

Demographics

	Netherlands	Hungary	Spain	Italy	Portugal	Germany	F
N	301	235	394	154	367	102	
Mean age	21.69	24.19	29.9	26.51	22.24	28.38	144.11***
SD age	3.55	5.24	5.49	5.96	4.26	5.42	
Range age	18-39	18-39	18-39	19-39	18-39	18-39	
% Male/female	18.2/81.8	49.8/50.2	17.8/82.2	21.1/77.3	37.9/62.1	35.3/63.7	3.9**

*p <0.05, **p < 0.01, ***p < 0.001

Table 2

Means of Country Level Cognitive Strategies

		Netherlands	Hungary	Spain	Italy	Portugal	Germany	*F*
Selfbl	Mean	9.78	11.26	10.71	9.99	9.87	10.19	8.82***
	SD	2.81	2.78	2.70	2.94	2.33	2.50	
	Cronbach's α	0.74	0.76	0.63	0.75	0.66	0.61	
Accept	Mean	11.49	11.51	13.31	12.43	11.67	12.38	13.99***
	SD	3.09	2.93	3.10	3.47	2.97	3.13	
	Cronbach's α	0.75	0.70	0.63	0.83	0.71	0.68	
Rumin	Mean	12.59	12.51	13.53	13.52	12.14	10.79	11.92***
	SD	3.56	3.63	3.40	3.07	3.21	3.44	
	Cronbach's α	0.84	0.82	0.71	0.72	0.76	0.77	
Refpos	Mean	10.47	10.88	10.86	9.78	11.19	10.20	3.16**
	SD	2.96	3.76	4.15	3.84	3.36	3.56	
	Cronbach's α	0.74	0.88	0.91	0.89	0.82	0.90	
Refplan	Mean	14.73	16.04	15.61	14.38	14.2	15.47	12.16***
	SD	3.02	2.75	3.27	2.90	2.90	3.19	
	Cronbach's α	0.83	0.81	0.80	0.76	0.79	0.83	
Posreap	Mean	14.22	14.38	15.26	14.86	13.81	13.36	7.28***
	SD	3.33	3.32	3.97	3.59	3.13	3.89	
	Cronbach's α	0.83	0.81	0.87	0.83	0.77	0.85	
Relat	Mean	12.56	11.71	13.98	12.50	12.06	12.71	12.36***
	SD	3.35	3.54	3.93	3.55	3.35	3.68	
	Cronbach's α	0.78	0.79	0.84	0.78	0.752	0.84	
Catast	Mean	6.02	7.14	8.05	8.67	8.29	6.83	23.34***
	SD	2.04	2.71	3.00	3.08	3.09	2.19	
	Cronbach's α	0.66	0.69	0.70	0.73	0.78	0.68	
Otherbl	Mean	6.46	8.33	7.79	8.49	8.20	7.76	15.31***
	SD	2.06	2.37	2.53	2.71	2.56	2.39	
	Cronbach's α	0.75	0.76	0.78	0.81	0.78	0.75	

*p < 0.05, **p < 0.01, ***p < 0.001.
Note: Selfbl= Self-blame; Accept= Acceptation; Rumin= Rumination; Refpos= Positive refocusing; Refplan= Refocus on planning; Posreap= Positive reappraisal; Relat= Putting into perspective; Catast= Catastrophizing; Otherbl= Other-blame.

To give a better overview of these results, effect sizes as estimated by Cohen's *d* were calculated (table available upon request). Some of the largest group differences ($d > .80$) were observed on the subscale rumination, catastrophizing, and other blame. Germany scored much lower on the rumination subscale, especially when compared to Spain and Italy. The Netherlands scored much lower on the subscale catastrophizing, especially when compared to southern European countries such as Spain, Italy, and Portugal. Lastly, the Netherlands also scored lower on the subscale other-blame, when compared to Hungary and Italy.

3.2 Cognitive strategies and depression

The linear combination of the nine cognitive strategies was significantly related to depression scores in four of the five countries (all except of Germany) (see Table 3). The

sample multiple correlation coefficients ranged between .16 and .43, indicating that 16-43% of the variability in depression scores was accounted for by the linear combination of cognitive strategies. In the significant models, the difference between R^2 and adjusted R^2 lay between .02 and .04, meaning that if the models were derived from the population rather than a sample it would explain approximately 2–4% less variance in the criterion variable.

The relative strength of the individual predictors and significance levels of the regression models can be inferred from Table 3. The overall regression models were significant for all countries except of Germany, with coefficients of determination ranging from .16-.43. The direction of the relationships between the predictor variables and the criterion were consistent, whereas the significance of the individual predictors varied across the different regression models. The three most important predictors were self-blame, refocus on planning, and catastrophizing. Higher self-blame scores were predictive of higher depression scores in five of the six samples (all but Germany). Positive scores on catastrophizing were predictive of higher depression scores in the same five samples. Refocus on planning had a negative relationship with depression scores in three of the six countries (including Spain, Germany, and Portugal). Positive reappraisal was only found predictive of depression scores in the Netherlands, where a higher score on positive reappraisal was related to a lower depression score.

