

VALIDATION OF THE RUMINATIVE RESPONSES SCALE ON THE ROMANIAN POPULATION - GENDER DIFFERENCES IN RUMINATING RESPONSES

DOI: <https://doi.org/10.26758/14.1.10>

Cătălin LAZĂR (1), Cornelia RADA (2), Cristian-Nicolae CONSTANTIN (3), Camelia POPA (4)

(1) (3) PhD student, School of Advanced Studies of the Romanian Academy. Institute of Philosophy and Psychology "Constantin Rădulescu – Motru", Romanian Academy, Romania

(2) "Francisc I. Rainer" Institute of Anthropology, Romanian Academy, Bucharest, Romania, e-mail: corneliarada@yahoo.com

(4) Institute of Philosophy and Psychology "Constantin Rădulescu – Motru", Romanian Academy, Romania, UNATC "I. L. Caragiale" Bucharest, e-mail: popa_zazon@yahoo.com

Address correspondence to: Cătălin Lazăr, School of Advanced Studies of the Romanian Academy, "Constantin Rădulescu-Motru" Institute of Philosophy and Psychology, Department of Psychology, Romanian Academy, 13 September Avenue, No. 13, 5th District, Bucharest, 050711, Romania. Ph.: +40-742952171; E-mail: catalazar@gmail.com

Abstract

Objectives. The objectives of the study were to develop the Romanian version of the RRS-22 Ruminative Response Scale, thus initiating the process of validating it and exploring gender differences in ruminative-depressive responses with the help of this instrument.

Material and methods. The scale was translated by two English translators. The two variants were compared in order to preserve the semantic content of the items, and the Romanian version of the scale was finalized. Subsequently, the scale was applied to N = 372 participants. Exploratory and confirmatory factor analyses were performed, and internal consistency, convergent validity, and divergent validity were assessed. Gender differences in ruminative-depressive responses were explored.

Results. The criteria required to validate the RRS instrument for the Romanian population have been satisfied. The scales associated with the three latent factors showed satisfactory internal consistency. Its use revealed significant differences between women and men, in favor of women, both in terms of total rumination scores and in terms of the reflection and brooding factor scores. There were also highly significant differences between women and men regarding ruminative themes assessed by the RRS-22.

Conclusions. The Romanian version of the RRS-22 scale proved to have good psychometric properties. Its application confirmed the results of international studies carried out with the help of this instrument, according to which there are important differences between women and men in the

way of coping with a negative mood, expressed through ruminative responses. The tendency to engage in rumination in response to distress is much more pronounced in women.

Keywords: rumination, depression, gender, brooding, reflection.

Introduction

Ruminative responses are negative thoughts that focus the individual's attention on depression, its symptoms, and possible negative consequences of depression, such as the inability to achieve something (Nolen-Hoeksema, 1991).

These responses constitute a special style of relating to reality, a depressive emotional focus that negatively affects all major areas of the psyche (cognitive, emotional, social, motivational value, and self-regulation) and, implicitly, human functioning.

Ruminative responses involve a focus on the affected emotional state, which monopolizes the field of consciousness and restricts the possibility of actively solving the problems facing the individual. In other words, they exacerbate depression—they produce negative cognitions that interfere with instrumental behavior and prevent the individual from calming down.

Distracting individuals with ruminative responses by engaging in activities has been found to produce large decreases in depressive affect, and a ruminative focus on self and mood is not itself depressing but may prolong an existing depressed mood (Nolen-Hoeksema, 1991, 2004).

According to most researchers, rumination is a major vulnerability in depression that increases the duration of depressive episodes. Ruminative responses are considered predictors of the severity of clinical depression (Watkins, 2004; Spasojević & Alloy, 2001; Nolen-Hoeksema, 2000; Kuehner & Weber, 1999; Just & Alloy, 1997).

