

A confirmatory factor analysis and validation of the forms of self-criticism/reassurance scale among teachers

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Abstract

Purpose: The present study investigated the psychometric properties of a Persian version self- reassurance/ self-criticism Inventory in the male and female teachers. **Materials & Methods:** This study was of a validation type. The participants were 444 teachers selected through a multistage-cluster random sampling among the teachers in high school second period in the city of Bojnord of the 2015-16 years. The three scales administrated in this study were: self- reassurance/ self-criticism Inventory, self-efficacy Scale and happiness Inventory. A Cronbach's and test-retest reliability was calculated to examine the reliability of the self- reassurance/ self-criticism Inventory and to check the validity of the method convergent validity, divergent validity and confirmatory factor analysis was used. **Findings:** The calculated α for the inventory was for self-criticism 0.69 and for and self-reassurance 0.77. Neutralizing dimensions respectively self-criticism and for and self- reassurance examined through correlating it to the self-efficacy scale and happiness Inventory given signification. Using factor exploratory analysis confirmed the two-factor structure. **Discussion:** The Persian version of the self- reassurance/ self-criticism Inventory seems satisfactory for measuring self- reassurance/ self-criticism symptoms in teacher's samples. Future research is, however, needed to confirm these data in a sample of OCD teacher's.

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1. Introduction

The many social and psychological components involved in reaching the teachers to necessary skills and competencies to achieve the aspirations of classroom and curriculum that one of these components can be mentioned self-criticism and self-reassurance. Self-critical people when faced with an obstacle in the way of achieving their goals, are vulnerable. These people prone to depression experience, along with the intense feelings of inferiority, guilt, worthlessness and failure to comply with expected standards (Bagby & Rector, 2004, Gilbert & Procter, 2004). Self-criticism can be considered in a continuum based on the amount of practice standard projection. at the end of this continuum, there is a kind of the self-criticism that it is based on the relatively outer standards, and at the other end of this continuum, is a kind of self-criticism that require internal standards (Thompson & Zuroff, 2004, Gilbert & Irons, 2004).

2. Research Background

The self-reassurance is a self-regulatory process and promote living well-being. Thus, it is expected that high self-criticism associated with low self-reassurance and by increasing the self-reassurance, the amount of the self-critical and other social and psychological damages along with it is reduced. The self-reassurance is a dynamic, adaptive and integrative process which acts as scheduler and is composed of two aspects: experiential self-reassurance as immediate attention and sensitivity to their current experience, reflective self-reassurance as their past experiences analysis, and integrating it in its own plan of action and reaction. Integrative self-reassurance, integrating experiential self-reassurance and reflective self-reassurance each other. These two processes through the process of self-regulatory, promote internal consistency and hence should be opposed to self-criticism (Ghorbani, Watson, Bing, Davison & Le Betlon, 2003).

the self-criticism and self-reassurance scale has been prepared by Gilbert, Clark, Hempel, Miles and Irons (2004) and has 22 clauses in two subscales of self-criticism and self-reassurance. subscales of self-criticism measures person tendency to have high expectations of themselves and trying to progress and achieve goals at a high level (Gylberg et al., 2011) and self-reassurance subscale measures belief or the amount of people's confidence about their ability to succeed in various fields (Kaltman & Gibson, 2003). The internal consistency of scale total score was reported 0.90 using Cronbach's alpha coefficient in the study of Gylberg et al (2004). In the study of Gylberg et al (2011), a factor analysis with principal components and rotating miles for each gender, revealed two factors and these factors were named, and finally, Gylberg et al (2011) concluded that this scale has two separate factors. So, since factor analysis, both conceptually and empirically, has led to a significant component, the scale is considered to be two-dimensional (Gylberg et al., 2011).

