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# Exploratory and Confirmatory Factor Analysis of Coping Responses Inventory among Fars province University Students

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The purpose of this study was to examine the validity and reliability of the CRI-adult among Iranian university students. This study explored the relationship between the two sub-scales among Iranian university students by using exploratory and confirmatory factor analysis. The results showed that the two factors (Approach and Avoidant Responses) were significantly related to the CRI general factor. The Goodness-of-Fit Index, the Adjusted Goodness-of-Fit Index, and the Root Mean Square Error of Approximation were significant. These indices supported theoretically that the construct of coping responses inventory is psychometrically sound and fit the model. Concurrent validity showed that the score of mental health and its factors such as bodily symptoms, anxiety, disorder in social function and depression correlated with scores of Approach and Avoidant factors. The Cronbach coefficient alpha values and test-retest correlations were acceptable for total scores' CRI and its subscales. The results showed that the CRI is a reliable and valid measure of assessing coping responses in Iranian university students and it is suggested for the examination of the quality of coping responses among Iranian students.

***Keyword:*** coping responses, approach and avoidant responses, college students

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When adolescent leave home for college they are actually presented with novel set of environmental experiences to explore the new environment and campus. College students perceive academic life as stressful and demanding (Karvi, & Heiman, 2005; Hicks 2006; Wan 1992; Hammer, Grisby & Woods, 1998) and report experiencing emotional to the external pressures and self-imposed expectations (The National Alliance for Mental Health, 2005). Using coping methods can be helpful in solving physical and mental problems, troubles in social relations and individual conflict; then they are considered as influential factors in general health and mental health (Gobbey & Courage, 2004; Allen, Shah, Nezu, Ciamborone, Hogan, & Moor, 2002).

Exploring the coping responses and relationships between coping and general health among college students would provide a meaningful understanding of personal and academic tasks that might patterned by cultural norms and expectations. Having a valid and reliable Coping Responses Inventory to identify coping skills used by college students would be important for program coordinators. Program coordinators could use such an inventory to identify kinds of coping styles among students and in turn use the results of such an inventory to identify kinds of coping styles the students use to develop coping adaptation methods, stress awareness and reduction programs. Subsequently, this may help their students deal with their potential stressors and help them succeed.

**Coping Responses Inventory**

Coping mechanism refers to a variety of cognitive and behavioral strategies individuals use to manage their stress (Folkman & Meskowitzs, 2004). Folkman and Lazarus (1980, 1985) differentiated between two major styles of coping; problem-focused and emotion-focused. The former involves dealing with the source of stress, whereas the latter reflects attempts to handle thought and feelings associated with the stressor. Lazarus and Folkman (1984) have described coping responses as an individual's attempts to master a demanding event or situation. Coping responses are either problem focused, such as problem-solving activities or



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attempts to take action intended to master stressful conditions, or emotion focused, such as avoidance of thinking realistically about a stressful situation in order to regulate an emotional reaction (Lazarus & Folkman, 1984; Moos, 1993). Folkman and Lazarus (1988) developed the coping scale to measure individual differences in these two dimensions of coping, a checklist of problem and emotion-focused coping strategies that might be used in a variety of stressful situations.

Carver, Scheier, and Weitrauh (1989) noted that these two coping-style dimensions were important, but felt further differentiation was needed. Contemporary theories emphasize the multidimensional aspects of appraisal and coping processes. In brief, some researchers have used two main conceptual approaches to classify coping responses. One approach emphasizes the orientation or focus of coping (problem-focused or emotion-focused), whereas the other emphasizes the method of coping (cognitive or behavioral) (e.g. Billing & Moos, 1981; Folkman & Lazarus, 1985; Roth & Cohen 1986; Moos, 2004; Litman, 2006).

Moos (2004) has created an inventory that considers the focus of coping and divides coping responses into approach responses and avoidance responses. Each of two sets of coping responses is divided into two categories that reflect cognitive or behavioral coping methods. Approach coping is problem-focused and represent cognitive and behavioral efforts to master or resolve life stressors. In contrast, avoidance coping tends to be emotion-focused, it reflect cognitive and behavioral attempts to avoid thinking about a stressor and its implications, or to manage the affect associated with stressor (Moos, 2004). Accordingly, Coping Responses Inventory (CRI-Adult) assesses four sets of coping skills: cognitive approach, behavioral approach, cognitive avoidance and behavioral avoidance. The coping responses inventory (CRI) is designed to identify and assess specific approach and avoidance responses that are used to confront with stress in stressful situations. Table 1 shows the eight CRI-Adult coping scales categorized into these four sets of coping responses.