Pyszczynski and Greenberg (1987) argued that ruminative responses have an individual axiological component. Failures, frustrations, and losses prompt individuals to turn inward to assess whether they are meeting important personal goals and values. Specifically, they evaluate the discrepancy between their ideal self and their actual self, and if this cannot be reduced, they remain self-focused.

Rumination exacerbates depression by magnifying the effects of a depressed mood on thinking, hindering effective problem-solving, impairing instrumental behavior, and diminishing social support (Nolen-Hoeksema, 2004).

According to Watkins and Roberts (2020), rumination exacerbates all forms of psychopathology by acting as an emotional magnifier. Simultaneously, rumination reduces problem-solving abilities. It is characterized by negative, self-critical, pessimistic thinking, which makes problems appear more severe and unsolvable (Lyubomirsky, Tucker, Caldwell, & Berg, 1999).

Lyubomirsky, Kasri, and Zehm (2003) found that rumination impacts instrumental behavior by diminishing concentration ability. Other authors suggest that rumination inhibits instrumental behavior by increasing uncertainty, consequently undermining an individual's confidence in executing their plans (Ward, Lyubomirsky, Sousa, & Nolen-Hoeksema, 2003).

Several studies have indicated that individuals who engage in frequent rumination tend to miss events in their surroundings, demonstrating reduced sensitivity and responsiveness to contextual cues (Tester-Jones, O'Mahen, Watkins, & Karl, 2015; Stein et al., 2012). These findings have been attributed to the abstract thinking style associated with rumination (Watkins & Roberts, 2020). Moreover, research has shown that women are more prone to rumination and emotional focus than men when experiencing sadness or depression. Rumination is thus considered part of a triad contributing to women's vulnerability to depression, along with chronic stress and a sense of low

control over their lives (Nolen-Hoeksema, Larson, & Grayson, 1999; Butler & Nolen-Hoeksema, 1994).

Materials and methods

The 22-item Ruminative Response Scale (RRS) was developed by Nolen-Hoeksema and Morrow (1991) as a subscale of the Response Styles Questionnaire (RSQ). It is the most widely recognized self-report measure of rumination, employed in both research on general populations and clinical practice with individuals exhibiting depressive symptoms. It boasts stable reliability and validity and has garnered international recognition for its strong psychometric properties, having been translated into several languages, including German, Dutch, Japanese, Turkish, and widely used in English (Erdur-Baker & Bugay, 2012). The RRS scale is supported by a well-established theoretical model and substantiated by numerous empirical studies (Roelofs, Muris, Huibers, Peeters, & Arntz, 2006).

The RRS-22 items, designed to assess symptom-based rumination, introspection/self-focus, and the causes and consequences of one's own affect, describe potential responses to depressive states and depressive symptoms and are rated on a 4-point Likert-type scale (Nolen-Hoeksema, 2000).

Some responses are self-focused (e.g., "You think about how lonely you feel"), while others concentrate on symptoms (e.g., "You think, 'I won't be able to concentrate if I continue to feel this way'"), and still, others reflect on the possible ramifications of their negative state of mind ("You think, 'I won't be able to do my job if I don't get out of this'").

Analyzing the congruence with items specific to depression assessment instruments, Treynor, Gonzalez, and Nolen-Hoeksema (2003) categorized the RRS items into three factors: depression, reflection, and brooding. Their analysis revealed that these factors exhibit distinct associations with depression and contributed to the development of a shorter version of the scale, comprising items specific to the reflection and brooding factors, with the latter elucidating the mediating role of rumination in the connection between gender and depression.

Regarding the overlap between the items of the depression factor composition and those of depression assessment tools, it is speculated that this overlap may be attributed to shared wording elements rather than an intrinsic relationship between the constructs.

The psychometric properties of the 22-item scale have been examined in both normal and clinical populations, including individuals with depression, demonstrating its robust validity across numerous studies.