According to Ongen (2015), behaviors measured by self-criticism subscales is harmful for people wellbeing and aspects of personality are considered to be the foundation for a set of harmful habits for health? On the other hand, Kleitman & Stankov(2007) showed that there is a direct and significant relationship between the features measured in a self-reassurance subscale and self-efficacy. Since research in the area of self-criticism and self-reassurance is highly regarded by experts in behavioral sciences, within the country, the existence of valid instruments to measure the psychological characteristics appropriate to the culture of the country according to which self-critical people with low self-confidence from ordinary people can be screened, are very limited. The validity and reliability of

formal questionnaires should not be accepted, this is especially important that inventory in other countries and for different subjects is designed and tested. So, this study was conducted with the investigation aim of the validity and reliability of self-criticism and self-reassurance.

3. Methodology

The study methodology was a cross sectional and descriptive -survey. The statistical society of this study included all the male and female teachers of the second cycle of secondary school of education organization of Bojnourd city in the academic year 95-1394 that the volume of it was equal to 3671 people. The study sample consisted of 500 teachers that will be chosen through the multi-stage cluster sampling method from among the mentioned statistical society. The table of Krejcie & Morgan (1971) was used in order to estimate the sample size.

The sampling method was in this way that first, Bojnourd city was divided to 5 geographic regions (North, South, East, West and Central) and from these regions, three regions (North, East and Central) as the first stage clusters of sampling were selected randomly. In the next step, in the mentioned third area, due to the volume of teachers in each geographic area, among the schools of different levels of each region, number of schools were chosen and the more classes from each school were selected as second and third stages clusters and finally, intended samples were selected. Among the completed questionnaires, incomplete questionnaires were excluded, and 444 questionnaires data were analyzed. In this study, the demographic check list and the self-efficacy and happiness and self-criticism / self-reassurance inventory was used to collect data.

The check list is demographic features to collect information related to age, employment history, marital status, sex and so on which is prepared and developed and designed by the researcher. The self-criticism / self-reassurance scale: kodberg et al's the self-criticism / self-reassurance scale (2004) were used to measure self-criticism and self-reassurance. This questionnaire has two subscales of self-criticism and self-reassurance. the answer to any clause of this scale was set in a range of 5 degrees Likret scale from strongly disagree (0) to strongly agree (4) and the maximum and minimum score fluctuate from zero to 88, respectively. Gylberg et al (2011) have reported reliability of the scale of this scale 0.90. In addition, internal consistency coefficients the self-criticism / self-reassurance scale in the entire sample was obtained 0.83 and in men and women, respectively 0.78 and 0.85. In a study Rajabi et al (1394), Cronbach's alpha reliability coefficient of the questionnaire in the total sample was obtained 0.64 and its validity coefficient with the Rosenberg self-esteem scale on 50 people was obtained significantly and -0.36.

First, the necessary coordination with the educational authorities of Bojnoord city, districts and the second secondary level schools was conducted. After selecting the schools, necessary coordination was conducted with officials and managers of desired schools and samples were selected. Flowing the samples selecting, desired questionnaires were distributed among them. At all stages of implementation, the researcher was in close interaction with the participants, and answers the ambiguity and possible difficulties. for compliance of ethical principles and to draw participants cooperation, before implementation of the test, Information about the object and purpose of research were given to participants as far as don't be not effective on the results of the study; and after attraction of the confidence of the participants, about the information of them not be analyzed individually and they are free to participate in research whenever they may be excluded from research, they were entered to

the study sample . It should be noted that the participants explained that it is not necessary that they wrote their name or password (except in cases where the participants were asking for information about results of the study).

