

The Mini-CERTS (Cambridge-Exeter Repetitive Thought Scale):

A Short Questionnaire to Assess Constructive and Unconstructive Repetitive Thinking

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### Abstract

This article presents the validation of a short self-report questionnaire assessing rumination, the Mini Cambridge-Exeter Repetitive Thought Scale (Mini-CERTS). This 16 item scale evaluates two dimensions of rumination: “concrete, experiential thinking” (CET), a constructive form of rumination and “abstract, analytical thinking” (AAT), an unconstructive form of rumination. A large sample of adult volunteers filled in the Mini-CERTS. Subsamples also responded to depression, anxiety and general symptomatology questionnaires as well as to the Ruminative Response Scale. Confirmatory factor analysis ascertained the two-dimension structure of the questionnaire. Correlational analyses evidenced differentiated patterns of relation between CET and AAT and the mood and symptomatology scales. AAT was correlated to the brooding scale of the RRS but there was no relation between CET and other scales of the RRS. Preliminary data suggest that the Mini-CERTS is sensitive to clinical status and treatment.

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A Short Questionnaire to Assess Constructive and Unconstructive Repetitive Thinking

Rumination is a mental process characterized by repetitive, prolonged, and recurrent thinking about one's concerns and one's experience (Watkins, 2008). It is often initiated automatically, and may be only partly conscious (McNally, 1995). Rumination constitutes an important precipitating and maintaining factor in psychopathology, especially in mood disorders (Harvey, Watkins, Mansell & Shafran, 2004; Nolen-Hoeksema, 2004). Rumination is even considered by many as the core cognitive process in depression (Nolen-Hoeksema, 2004) and in general anxiety (Borkovec, Alcaine, & Behar, 2004). As such, it is the main target of recent cognitive and behavioural interventions on mood disorders (Watkins & al., 2007).

Research has demonstrated that some forms of rumination are particularly deleterious for mental health. Already two decades ago, studying worry, a form of rumination typical of general anxiety, Borkovec has observed that this pathological ruminative mode mostly consists in verbal and abstract thinking and is poor in imagery (Borkovec & Inz, 1990; Stöber & Borkovec, 2002). In contrast, concrete and imageful thinking has been shown to promote healthy emotional processing (Holmes & Mathews, 2005; Holmes, Mathews, Dalgleish, & Mackintosh, 2006; Lang, 1993). Synthesizing observations of repetitive thinking in mood disorders, Watkins has distinguished two main forms of rumination, one being constructive and the other, unconstructive (Watkins, 2008). Constructive rumination is characterized by a mode of thinking centred on how one is presently feeling and experiencing the ongoing situation. It has been labelled "concrete, experiential thinking" (CET). The unconstructive mode consists in abstract thinking about the causes and consequence of one's mood or condition; it is focused on past and future events rather than on the present moment.

It has been labelled “abstract, analytical thinking” (AAT). A wealth of research has shown that AAT is associated with emotional vulnerability, depressed mood, and poor problem solving abilities. On the opposite, CET is associated with faster positive mood restoration after exposure to a stressor, protection against mood depletion, and good problem solving abilities (for a review, see Watkins, 2008).

The centrality and ubiquity of rumination in psychopathology call for the development of measures of rumination that should gather the following characteristics. First, they should distinguish between constructive and unconstructive modes of rumination, and not be focused exclusively on pathological rumination. As developed above, the literature has clearly established that different modes of rumination might bare opposite consequences for psychopathological processes, some mode being deleterious to mental health, other being protective or even fostering recovery. For research as well as for clinical purposes, an assessment of rumination would be incomplete, would it consider only one mode. Second, measures of rumination should be transdiagnostic, i.e. they should tap fundamentals of ruminative thinking that appear to be constructive or unconstructive across disorders and that are not peculiar to one specific condition, such as depression or generalized anxiety. Third, they should be sensitive to clinical condition and to therapeutic change. In particular, they should be sensitive to therapeutic intervention targeting rumination. Finally, in order to be easily used in clinical practice, such measures of rumination should be short and easy to administrate.