Luminet (2004) reported very high internal consistency for the scale (0.88–0.92) and good test-retest reliability. Additionally, the RRS-22 scale has demonstrated predictive validity concerning the development of depression.

Furthermore, in the context of research conducted on the Romanian population, the RRS-22 scale exhibited satisfactory internal consistency, yielding a Cronbach's alpha coefficient of 0.951.

With respect to gender disparities, studies utilizing various versions of the RRS have consistently shown that women engage in more rumination than men when experiencing depression (Butler & Nolen-Hoeksema, 1994; Nolen-Hoeksema, Larson, & Grayson, 1999).

Moreover, Johnson and Whisman's (2013) meta-analysis, encompassing studies employing rumination rating scales, including the RRS, revealed that women scored higher than men in rumination, reflection, and brooding.

Utilizing the RRS scale, therefore, proves to be instrumental in advancing the comprehension of the connection between rumination and depression, particularly given the twofold increase in the prevalence of major depressive disorder among women (Nolen-Hoeksema, 2002).

Erdur-Baker and Bugay (2012) mentioned the need for cross-validation of psychometric instruments. In this context, the results of applying the scale to the Romanian population contribute to the extension of the cross-cultural validation of the RRS scale.

To achieve the first objective of the study, the validation of the Romanian version of the RRS-22 Ruminative Response Scale, we followed a rigorous translation process. Two English translators independently translated the scale, and the two variants were compared to ensure the preservation of the semantic content of the items. Any differences between the translations were thoroughly discussed, and a finalized Romanian version was established. Subsequently, a Romanian-English retroversion was conducted, with no differences in meaning compared to the original English version.

The scale was administered to a sample of 372 participants, comprising 289 women and 83 men. Participants completed an anonymous internet survey in which the RRS-22 scale was distributed via social media. Exploratory and confirmatory factor analyses were performed and the internal consistency, convergent validity, and divergent validity were assessed.

For the second objective of the study, exploring gender differences in ruminative-depressive responses, the two samples of 289 women and 83 men were compared. Given that the scores for the depression, reflection, and brooding subfactors, as well as the total RRS score, did not exhibit a normal distribution, we employed the nonparametric Mann-Whitney "U" test for independent samples to test the hypotheses.

Results

The Romanian adaptation of the RRS-22 scale demonstrated favorable psychometric properties, with a Cronbach's alpha coefficient of .951. Among the 372 participants in the study, there were individuals exhibiting high levels of symptoms related to rumination and its subfactors, as well as individuals with low levels of rumination (with a standard deviation of 14.02 for total rumination scores and 8.20 for the depression subfactor).

► Exploratory and Confirmatory Factor Analysis

All the 22 items of RRS have been analyzed in a formal 3 factors exploratory factor analysis (EFA), mainly to assess the KMO (Kaiser-Meyer-Olkin) value and Bartlett's test. The overall KMO value was 0.954, and all the KMO values for each item were higher than 0.850. Bartlett's test of sphericity was significant ($p < 0.001$).

If the p-value from Bartlett's test of sphericity is lower than our chosen significance level (common choices are 0.05 and 0.01), then the dataset is suitable for a data reduction technique. The Kaiser-Meyer-Olkin measure of sampling adequacy is a statistic that indicates the proportion of variance in observed variables that might be caused by underlying factors. High values (close to 1.0) generally indicate that a factor analysis may be useful with the analyzed data. If the value is less than 0.50, the results of the factor analysis probably won't be very useful.

Based on the above findings, a confirmatory factor analysis (CFA) was used to assess the three-factor ruminative model as proposed by Treynor, Gonzalez, and Nolen-Hoeksema (2003): the *Depression* factor with 12 indicator variables, *Reflection* with 5 indicators, and *Brooding* also with 5 indicators. Analysis was performed with Jamovi, a free statistical software based on the R statistical

language. The DWLS estimation method was used due to the category nature of the data, a Likert scale with 4 levels.