4. Findings

Among the all participants in this study, 212 people (47.74%) were females and 232 people were (52.26 percent) male. In this study, 42 people were single (5/9%), 395 people (89%) were married, 5 people (1/1%) were divorced and 2 people (0.5%) were widow, respectively. maximum number of participants had bachelor's degree that 253 people means 57% of the sample were assigned to themselves. in addition, the minimum amount of participants was related to PhD level that 2 people means the 0.5% of participants were in it. the mean and age SD of the sample group individuals respectively were equal to $6.40 \pm 39/83$ years. exploratory and confirmatory factor analysis was used to investigate the factor structure of self-criticism / reassurance scale. in this study, exploratory and confirmatory factor analysis was run on two separate samples of data means that for exploratory factor analysis, 220 subjects were randomly selected and underwent exploratory analysis (choosing the sample size was based on the ratio of 10 to one item). confirmatory factor analysis was performed on the 224 remaining subjects. the first results of exploratory analysis were presented. The factor analysis method was used to determine the factors number of self-criticism / self-reassurance scale with 22 items. Before conducting the factor analysis, index of sampling adequacy (KMO) and Bartlett's sphericity test value was calculated. In this analysis KMO amount was achieved 0.766 and the chi-square amount of Bartlett's sphericity test was achieved 1118.576 that it was significant with the degree of freedom 231 ($p \leq 0.0001$).

Thus, in addition to the adequacy of sampling, implementation factor analysis based on the studied matrix was justified. For determining that self-criticism / reassurance scale is saturated from several factors, equity indices, the proportion of explained variance by each factor and Scree graph (Figure 1) were taken into account. In the primary analysis, two factors were extracted. These two factors could explain in total 84.31% variance of 22 intended items. Studying Scree graph and the total table explained variance indicates that there is a large primary cause (self-confidence) has equity equal to 3.66 and explained 16.64 % total variance. The second cause (self-criticism) has equity equal to 3.34 and explained 15.20 % total variance. It is noteworthy that the main version of the scale was three factors that there was a factor as a self-hatred that the questions related to this factor were loaded on self-criticism factor in the exploratory analysis on the Iranian sample (sample size) and formed a factor.

Table 2. Load factors of the questions of self-criticism / self after rotating scale (n=220)

item	questions	self- reassurance	self-criticism
16	I'm the kind and supportive to myself.	0.713	
21	I encouraged myself for the future.	0.702	
11	I am still loved and accepted.	0.669	
13	I know that I can be myself easily.	0.689	
8	I'm still myself.	0.596	
19	I am able to care of myself.	0.545	
3	I am able to remember the positive things about myself.	0.535	
10	I hated myself.	0.451	
5	I know that I easily forget.	0.402	
2	Part of me that makes me weak.		0.626
7	I feel down because I have self-critical thoughts.		0.623
6	It is a part of me, so, I feel that I'm not good enough.		0.567
1	I am easily disappointed myself.		0.563
22	I do not like to be myself.		0.521
4	I know that controlling anger and frustration is hard for me.		0.516
14	I am reminded of my failure and stop them.		0.514
18	I think I deserved self-criticism.		0.481
9	I am so angry at myself that I'm going to hurt myself.		0.431
15	I call myself by different names.		0.381
12	I'm not worried about myself.		0.373
17	I cannot accept my failures and problems with discontent.		0.284
20	It is part of me that I want to distance myself from it and I didn't like it.		0.283

As seen in the above table, almost all factor loads are appropriate. The smallest load factor was related to question 20 equal to 0.283, and the biggest load factor was related to question 16 equal to 0.713.