Table 3

Pearson Correlations and Hierarchical Regression Analysis for Variables Predicting Depression

	Netherlands (N=301) BDI		Hungary (N=235) BDI-S		Spain (N=394) BDI		Portugal (N=367) BSI		Germany (N=102) PHQ	
	r	*β*	*r*	*β*	*r*	*β*	*r*	*β*	*r*	*β*
Gender		-.06		-0.00		.03		-.22***		-.00
Age		-.10		-0.20***		-.13		.07		-.18
Selfbl	.33***	.21**	.35***	.26***	.35***	.28***	.32***	.28***	.19*	.13
Catast	.48***	.33***	.46***	.22**	.45***	.24***	.34***	.17**	.15	-.11
Posreap	-.23***	-.20*	-.29***	-.13	-.34***	-.09	-.16**	-.04	-.12	.02
Rumin	.26***	.08	.39***	.05	.23***	.10	.19***	.07	.24**	.28*
Refplan	-.07	-.04	-.20***	-.06	-.28***	-.22***	-.19**	-.23**	-.19*	-.24*
Refpos	-.23***	-.00	-.29***	-.13*	-.24***	-.05	-.16**	-.09	-.12	-.01
Accept	.11	.02	.14*	.07	-.04	-.05	.03	.03	.06	.06
Relat	-.13*	-.02	-.17**	-.05	-.19***	-.01	-.04	.04	-.08	.00
Otherbl	.15**	.02	.18**	.05	.16**	.04	.17***	.04	.07	.09
R²		.33		.43		.34		.27		.16
F		10.63***		14.78***		23.16***		12.81***		1.55

*p < .05, **p < .01, ***p < .001.
Note: Selfbl= Self-blame; Accept= Acceptation; Rumin= Rumination; Refpos= Positive refocusing; Refplan= Refocus on planning; Posreap= Positive reappraisal; Relat= Putting into perspective; Catast= Catastrophizing; Otherbl= Other-blame.

A cross-validation analysis [30] was used to test whether the relationships between specific cognitive strategies and symptoms of depression were consistent with those in the Dutch sample. The following regression model was derived from the Dutch sample and tested across the Hungarian, Spanish, Portuguese, German and sample: y_i=-0.51+(.36*catast)+(.20*selfbl)+(.09*rum)+(-.21*posreap)+(-.02*otherbl). A list of the regression weights using only the selected strategies is available upon request. As can be seen in Table 4, all the Fisher *r*-to-*z* transformations (Fisher, 1915) were non-significant, indicating that the Dutch regression model was applicable to all four samples.

Table 4

Fisher r-to-z transformation assessing significance of the difference between correlation coefficients r_a and r_b

	Dutch Hierarchical Regression Model	Country Hierarchical Regression Model	Fisher Transformation
Hungary (N=235)	$R_a = .58$	$R_b = .60$	P = 0.74 *ns*
Spain (N=394)	$R_a = .55$	$R_b = .56$	P = 0.87 *ns*
Portugal (N=367)	$R_a = .42$	$R_b = .43$	P = 0.87 *ns*
Germany (N=102)	$R_a = .23$	$R_b = .28$	P = 0.70 *ns*

Note. The Hierarchical Regression models included catastrophizing, self-blame, rumination, positive-reappraisal and other-blame as predictor variables and depression scores as the outcome variable.

3.3 Cognitive strategies and anxiety

The linear composite of nine cognitive strategies was significantly related to anxiety scores in all five analyses (see Table 5). There was however variability in the adjusted R^2, indicating that in some countries cognitive strategies accounted for a larger amount of the variance in anxiety scores. The sample multiple correlation coefficients ranged between .14 and .49, indicating that 14 - 49% of the variability in anxiety scores was accounted for by the linear combination of cognitive strategies. In Hungary, the regression model explained the largest amount of variance in the criterion variable (49%), whereas in the Netherlands the least amount (14%). In the significant models the difference between R^2 and adjusted R^2 lay between .02 and .08, meaning that if the models were derived from the population rather than a sample it would explain approximately 2-8% less variance in the criterion variable.

The relative strength of the individual predictors and significance levels of the regression models can be inferred from Table 5. The overall regression models were significant for all countries with coefficients of determination ranging from .14-.49. The direction of the relationships between the significant predictor variables and the criterion were consistent (i.e. self-blame, rumination, and catastrophizing were positively correlated with anxiety). There was great variability in whether or not a certain predictor was significant across the different countries.