The scales associated with the three latent factors showed a satisfactory internal consistency, with both alpha and omega indices over 0.7. The Average Variance Extracted (AVE), which assesses the degree of shared variance between the latent variables of the model, was above the acceptable value of 0.5, indicating a satisfactory convergent validity. See Table 1.

Table 1.
Reliability indices

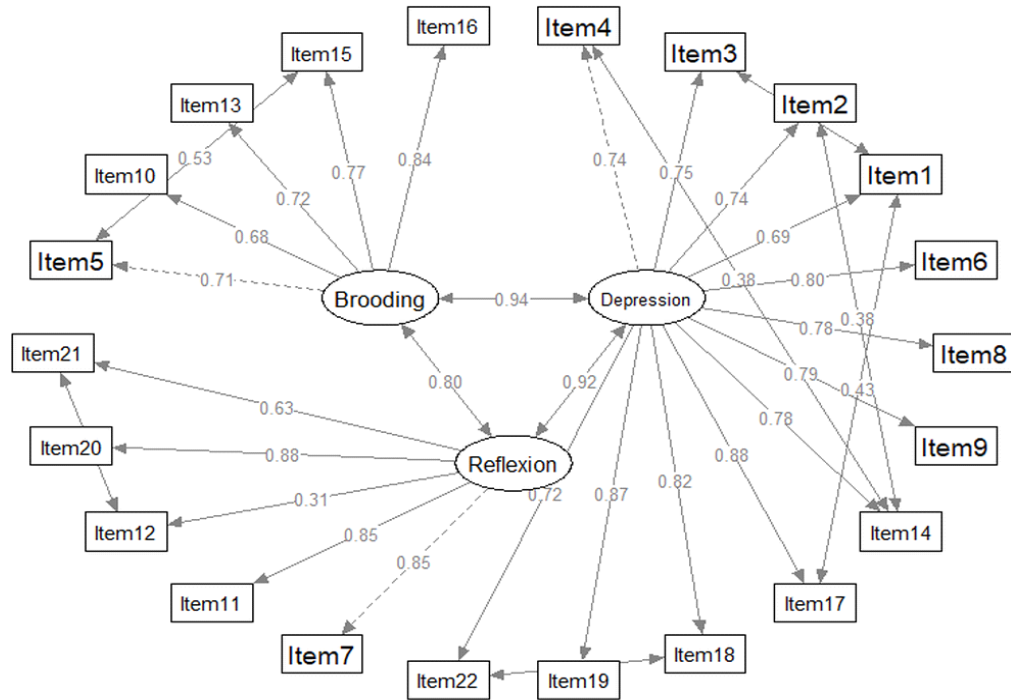
Scale	α	Ordinal α	ω_1	ω_2	ω_3	AVE
Depression	0.931	0.949	0.914	0.914	0.926	0.611
Reflexion	0.808	0.847	0.795	0.795	0.782	0.542
Brooding	0.832	0.864	0.785	0.785	0.798	0.556

Composite Reliability (CR) values were also satisfactory, above 0.7, respectively: 0.926 for Depression, 0.782 for Reflexion, and 0.798 for Brooding, indicating that convergent validity was supported in the dataset. The structural equation model with three factors performed well, showing good fit indices: CFI =.996, TLI =.995, RMSEA =.05 (pRMSEA =.462). All the regression coefficients (factor loadings) were statistically significant ($p < .001$), with almost all beta values over 0.6. However, the beta value for item 12 of the Reflexion scale (*“Write down what you are thinking and analyze it”*) was only 0.313. This item probably should be removed from the questionnaire.

The invariance of the model was tested for two group types: gender (male versus female) and relation (having a relation versus no relation), and it was concluded that scalar invariance was supported in the dataset. Finding scalar invariance ensures that any statistically significant changes in group means are not caused by variations in scale properties at various groups and supports multi-group comparisons of factor means (e.g., t-tests or ANOVA).