Confirmatory factor analysis: the confirmatory factor analysis was used in order to determine the fitness amount of 2-factor model to the data. Fitness indexes of Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean Square Residual (SRMR), Comparative Fit Index (CFI), Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI) was used to assess the model fitness. The different slides for fitness indexes have been proposed by experts. For example, amount equal to or less than 0.05 for Root Mean Square Error of Approximation, amount equal to or higher 0.96 for Comparative Fit Index, amount equal to or less than 0.07 for Standardized Root Mean Square Residual represents a sufficient fitness of model (Joreskog & Sorbom, 2003). on the other hand, it is proposed that if Comparative Fit Indexes, and Goodness of Fit Index and Adjusted Goodness of Fit Index be larger than 0.9 and Root Mean Square Error of Approximation indexes and Standardized Root Mean Square Residual be smaller than 0.05, it will imply on very good and smaller fit than 0.1 (Berkler, 1990). Fitness indexes of the final form of the questionnaire self-criticism / confidence scale was investigated. The results of the model suggest that some fitness indexes suggest data- model optimal fitness and the other indexes indicates poor data - model fitness (table 3). In this model, $X^2 = 440.58$ and $df=208$ and so, $X^2/df = 2.12$ that this ratio is appropriate. The amount of Comparative Fit Index (CFI) can be between zero and 1. 0.90 And higher values, are acceptable. The amount of CFI in this study was obtained 0.90 that it is acceptable. Square Root Mean Square Error of Approximation (RMSEA) shows the average remains between correlation, observed sample covariance, and the expected estimate model of community. As it has been noted, the amounts less than 0.08 represents good fit, 0.08 to 0.10 represents average fit, and higher than 0.10 represents the weak fit. RMSEA value

was obtained for this study 0.071 that shows good fit of the model with the data. Other indexes of fitness are in table 3.