Several measures of rumination can be found in the literature. A widely used scale in depression research is the Ruminative Response Scale (RRS), which is part of the Response Style Questionnaire (RSQ; Nolen-Hoeksema & Morrow, 1991). The RRS, originally a 22-item scale latter reduced to 10 items, distinguishes “brooding” defined as a passive

comparison between one's present situation and unfulfilled standards, and "reflection" that is a voluntary introspection to actively cope with the situation in order to alleviate depressive symptoms (Treynor, Gonzalez, & Nolen-Hoeksma, 2003). Brooding is particularly associated with depressive symptoms and is positively correlated with depression two years later, while reflection is slightly predictive of depression remission (Treynor et al., 2003). The RRS has the merits to distinguish two modes of rumination, to be predictive of depression and to be short and easy to administer. However, one limitation of this scale is that it specifically targets rumination in the context of depression. The instructions of the questionnaire (focusing on sadness) as well as the items proposed are not relevant for anxious rumination such as worry. This latter type of rumination is the specific target of the PennState Worry Questionnaire (PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990). However, this unidimensional 16-item scale does not consider constructive modes of rumination and is not suited for evaluating depressive types of rumination, as it specifically focuses on the intensity of worry. Similarly, the Worry Domains Questionnaire (WDQ; Tallis, Eysenck, & Mathews, 1992) evaluates worry in six domains, but does not consider constructive modes of rumination, or other form of rumination than anxious worrying.

Recently, Barnard, Watkins, McKintosh and Nimmo-Smith (2007) have attempted to develop a questionnaire that would assess multiple facets of rumination, the Cambridge Exeter Repetitive Thought scale (CERTS). This 84-item scale consists in three parts: The first assesses the contexts of rumination, the second questions whether the respondents evaluate their ruminative thinking functional or not, and the third focuses on the ruminative processes. This scale has the merits to consider different modes of rumination and to be clearly transdiagnostic. However, it is long to administer and the factorial structure of the third part is not satisfactorily stable.

To overcome these weaknesses and to propose a scale assessing rumination and fulfilling to the four criteria mentioned above we extracted from the last part of the CERTS the 16 items that would better reflect CET and AAT, thus creating the “mini-CERTS”. In order to validate this new scale, we submitted it to a large sample, together with other scales assessing either depression, anxiety, or psychopathological symptoms. The RRS was also used to examine convergent validity.

## Method

### Participants

Participants were recruited by three different means. A snow-ball strategy was used by the authors and their students to collect 157 protocols in a general French-speaking population in France and Belgium (sub-sample 1). The inclusion criteria were to be between 18 and 75 years of age and to have no known neurological disorders. Fifty-four additional participants were recruited among a French-speaking student population from a large Belgian university (sub-sample 2). Finally, 41 participants were recruited among French-speaking adults who applied for a personal development program (mindfulness training) at a university psychological service (sub-sample 3). The total sample is thus constituted by 252 adults participants (143 women and 109 men). Mean age was 31.73 ( $SD=14.46$ ). Characteristics of the total sample are presented in Table 1.

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Insert about here Table 1.

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### Questionnaires

**Mini-CERTS.** A short form of the Cambridge Exeter Rumination Thinking Scale (CERTS; Barnard, Watkins, Mackintosh, & Nimmo-Smith, 2007) was adapted in French. On

the basis of a factor analysis performed on a large British sample of the full original scale, 16 items were selected as the one with the highest factor loading on constructive (7 items) and unconstructive (9 items) modes of thinking. Selected items were translated and back translated by bi-lingual professionals with a Ph.D. in psychology. Inconsistencies in translation were discussed and resolved with the authors of the original scale. The items were rated on a 1-4 scale (*1 = almost never, 4 = almost always*). Participants were instructed to rate the items in order to reflect how they typically think when they are confronted to a difficult situation. The French and English versions of the Mini-CERTS can be examined in Appendix 1.

***Other questionnaires.*** The global score index (GSI) of the Symptom Check-List-90-R (SCL-90-R; Derogatis, 1977) was used to assess the level of psychopathological symptoms. The State Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) and the Beck Depression Inventory (BDI; Beck & Steer, 1987; Beck, Steer, & Brown, 1998) were used to assess the level of anxious and depressive symptoms, respectively. Finally, the Ruminative Response Scale (RRS; Treynor et al., 2003) was used as a convergent measure of rumination.

#### Procedure

Participants filled in the questionnaires individually and in a quiet room, either at home or in a university laboratory. According to the subsample, participants fill in additional questionnaires to the Mini-CERTS. All participants of sub-sample 1 filled in the BDI-II. In addition, 60 of them completed the STAI and the 97 other completed the RRS. Participants from sub-sample 3 also responded to the SCL-90R.

#### Results

Preliminary analyses revealed seven univariate outliers ( $z < 3$ ) and two multivariate outliers (Mahalanobis distance:  $\chi^2(16) > 39.25$ ; see Tabachnik & Fidell, 2003). These participants were excluded from the subsequent analyses.