The discriminant validity was assessed using the heterotrait-monotrait ratio of the correlations (HTMT) criterion. HTMT values close to 1 indicate a lack of discriminant validity. Using the HTMT as a criterion involves comparing it to a predefined threshold. If the value of the HTMT is higher than the 0.85 threshold, one can conclude that there is a lack of discriminant validity. The HTMT value of 0.926 for Depression versus Brooding latent factors was higher than the threshold and indicated a discriminant validity problem. The graphical representation of the CFA model is presented in Figure 1 (next page).

Figure 1 – RRS Romanian Structural Model



► **Gender differences**

Statistical analysis revealed significant gender differences ($p < .05$) for both total rumination scores and the reflection and brooding subfactors. As presented in Table 2, there were no gender differences observed in depression subfactor scores. These findings suggest that rumination, specifically related to reflection and brooding, might be a central symptomatology of female depression.

Table 2
Gender differences in rumination

Rumination Subfactors	Total (n=372)	Women (n=289)	Men (n=83)	p
Depression	22.17	22.61	20.64	.124
Reflection	9.21	9.52	8.14	.001
Brooding	10.02	10.30	9.04	.015
RRS total score	41.40	42.42	37.82	.016

Gender differences also appear in ten of the 22 ruminative themes of the RRS, as presented in Table 3.

Table 3 *Gender differences in ruminative themes*

Ruminative themes	Total lot (n=372)	Women (n=289)	Men (n=83)	p
1. Think about how alone you feel	1.89	1.94	1.70	.034
2. Think about how you don't seem to feel anything anymore	1.63	1.68	1.43	.011
3. Think about how sad you feel	1.82	1.90	1.57	.003
4. Think about all your shortcomings, failings, faults, mistakes	2.04	2.10	1.83	.025
5. Analyze recent events to try to understand why you are depressed	2.11	2.19	1.86	.012
6. Go away by yourself and think about why you feel this way	1.72	1.78	1.54	.011
7. Analyze your personality to try to understand why you are depressed	1.98	2.07	1.64	.001
8. Think about a recent situation, wishing it had gone better	2.45	2.51	2.24	.007
9. Think "Why do I have problems other people don't have?"	1.68	1.75	1.42	.023
10. Think "Why can't I handle things better?"	2.09	2.16	1.83	.006

Discussions

Most of the criteria required to validate the RRS instrument for the Romanian population have been satisfied; however, some issues must further be addressed to improve the performances and validity. For instance, item 12 having a low loading on the *Reflexion* scale must be removed or revised in Romanian. Discriminant validity (HTMT) is problematic.

Special attention must be paid to the high correlations between the items on different scales, which might influence the discriminant validity. For example, items 1 with 11 and 17 with 11 were highly correlated.

Due to the above problems, it will be necessary to consider the adaptation of a condensed version of the RRS in Romania. Condensed versions have also been proposed by researchers from countries such as China (Lei et al., 2017), Colombia (Ruiz et al., 2017) and Spain (Hervás, 2008). Only two scales should be covered in the condensed version: *Brooding* and *Reflection*. With just ten items, this RRS original-derived measure has demonstrated exceptional psychometric qualities.

To assess the negative emotional states of depression, anxiety, and stress, the DASS-21 questionnaire—which has been validated in Romania—should be used in conjunction with the RRS short form.

The results obtained from the Romanian group regarding the presence of gender differences in rumination, favoring women, are consistent with both the findings of the scale's author and those of other researchers. Response Styles Theory, from its inception, predicted higher levels of ruminative responses in women compared to men, thereby offering an explanation for the higher prevalence of depressive disorders in women (Nolen-Hoeksema, 1991, 2002).

In our sample of $N = 372$ participants, significant differences emerged between women and men concerning ten distinct ruminative themes.