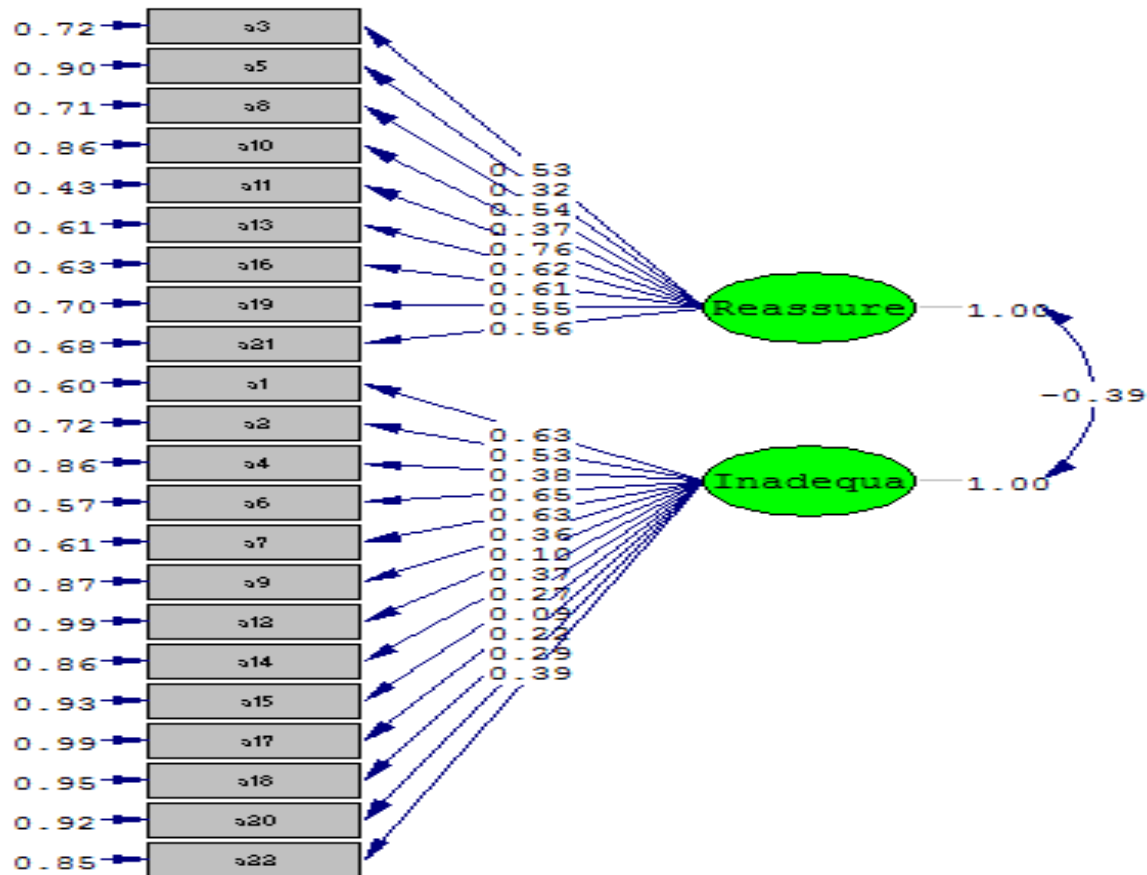


Figure 1: the model of final measurement of self-criticism / self-confidence scale (standardized coefficients are reported).

Table 3. Two-factor model fit indexes of self-criticism / self-confidence scale (n=444).

Model	χ^2/df	CFI	RMSEA	RMSEA CI 90%	SRMR	GFI	AGFI
Two-factor	2.12	0.90	0.071	0.062-0.080	0.081	0.90	0.88

- Chi-square, with maximum likelihood method

The simultaneous implementation of it with Sherer General Self-Efficacy Questionnaire and Oxford happiness questionnaire (long form) was used to evaluate scale validity. Variables simultaneously conducted among a sample group and the data were analyzed using Pearson's correlation coefficient.

Table 4. Correlation of self-criticism / self- confidence with efficacy and Happiness

Variable	1	2	3	4
1. Self-criticism	1			
2. Self- reassurance	-0.221 *	1		
3. Self-efficacy	-0.396 *	0.269 *	1	
4. Happiness	-0.367 *	0.359 *	0.383 *	1

As it can be seen from the above table, the correlation amount is between self-criticism with self-confidence ($r = -0.221$) Self-efficacy ($r = -0.397$) happiness ($r = -0.367$). As well as self-confidence has significant and positive relationship with self-efficacy ($r = 0.269$), happiness ($r = 0.359$). In addition, self-efficacy with happiness ($r = 0.383$) has significant and positive relationship together. It is noteworthy that

all correlations were significant it is noteworthy that all correlations were significant in the level $p \leq 0.1$. Two Cronbach's alpha and retest methods was used to assess self-criticism /confidence scale. The results of the reliability of the questionnaire is presented in the table below.

Table 5. The Cronbach's alpha and retest coefficients of self-criticism / self-confidence scale.

Variables	Cronbach's alpha	Retest coefficients
self-criticism	0.699	0.81
self- reassurance	0.780	0.85

According to table 5 the reliability of the self-criticism / self-confidence scale was calculated through two Cronbach's alpha and retest methods and the results showed that Cronbach's alpha and retest coefficient of self-criticism / self-confidence is respectively equal to 0.69 and 0.77. This questionnaire was conducted again two weeks after about 110 subjects, who participated in the first phase of the research. Retest coefficient of self-criticism / self-confidence was calculated respectively 0.81 and 0.85. In addition, in Table 6, mean, standard deviation, correlation with total score and alpha coefficient was coming if you remove any item.

Table 6. Mean, standard deviation, correlation with total score and alpha coefficient was coming if remove any item of the self-criticism / self-confidence scale.

factor	Item	mean	standard deviation	Correlation	it is alpha If remove alpha
self- reassurance	3	2.51	1.12	0.437	0.763
	5	1.86	1.25	0.378	0.770
	8	2.75	1.15	0.477	0.757
	10	2.55	0.73	0.327	0.776
	11	2.60	1.07	0.632	0.735
	13	2.70	1.07	0.562	0.745
	16	2.48	1.22	0.837	0.748
	19	2.84	1.01	0.445	0.762
	21	3.06	0.97	0.528	0.752
self-criticism	* Alpha			0.780	
	1	0.86	0.83	0.414	0.671
	2	1.03	0.93	0.394	0.672
	4	1.54	1.06	0.314	0.683
	6	1.20	0.88	0.467	0.664
	7	0.90	0.87	0.425	0.669
	9	0.33	0.67	0.361	0.689
	12	1.58	1.15	0.300	0.680
	14	1.19	1.13	0.390	0.671
	15	0.51	0.85	0.352	0.670
	17	1.46	1.06	0.390	0.670
	18	1.46	1.06	0.307	0.684
	20	1.73	1.21	0.903	0.668
	22	0.60	1.00	0.382	0.673
	* Alpha			0.699	