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**Table 1.**
**CRI – Adult Scales**

| Type of Coping | Approach Coping Response | Avoidance Coping Response |
|---|---|---|
| Cognitive | Logical Analysis<br>Positive Reappraisal | Cognitive Avoidance<br>Acceptance of Resignation |
| Behavioral | Seeking Guidance and Support Problem Solving | Seeking Alternative Rewards<br>Emotional Discharge |

Moos (2004) published a manual supplement that gives an overview of the body of research utilizing the CRI-A since its first publication. It contains data on study participants ranging from the young to the elderly, describes the inventory's utility, and offers evidence of the validity of CRI-A. The CRI-A is suitable for assessing the coping responses of adults aged 18 and above and can be used with healthy adults as well as psychiatric, substance abuse, and medical patient (Moos 2004). The CRI-A has been translated into several languages. For example, Japanese (Fukunishi, 1997), Spanish (Zanini, 2003; Kirchner & Mohino, 2003; Villavicencio Carrillo & Herranz, 1997), Indian (Satija, Advani & Nathawat, 1997), Taiwanian (Kao, 1999), and Sri Lankaian (Soysa, 2002).

**Purpose of the study**

The present study, taking into consideration the work of Moos (2004), translated the CRI, adopted the CRI to be used on Iranian students' population. The purpose of this study was to translate and report on the validity and reliability of the CRI. In addition to computing the concurrent validity, the internal consistency coefficients and confirmatory factor analyses were employed. According to Bentler (1998) "measurement models used in structural modeling are confirmatory factor analysis models" (p.183). In confirmatory factor analysis, the researcher knows



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which variables are good indicators of the factor(s). With reference to the CRI, there are two categories (Approach responses and avoidance responses). The procedure usually used in computing the confirmatory factor analysis to determine the intercorrelation among the variables. Then, a confirmatory factor analysis is computed (based on models set up on data to be analyzed) to determine how much each variable contributes to each factor and total measurement instrument.

## Method

### Procedure

In responding to the CRI-Adult, the CRI first was translated using back-to-back method from English to Persian back to English. Comparison between the two English and Persian versions (the original and the translated versions) was conducted to examine the exactness of the translations. The translated CRI was given to four specialists, two professors in translation and two professors in psychology, the judges were asked to judge the translated questionnaire. The translated inventory was subsequently pilot tested among a sample of two hundred undergraduate students of Shiraz and Arsenjan Universities. The purpose of the pilot study was to evaluate face and content validity of translated inventory items. An open-ended question was posed to the respondent to gauge additional ideas that could be used to improve the inventory. Then, four hundred undergraduate students responded to translated CRI and GHQ. Subsequently, CRI was administrated to determine the CRI's test-retest reliability two months later.

### Population and sample

The population of the study consists of all undergraduate students in the private and state universities of Fars province in Iran who enrolled in academic year 2008/2009. The samples for the study were randomly selected form the population. Every individual within the population has a known nonzero chance of being included in the sample. The present study adopted a simple random sampling.



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**Sample Size**

The question that is needed to be considered by researcher is not simply- how large the sample should be, but rather how large the sample should be in order to detect a specific effect size or the degree to which the phenomenon exists (Hair, Anderson, Tantham, & Black, 1998). If one aims to use a split-half procedure and perform both exploratory and confirmatory analyses, then a sample size of 500 or more would be preferable. The actual sample (n=600) in this study were randomly selected for evaluating the CRI questionnaire.

**Participants**

hundred undergraduate students in Shiraz and Arsenjan Universities. The translated coping responses inventory was implemented at several universities in Fars Province of Iran. Based on table of Krejeie and Morgan (1970) and Hair, Anderson, Tantham & Black (1998), six hundred undergraduate students were randomly selected to respond to two questionnaires. Participants were enrolled during the spring semester 2008/2009. The profile of the respondents was developed based on the following variables: university, gender, specialization and locality. The distribution of the students in the study sample is shown in Table 2.