The initial four ruminative themes, which fall within the depression subfactor, revolve around loneliness, profound emotional numbness, sadness, self-blame, and loss, all of which serve as central facets of the clinical diagnosis of depression. These differences strongly favor women. However, it's noteworthy that, when considering the depression subfactor as a whole, there is no statistically significant difference between genders.

The subsequent three themes, within the realm of the reflection subfactor, pertain to comprehending events, self-exploration in solitude, and self-assessment, and once again, they exhibit significant differences in favor of women. These themes represent an acknowledgment of one's own limitations and an appeal to reason to counterbalance the destabilizing emotions of one's personality and behavior. Moreover, they serve as factors of resilience in the context of depression. Research has demonstrated that reflection, as a ruminative subfactor, is protective and does not exacerbate depression (Nolen-Hoeksema, Morrow, & Fredrickson, 1993).

The final three themes, in which women outscore men, involve the reliving of traumatic events, a perceived inability to solve problems personally, and a sense of implacability regarding one's own fate. These themes fall within the domain of the brooding subfactor, which is considered a risk factor for the prolongation or exacerbation of depression.

As early as 1991, when the scale was originally developed, Nolen-Hoeksema demonstrated that women tend to engage in ruminative responses more often than men when experiencing depression. This tendency amplifies their symptoms and extends the duration of their depressive episodes. In contrast, men tend to distract themselves from their depressed mood, thereby reducing their symptoms. These findings were subsequently supported by additional studies conducted by the same researcher. These studies indicated that men are less inclined to self-focus following a negative event, whereas women are more likely to self-induce a negative mood. However, men often employ potentially harmful distraction mechanisms, such as alcohol consumption, to cope with emotions and hopelessness and to prevent ruminative responses.

A meta-analysis conducted by Johnson and Whisman (2013), which involved 14,321 participants, revealed that women scored higher than men on measures of Rumination, Brooding, and Reflection. Although these gender differences in rumination were statistically significant, the effect sizes were small. Given women's increased propensity to ruminate on their depressive symptoms and distress, they also exhibit approximately twice the rates of depression, as previously indicated.

However, the magnitude of gender differences in rumination varied across studies. Notably, significant differences in rumination emerged not only with the RRS-22 scale but also with its abbreviated version, the RRS-10. Lei et al. (2017) administered the simplified 10-item form to a sample of $N = 5,236$ participants and found that women engaged in more rumination than men regarding the potential causes of their mood, which had a greater impact on the alleviation of depressive states. Moreover, they established the gender invariance of the scale and demonstrated its acceptability across genders.

Researchers studying differences in ruminative response styles between women and men have concluded that these differences may partly account for the gender gap in adult depression, with women experiencing more than twice the incidence of the disorder.

Upon conducting a critical review of the determinants of gender differences in depressive disorders, Nolen-Hoeksema and Jackson (2001) determined that gender disparities in rumination cannot be attributed solely to differences in distress levels, emotional expressiveness, or the

inclination to provide socially desirable responses. According to their analysis, gender differences in depression and rumination may be linked to adverse childhood experiences, early experiences with depression and anxiety, sociocultural roles associated with adverse experiences, and psychological vulnerabilities. However, these aspects have yet to be thoroughly explored from a gender perspective.

Current research trends tend to overlook observed gender differences. Women tend to experience internalizing depression spectrum disorders and pre-existing anxiety disorders, while men are more prone to externalizing issues, such as binge drinking, antisocial personality, and substance abuse.

Conclusions

This study has demonstrated that the RRS-22 Rumination Response Scale exhibits favorable psychometric properties and strong internal consistency following its translation and adaptation for use with a Romanian population. Its administration to a sample of 372 participants revealed significant gender-based differences, with women scoring higher than men, both in terms of total rumination scores and scores on the reflection and brooding factors.