In order to examine the factorial structure of the Mini-CERTS, the 16 items selected from the CERTS were submitted to a two-factor –CET and AAT–confirmatory analysis using the software LISREL 8.80 (Jöreskog & Sörbom, 2006). Preliminary Mardia’s test (Mardia, 1974) indicated that the hypothesis of multivariate normality cannot be sustained (Mardia coefficient = 295.93,  $p < .01$ ). Therefore, conventional methods of estimation cannot be used safely (Byrne, 2001). Consequently, we used the unweighted least squares (ULS) estimation method because this estimation, unlike the maximum likelihood estimation, does not require the assumption of multivariate normality (Blunch, 2008). As the Chi-square is not applicable with the ULS method (Browne, 1982), the fit of the present model was evaluated according the following indices: the goodness of fit Index (GFI), the adjusted goodness of fit (AGFI), the parsimony goodness-of-fit index (PGFI), and the parsimony ratio (PRATIO). Criteria for acceptable model fit were GFI and AGFI  $> .90$  (Cole, 1987), and PGFI and PRATIO  $> .60$  (Blunch, 2008). The two-factor model fit the data well, with GFI = .95, AGFI = .94, PGFI = .72 and PRATIO = .76. As shown in Table 2, all items in the model had ULS coefficients of more than .47 on their respective factors with the exception of item 5 (“I judge myself against my own standards and beliefs”) which had a weak coefficient on the AAT factor and in an unexpected direction (-.13). Therefore, we decided to compute the analysis again without this problematic item. This new analysis resulted in a GFI of .96, an AGFI of .94, a PGFI of .71 and a PRATIO of .74. Both model had acceptable fit indices.

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Insert about here Table 2.

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In order to evaluate the reliability of the Mini CERTS, internal consistency was assessed with Cronbach's  $\alpha$  coefficients (Cronbach, 1956). Coefficients for the AAT (.75) and for the CET (.77) scales indicated an acceptable internal consistency. However, the  $\alpha$  was better for the AAT computed without item 5 (.80). Consequently, we decided to suppress this item from the scale in the subsequent analyses.

Spearman correlations between subscales and the other measures were computed. AAT and CET scales were significantly intercorrelated,  $r_s = -.27$ ,  $p < .001$ . As expected, AAT was positively correlated with the BDI,  $r_s = .48$ ,  $p < .001$ , the STAI-trait,  $r_s = .48$ ,  $p < .001$ , and STAI-state,  $r_s = .31$ ,  $p < .05$ , and the SCL90-R,  $r_s = .57$ ,  $p < .001$ . CET showed small albeit significant negative correlations with the BDI,  $r_s = -.19$ ,  $p < .05$ , the STAI-trait,  $r_s = -.29$ ,  $p < .05$ , and the STAI-state,  $r_s = -.28$ ,  $p < .05$ . CET was marginally correlated with SCL-90-R,  $r_s = -.29$ ,  $p < .06$ . Finally, as expected, the AAT scale showed a good convergent validity with the RRS-brooding scale,  $r_s = .69$ ,  $p < .001$  but was not correlated with the RRS-reflection scale,  $r_s = .15$ ,  $ns$ . The CET was correlated nor with the RRS-brooding,  $r_s = .00$ ,  $ns$ , nor with the RRS-reflection,  $r_s = .14$ ,  $ns$ .

### Discussion

The aim of the present study was to validate a short questionnaire that would capture ruminative thinking in a diversity of situations (i.e. that would not target specifically depressive or anxious responses) and that would distinguish between constructive and unconstructive modes of rumination. The confirmatory factor analysis clearly establishes that the Mini-CERTS is constituted by two dimensions, one reflecting constructive thinking (CET) and the other unconstructive thinking (AAT). The two scales are moderately and negatively correlated, suggesting that the modes are partly competing with each other. It suggests that activating constructive rumination might inhibit unconstructive rumination and vice versa.

This is consistent with experimental and clinical observations (Ref). However, the correlational nature of the present data calls for caution in interpreting these results.

The internal consistency of these dimensions, as measured by Cronbach's  $\alpha$ , is good. The external validity is attested by the observations that AAT is positively related to depression and anxiety, while CET shows the opposite pattern. The strong correlation between AAT and the RRS brooding scale shows convergent validity of these scales. Interestingly, the CET is not correlated with the RRS reflection scale. While the CET has clearly been designed as a constructive thinking scale—and its constructive nature is supported by the negative correlations with psychopathological symptoms, the status of the RRS reflection scale is more ambiguous. Indeed, it is positively associated with present depressive symptoms but slightly predictive of depression remission at a 2 year follow up (Treyner et al., 2003). Overall, these findings suggest that CET might better capture a constructive form of rumination than the RRS reflection scale.