Table 5

Summary of Hierarchical Regression Analysis for Variables Predicting Anxiety

	Netherlands (N=301) SCL90		Hungary (N=235) STAI		Spain (N=394) STAI		Portugal (N=367) BSI		Germany (N=102) ASI	
	r	*β*	*r*	*β*	*r*	*β*	*r*	*β*	*r*	*β*
Gender		-.04		.12*		-.01		-.17**		-.05
Age		-.13*		-.04		.01		.3		.12
Catast	.40***	.35***	.52***	.22**	.40***	.24***	.35***	.17**	.31**	.02
Selfbl	.16**	.04	.51***	.21**	.25***	.16**	.26***	.14*	.13	-.03
Rumin	.16**	.06	.50***	.24**	.21***	.12*	.27***	.17**	.41***	.27*
Posreap	-.14*	-.11	-.39***	-.28***	-.30***	-.16*	-.10*	-.04	-.41***	-.27*
Refplan	-.07	-.05	-.23**	-.07	-.21***	-.14*	-.11*	-.17*	-.12	-.05
Refpos	-.04	.02	-.31***	-.08	-.14**	.03	-.09*	-.06	-.29**	-.14
Relat	-.07	.02	-.14*	.04	-.15*	-.01	.03	.06	-.15	.10
Accept	.09	.02	.12	.03	-.01	-.01	.07	.03	-.04	.07
Otherbl	.11*	-.01	.19*	.06	.12**	.00	.24***	.10	.27**	.17
R^2		.14		.49		.21		.20		.24
F		5.13***		16.31***		12.34***		10.13***		4.00***

*p < .05, **p < .01, ***p < .001.
Note: Selfbl= Self-blame; Accept= Acceptation; Rumin= Rumination; Refpos= Positive refocusing; Refplan= Refocus on planning; Posreap= Positive reappraisal; Relat= Putting into perspective; Catast= Catastrophizing; Otherbl= Other-blame.

The most consistent predictors were rumination and catastrophizing. Rumination was predictive of anxiety in four of the five countries (all but the Netherlands) and catastrophizing was predictive of anxiety in four of the five countries (all but Germany). Two predictor variables that had a negative relationship with anxiety scores were refocus on planning and positive reappraisal. Higher refocus on planning scores were related to lower anxiety scores in Spain and Portugal. Higher positive reappraisal scores were related to lower anxiety scores in Hungary, Spain, and Germany.

A cross-validation analysis (Browne, 2000) was used to test whether the relationships between specific cognitive strategies and symptoms of anxiety were consistent with those in the Dutch sample. The following regression model was derived from the Dutch sample and tested across the Hungarian, Spanish, Portuguese, and German sample:

y_i=10.08+(.36*catast)+(.04*selfbl)+(.04*rumin)+(-.11*posreap). A list of the regression weights using only the selected strategies is available upon request. As can be seen in Table

6, all the Fisher *r*-to-*z* transformations (Fisher, 1915) were non-significant, indicating that the

Dutch regression model was applicable to the all four samples.

Table 6

Fisher r-to-z transformation assessing significance of the difference between correlation coefficients r_a and r_b

	Dutch Hierarchical Regression Model	Country Hierarchical Regression Model	Fisher Transformation
Hungary (N=235)	$R_a = .39$	$R_b = .31$	P = 0.33 *ns*
Spain (N=394)	$R_a = .45$	$R_b = .47$	P = 0.73 *ns*
Portugal (N=367)	$R_a = .38$	$R_b = .41$	P = 0.62 *ns*
Germany (N=102)	$R_a = .44$	$R_b = .51$	P = 0.52 *ns*

Note. The Hierarchical Regression models included catastrophizing and positive reappraisal and as predictor variables and anxiety scores as the outcome variable.

4. Discussion

The purpose of this study was to explore cross-cultural differences in cognitive

emotion regulation of young adults. Six independent studies from six European counties (The

Netherlands, Hungary, Spain, Italy, Portugal and Germany) contributed to this study. As

predicted, our study demonstrated that there were systematic differences on all nine cognitive

strategies between the six countries. Furthermore, we found that there were specific strategies

that consistently predicted symptoms of psychopathology (depression and anxiety) across

countries.