As it was shown in the above table, the mean and standard deviation for each items of scale of self-criticism / self- confidence scale is provided. However, in two other columns, the correlation of each question and the total score is coming that the results shows that all correlations are good with the total score (greater than 0.3). On the one hand the results show that if you remove any of the items, the alpha

value will not be greater than the standard value, therefore, none of the questions of subscales were excluded from the questionnaire.

5. Discussion

The aim of this study was to investigate the validity and reliability of self-criticism and self-confidence scale among teachers. Based on the results obtained, it was found that self-criticism and self-confidence scale has satisfactory reliability and validity within the country and the population of teachers in the country. based on the results obtained, this finding is consistent with results of previous studies such as Gilbert et al (2004), Ownegh et al. (2015) and Rajabi et al (1394) and it could be said that self-criticism and self-confidence scale has satisfactory reliability and validity within the country. Check acceptable to excellent internal consistency with Cronbach's alpha coefficient was obtained between 0.69 and 0.77.

The study results showed that the scores of self-criticism / self -reassurance scale have appropriate exploratory and confirmatory factor structure .so, the present study findings as research findings of Gilbert et al (2004) from the main version of the questionnaire represented unchangeable factor structure and appropriate psychometric properties of studied questionnaire of our country teacher's sample. In examining the divergent validity of self-criticism / self -reassurance scale, the correlation between these two and self-efficacy and happiness was evaluated.

Results revealed that there is the negative and significant relationship between self-criticism and self-efficacy and happiness and there is the negative and significant relationship between self -reassurance and self-efficacy and happiness. With achieving these findings, the divergent validity of self-criticism / self -reassurance scale is confirmed because self-efficacy and happiness was proposed as positive aspects of mental health and psychological well-being. Besides the physical health, it forms the overall concept of health. The correlation between self-criticism and self -reassurance was negative and significant that this issue shows that these two scales do not assess the same symptoms and are fully independent. These results confirm using of self-criticism / self -reassurance scale as a means to evaluate different aspects of self-criticism and self -reassurance. Many people are being sensitive to external feedback with reducing efficacy and happiness. As a result, they are being conscious from the conflicts and contradictions between the public and private aspects of their personality, so, they adopt a conservative approach in their relationships with others, especially his close family members and individuals and they in the result of the efforts to maintain or improve their relations are involved in self-critical behaviors. When people in your close relationships are involved in conflict resolution activities and do not express their feelings and thoughts versus hostility and enmity of their relatives and acquaintances and criticize their own (Lanko et al., 2015).

Finally obtained two-factor model from the research of Gilbert et al (2004) showed a perfect match based on the findings of the present study. In this study, such as the main research, two factors of self-criticism / self -reassurance was obtained. This finding is in line with the main research findings and other studies that they have shown that self-criticism / self -reassurance scale has been formed from two factors (Gilbert et al., 2011).

According to the results of this study, the above suggestions are presented; being two-dimensional, being short and ease of implementation of self-criticism / self -reassurance scale makes it a useful tool for the extensive use in the research and clinical different spheres in the Behavioral and Psychiatry Sciences, so, using this tool is recommended to psychologists and psychiatrists. Among the limitations

of this study can be cited: limitation of this study with descriptive -sectional study, sample limitation of this study to teachers of Bojnourd city and the use of pencil and paper and self-reported questionnaire that it was better than other- reported questionnaires and software inventories that the answer is corrected with minimal mistakes and quickly.

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