**Table 2.**
**Distribution of Respondents according to Demographic Variables**

| Demographic Variables | Characteristics | N | % |
|---|---|---|---|
| University | Private university | 375 | 65 |
| | Government university | 201 | 35 |
| Gender | Male | 276 | 47.93 |
| | Female | 300 | 52.07 |
| Specialization | Human Science | 161 | 28 |
| | Basic Science | 138 | 24 |
| | Engineering | 127 | 22 |
| | Medical Science | 150 | 26 |
| Locality | No local | 390 | 67.5 |
| | Local | 286 | 32.5 |



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Table 2 shows that 375(65%) of total students were randomly selected from Islamic Azad University (Privet University) while 201(35%) of them were selected from Government University. Furthermore, the Table shows the number of male and female subjects. According to Table 2, 47.93% (n=276) of the sample for this study were males while 52.07% (n=300) were females. As for students' academic specialization, the Table shows that 28% of the students were selected from Human Science, 24% Basic Science, 22% Engineering, 26% Medical Science. In relation to locality, almost the majority of the students 390(67.5%) were not local while 286(32.5%) were local. The mean age for all the students were 22.8 (19-34 years) while the mean age for the male students was 22.7 years and that for the female students was 22.9.

**Instruments**

The coping responses inventory (CRI) assessed two different types of coping responses related to stressful life circumstances and consisted of 48 items (α=.89). The Coping Responses Inventory divides coping responses into approach and avoidance responses and each of the two categories reflects cognitive and behavioral coping strategies. When responding to the CRI, individuals select a four-point scale varying from “not at all” to “fairly often” to rate their reliance on each of 48 coping response items. Participants used an item booklet and an answer sheet that directed them to provide responses to 48 coping items through the use of a likert scale. The author of the inventory provided a profile area on the reverse side of the answer sheet that allowed for conversion of raw scores to *T* scores (M=50, SD=10) and equivalent percentile ranges. The profile area also contained marked regions of *T* scores and associated interpretative descriptors that described *T* scores of 46 to 54 as average, *T* scores less than 34 as considerably below average, and greater than 66 as considerably above average. Moos (2004) reports the internal consistency measures (Cronbach Alpha) for Approach responses (α=.64) and for Avoidance responses (α=.70).



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The General Health Questionnaire (GHQ) was used to assess general health. The GHQ is one of the most used psychometric measures in health and psychiatry and has good reliability and validity (Goldberg, & Williams, 1988). Each item is on a four point Likert-type scale, which assesses how a person has been feeling over the past few weeks. Higher scores (higher than 47.28 score) indicate greater degrees of mental illness. Its Alpha coefficient in this study was .89. The present study used the Persian version of GHQ that was translated and adapted to the Iranian medical students by Bahmany and Askary (2007). Estimates of the internal consistency of General Health Questionnaire (GHQ) and its subscales were made by Cronbach's alpha and split- half, and are presented also in Table 3. Cronbach's alpha for the subscales were adequate (.77, .79, .76 and .75 respectively). Cronbach's alpha for overall scale was .83. These results suggest that the GHQ and its subscales have high internal consistency and reliability. Sequence, split-half coefficient was conducted. In splitting the items, sequence of the items was taken into account as well as whether the items indicated control of stress or expression of stress. The first half included items 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, and 14 while the other half items were 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, and 28. The split-half coefficients were .81 for overall scale, and .77, .76, .70 and .72 for Physical Symptoms, Anxiety, Social Dysfunction and Depression, respectively. These results clearly indicate that the GHQ and its subscales have sufficient reliability for Iranian university students. The obtained results are consistent with previous studies performed in other student groups (e.g. Hooman, 1998; Noorbala, 2004). The GHQ was used to determine concurrent validity of CRI among Iranian students.

**Statistical Analyses**

Correlations were calculated among items in the 48-item CRI-Adult, followed by a confirmatory factor analysis. A confirmatory factor analysis is computed to determine how much each variable contributes to each factor and the total measurement instrument. Internal consistency reliabilities were determined for each subscale with coefficient alpha and



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split-half. Test-retest reliability coefficient was determined by Pearson correlation coefficient. To assess the concurrent validity of the CRI, Pearson product moments correlations were calculated between the overall CRI score and GHQ and their subscales.

**Table 3.**
**Number of Items, Means, Standard Deviations, and Reliability Coefficients for the General Health Questionnaire**

| Construct | N of Items | Mean | Sd | Alpha | Split-half |
|---|---|---|---|---|---|
| Physical Symptoms | 7 | 8.51 | 4.33 | .77 | .77 |
| Anxiety | 7 | 10.30 | 3.79 | .79 | .76 |
| Social Dysfunction | 7 | 9.65 | 4.73 | .76 | .70 |
| Depression | 7 | 6.54 | 4.45 | .75 | .72 |
| Overall Scale | 28 | 33.60 | 13.68 | .83 | .81 |

## Results

An exploratory factor analysis was conducted to determine how the revised scale related to the underlying latent variable (Bentler, 1998). In the study, the exploratory factor analysis with varimax rotation was performed on the revised scale to answer the question of what are the underlying constructs and sub-constructs that explain coping responses inventory of the Iranian university students.