People from different cultural backgrounds varied in the extent to which they used

specific cognitive strategies. These findings are in line with comparison studies between

European American and Eastern Asian cultures (Matsumoto, 2006). There were differences

on strategies that have been linked to symptoms of psychopathology; overall northern

European countries (Germany and Netherlands) made less use of strategies such as

rumination, catastrophizing, and other-blame, when compared to southern European

countries. One way of interpreting these results is by looking at cross-national epidemiology

studies of psychopathology (i.e. depression). Taking into account the negative consequences

of using these strategies (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Matsumoto, 2006;

Wong, 2009), one would expect that southern and eastern European countries would have higher lifetime prevalence rates of major depression. Looking at recent literature, these countries do not seem to have higher prevalence rates of depression when compared to northern European countries (Bromet et al., 2011). Future studies should test the relationship between systematic differences in the use of cognitive strategies and national differences in prevalence rates of depression and anxiety more thoroughly.

Our findings show that there are cross-cultural differences in the use of cognitive strategies. Given the cross-sectional nature of our investigation we are not able to conclude how these differences developed; however researchers have argued that these differences can be explained by differences on cultural variables (De Leersnyder et al., 2013). Two cultural variable that might explain the observed differences are Hofstede's cultural dimensions *power distance* and *uncertainty avoidance* (Hofstede, Hofstede, & Minkov, 2010). Power distance refers to the degree to which less powerful people in a culture accept power inequalities, which has been shown to be consistently related to unpleasantness of negative emotions (Basabe et al., 2002; Hofstede et al., 2010). Similarly, uncertainty avoidance, which symbolizes the degree to which people feel threatened by ambiguous situation, has a positive association with emotional unpleasantness (Basabe et al., 2002; Hofstede & Hofstede, 2005). There is evidence that northern European countries score lower on power distance and uncertainty avoidance, which might explain the more adaptive pattern of emotion regulation (i.e. northern European countries making less use of maladaptive cognitive strategies) (Hofstede & Hofstede, 2005). Future studies should measure both cognitive strategies and cultural variables such as Hofstede's cultural dimensions in order to explore how cultural differences influence the use of cognitive strategies.

Our hypothesis that the relationships between cognitive strategies and symptoms of depression would be consistent across countries was partially confirmed. The direction of the

relationships between strategies and depression was consistent, and there seemed to be some strategies (self-blame, catastrophizing, and refocus on planning) that consistently predicted depressive symptoms across countries. At the same time, there were some strategies that were only related to depressive symptoms in certain countries (i.e. positive reappraisal in the Netherlands) and not in others. The same pattern emerged when looking at predictors of anxiety across countries. Again, the direction of relationships between strategies and anxiety symptoms was consistent and there were strategies (rumination and catastrophizing) that consistently predicted anxiety symptoms across countries.

While these last results should to be interpreted with caution, as different countries made use of different measures of psychopathology, we nonetheless obtained additional evidence for the idea that certain strategies consistently predict psychopathology across countries, by using a cross-validation analysis. With this analysis we were able to show that a Dutch regression model successfully predicted depression and anxiety scores in all the tested countries. Combined with previous findings (Aldao & Nolen-Hoeksema, 2010; Garnefski, Koopman, Kraaij, & ten Cate, 2009; Garnefski et al., 2001; Haga et al., 2009) our results suggest that there might be some universally undaptive cognitive strategies (such as catastrophizing and rumination) that consistently predict symptoms of a wide variety of different types of psychopathology. This is an important finding because that means that treatments that target cognitive strategies to treat psychological disorders could be translated to treat patients across different European countries

These ideas are in line with the transdiagnostic school of thought, which suggests that psychotherapy research should be less disorder specific, and rather focus on developing treatments that concentrate on the broader processes which underlie multiple disorders (Aldao & Nolen-Hoeksema, 2010). The idea that there are some strategies (i.e. catastrophizing) that successfully predict depression and anxiety symptoms over different

countries is supported by our findings. Costs could be saved by designing treatment interventions that target a broad range of disorders and that could be translated and used across different countries.

There are some limitations to this study including the cross-sectional study design, which makes inferences about the direction of the relationship difficult. The observed relationships between cognitive strategies and symptoms of psychopathology could be bidirectional—that is not only did maladaptive coping strategies lead to symptoms of psychopathology, but that psychopathology might cause the use of maladaptive strategies. Another limitation of this study is that the data was collected from different independent studies, each of which made use of different procedures and outcome measures. The use of different measures of psychopathology might have introduced problems with construct validity. For example, the depression measure used in the German sample was the PHQ, which is a screening tool rather than an in depth measure of depression (i.e. BDI-II). However, we addressed this problem by ensuring that the majority of studies included, used comparable measures which is reflected in the consistent relationship between cognitive strategies and symptoms of psychopathology. Future research projects should use the same methodology with the same outcome measures in order to improve the validity of the results.

Despite these limitations, there are some important strengths to this study. This was the first study looking at differences in cognitive emotion regulation across different European countries. The authors paid great attention on including only those studies that had comparable samples. The study showed that cognitive strategies play an important role in the development of psychopathology and might be a promising target for treatment in various countries in Europe.

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