While the present data offer no information regarding the sensitivity of the Mini-CERTS to clinical status and clinical change, several recent studies that used the Mini-CERTS suggest interesting qualities of the questionnaire in these respects. Regarding sensitivity to clinical status, DiSclena, Luminet, and Philippot (2010) have observed that AAT was clearly associated with difficulties in identifying feelings, a subdimension of alexithymia particularly predictive of psychopathological problems. In contrast, CET was negatively associated with externally oriented thinking, another dimension of alexithymia. Also, Douilliez and Philippot (2010) have observed that pathological perfectionists scored higher on the AAT and lower on the CET than non perfectionists. DiSclena, Luminet, Philippot, and Douilliez (2010) replicated these observations in a dimensional study of perfectionism and rumination. Regarding sensitivity to clinical change, Heeren and Philippot

(2010) have observed that both the CET and the AAT were modified by a 8 weeks psychological intervention based on MBCT (Segal, Williams, & Teasdale, 2002). Not only CET increased and AAT decreased following that intervention, but also these changes in ruminative thinking partially mediated psychopathological symptoms reduction induced by the intervention.

In sum, the Mini-CERTS is a short questionnaire, easy to use in clinical as well as in research settings. It captures the constructive and unconstructive dimensions of rumination in any contexts in which individuals are confronted with difficulties. Preliminary data suggest that it is sensitive to clinical status and clinical change.

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Table 1. Sample Characteristics

Variables	n	M	SD
Mini-CERTS-UR	243	18.93	4.63
Mini-CERTS-CR	243	17.06	3.71
BDI-II	148	8.60	6.90
STAIA	56	35.57	9.45
STAIB	56	45.51	7.94
SCL-90-R	41	0.94	0.56
RRS-Brooding	91	10.26	2.94
RRSR-Reflection	91	5.52	0.28

Tableau 2

	Unconstructive rumination factor	Constructive Rumination factor
Item 1	.60	
Item 2		.61
Item 3	.72	
Item 4		.75
Item 5	-.13	
Item 6	.46	
Item 7	.56	
Item 8		.60
Item 9		.51
Item 10	.66	
Item 11		.50
Item 12	.55	
Item 13		.50
Item 14	.45	
Item 15	.64	
Item 16		.51



### Appendix 1: French and English version of the Mini-CERTS

Lisez chacune des propositions présentées ci-dessous, puis sélectionnez, à l'aide d'une croix, la case qui décrit aux mieux ce que vous vivez habituellement. Ne passez pas trop de temps à répondre, c'est votre première impression qui est importante.

« Quand des pensées à propos de moi, de mes sentiments ou de situations et d'évènements vécus me viennent à l'esprit ... »

Presque jamais	Parfois	Souvent	Presque toujours
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1. Mes pensées sont prises dans une ornière, revenant toujours aux mêmes thèmes
2. Je peux comprendre et répondre aux changements de manière intuitive, sans devoir analyser tout en détails
3. Je me compare aux autres personnes
4. J'y pense de manière ouverte, libre et créative
5. Je me juge en fonction de mes valeurs et de mes croyances personnelles
6. Je me concentre sur la question de savoir pourquoi les choses se sont passées de cette manière là
7. Je me demande pourquoi je n'arrive pas à me mettre en action
8. Mes pensées se développent dans des directions nouvelles et intéressantes
9. Je semble être immergé(e) dans l'action et en contact avec ce qu'il se passe autour de moi
10. Je pense que je ne suis bon(ne) à rien
11. J'aime me laisser aller à suivre le flux de mes pensées spontanées
12. Je me sens sous pression d'empêcher que mes pires craintes se réalisent
13. Je me concentre sur le fait d'explorer et de jouer avec les idées, curieux (se) d'où elles peuvent me mener

14. Mes pensées ont tendances à fuser à partir d'un événement spécifique vers des aspects plus larges et généraux de ma vie

15. Je m'en fais de ce que les autres pourraient penser de moi

16. J'ai très rapidement des impressions et des intuitions de ce qui se passe et de comment réagir

Read each item and then decide how you generally respond. Please put ONE tick for each row. Don't agonise over individual answers, give the first response to each line that comes to mind.

When thoughts about myself, feelings, situations or events do come to mind:

<b>Almost Never</b>	<b>Some-times</b>	<b>Often</b>	<b>Almost Always</b>
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1. My thinking tends to get stuck in a rut, involving only a few themes
2. I can grasp and respond to changes in the world around me without having to analyze the details
3. I compare myself to other people
4. My thinking tends to become open, loose, expansive and creative
5. I judge myself against my own standards and beliefs
6. I focus on why things happened the way they did
7. I think about why I can't get started on something
8. My thoughts move in new and interesting directions
9. I seem to be engaged in and directly in touch with what is going on around me
10. I think I'm no good at all
11. I'm relaxed about going with the flow of what comes to mind

12. I feel under pressure to stop my worse fears happening

13. I focus on exploring and playing with ideas, curious about where it will lead

14. My thinking tends to spiral out from one specific event to broader, general aspects of my life

15. I am concerned about what other people might think of me

16. I have very rapid impressions and intuitions of what is happening around me