The findings of this study hold practical implications for clinical psychologists and psychotherapists working with individuals experiencing depression characterized by elevated levels of ruminative responses. Understanding the distinct patterns of reporting depressive symptoms and the consequences of traumatic events, as reflected in ruminative themes based on gender, provides valuable research evidence for practitioners. Such insights can aid in the normalization of ruminative tendencies and the reduction of the magnitude of depressive symptoms.

Several limitations of this study should be acknowledged. Firstly, the data relied on subjective self-reports. Additionally, the use of convenience sampling restricts the generalizability of the findings. Furthermore, the gender distribution among the subgroups was imbalanced, with a higher proportion of women participating in questionnaire completion. In future research, we propose an expansion of the instrument's validation, including a thorough examination of all psychometric properties, on a larger and more gender-balanced population. This should involve exploring the invariance of the RRS and its application in clinical populations, as well as the examination of ruminative responses among specific subgroups, such as those categorized by age, education, and marital status, among others.

In conclusion, this study underscores that rumination represents an ineffective coping mechanism for dealing with negative emotional states. Ruminative responses are implicated in the initiation and perpetuation of depression and have also been associated, through research findings, with symptoms of various other disorders, including anxiety, binge eating, addiction, and self-injurious behaviors. Understanding the nuances of ruminative responses and their intensity can facilitate a more effective clinical and psychotherapeutic approach to depression, with a particular focus on addressing negative thought patterns and brooding tendencies.

Table 4.
RRS with 22 items

RRS items		
No	English	Romanian
1	Think about how alone you feel	Te gândești cât de singur/singură te simți
2	Think “I won’t be able to do my job if I don’t snap out of this.”	Te gândești: “Nu voi putea să-mi fac treaba dacă nu ies din asta.”
3	Think about your feelings of fatigue and achiness	Te gândești la starea ta de oboseală și de suferință
4	Think about how hard it is to concentrate	Te gândești la cât de greu îți e să te concentrezi
5	Think “What am I doing to deserve this?”	Te gândești: “Ce am făcut să merit asta?”
6	Think about how passive and unmotivated you feel	Te gândești cât de pasiv(ă) și nemotivat(ă) te simți
7	Analyze recent events to try to understand why you are depressed	Analizezi evenimente recente și încerci să înțelegi de ce ești deprimat(ă)
8	Think about how you don’t seem to feel anything anymore	Te gândești la faptul că nu pare să mai simți nimic
9	Think “Why can’t I get going?”	Te gândești: “De ce nu pot să continui?”
10	Think “Why do I always react this way?”	Te gândești: “De ce întotdeauna reacționez astfel?”
11	Go away by yourself and think about why you feel this way	Te retragi în singurătate și te gândești de ce te simți singur/singură
12	Write down what you are thinking and analyze it	Scree lucrurile la care te gândești și le analizezi
13	Think about a recent situation, wishing it had gone better	Te gândești la o situație recentă dorind să fi decurs mai bine
14	Think “I won’t be able to concentrate if I keep feeling this way.”	Te gândești: “Nu voi fi în stare să mă concentrez dacă continui să mă simt astfel.”
15	Think “Why do I have problems other people don’t have?”	Te gândești: “De ce am eu probleme pe care alții nu le au?”
16	Think “Why can’t I handle things better?”	Te gândești: “De ce nu pot să gestionez lucrurile mai bine?”
17	Think about how sad you feel	Te gândești cât de trist(ă) te simți
18	Think about all your shortcomings, failings, faults, mistakes	Te gândești la toate deficiențele, ratările, defectele, greșelile
19	Think about how you don’t feel up to doing anything	Te gândești la cum nu te simți în stare să faci nimic
20	Analyze your personality to try to understand why you are depressed	Îți analizezi personalitatea, încercând să înțelegi de ce ești deprimat(ă)
21	Go someplace alone to think about your feelings	Mergi undeva singur(ă) să te gândești la sentimentele tale
22	Think about how angry you are with yourself	Te gândești la cât de furios (furioasă) ești pe tine însuți

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