### Item analysis of CRI

Item analysis was conducted to decide which items to include or to exclude from the CRI. The objective of item analysis is to select a set of items they yields a summed score that is more strongly related to the construct of interest than any other possible set of items (Green, Salkind, Theresa, 1997, p367). Based on the result of the analysis of CIR items it appears that items 23, 31, 37 and 47 were somehow different from the rest of the items. Accordingly, the reliability procedure was rerun without these items. These items dropped from the inventory because they have



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inter-correlations lower than .30. A reduced CRI was created with the remaining 44 items.

**Factor Analysis of CRI**

The factor structure of the reduced 44-item CRI was explored by means of orthogonal warimax rotation. Items were included if they had a loading of .35 or greater (Hair et al., 1998). Thirty-nine out of the 44 items yielded two interpretable factors with eigenvalues grater than one, which accounted for 24.125% of proportion varince in Coping Responses Inventory scores. This resulted in a two-component solution with the retention of 39 items. As shown in Table 4 items were significantly divided into two distinctive factors. The item values loaded ranged between.37 to .70. An example of an item that is loaded low is item number 5 (Try to forget the whole thing), and an example of an item that has the highest degree of factor loading is item number 9 (Try to step back from the situation and be more objective).

It is worth mention that the factor loading of coping responses did not load as previously hypothesized and found in the Moos' study. The Coping Responses Inventory divides coping responses into the approach and avoidance responses and each of the two categories reflects cognitive and behavioral coping methods. Accordingly, CRI assesses four sets of coping skills: cognitive approach, behavioral approach, cognitive avoidance and behavioral avoidance. However, based on the factor analysis the CRI for Iranian university students has only two categories and none of the two was divided into two cognitive and behavioral sub-scales. Tables 4 and 5 show items that measure coping responses which clustered into two sub-constructs. The first sub-construct was measured by 24 items. The second sub-construct was measured by 15 items. The two components were named based on their content as follows: 1) Approach Responses 2) Avoidance responses. Table 6 also shows that the items had loading lower than .35 and as a result drop from adapted CRI.



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**Table 4.**
**Coping Responses Items; Factor Loading Items**

| Item | Factor1 | Factor2 |
|---|---|---|
| **Approach Responses** | | |
| 1. Think of different ways to deal with the problem. | .65 | |
| 2. Tell yourself things to make yourself feel better. | .54 | |
| 3. Talk with your spouse or other relatives about the problem. | .43 | |
| 4. Make a plan of action and follow it. | .67 | |
| 9. Try to step back from the situation and be more objective. | .70 | |
| 10. Remind yourself how much worse things could be. | .59 | |
| 11. Talk with a friend about the problem. | .54 | |
| 12. Know what had to be done and try hard to make things work. | .71 | |
| 17. Go over in your mind what you would say or do. | .64 | |
| 18. Try to see the good side of the situation. | .59 | |
| 19. Talk with a professional person (e.g. doctor, lawyer, and clergy). | .49 | |
| 20. Decide what you wanted and try hard to get it. | .67 | |
| 25. Try to anticipate how things would turn out. | .49 | |
| 26. Think about how you were much better off than other people with similar problems. | .60 | |
| 27. Seek help from personal or groups with the same type of problem. | .65 | |
| 28. Try at least two different ways to solve the problem. | .68 | |
| 33. Yell or shout to let off steam. | .57 | |
| 34. Try to tell yourself that things would get better. | .54 | |
| 35. Try to find out more about the situation. | .56 | |
| 36. Try to learn to do more things on your own. | .49 | |
| 41. Try to anticipate the new demands that would be placed on you. | .54 | |
| 42. Think about how this even could change your life in a positive way. | .49 | |
| 43. Pray for guidance and/or strength. | .58 | |
| 44. Take things a day at a time, one step at the time. | .64 | |
| **Avoidance Responses** | | |
| 5. Try to forget the whole thing. | | .37 |
| 8. Take it out on other people when you felt angry or depressed. | | .42 |
| 14. Realize that you had no control over the problem | | .36 |
| 15. Get involve in new activities. | | .49 |
| 16. Take a chance and do something risky. | | .51 |
| 21. Daydream or imagine a better time or place than the one you were in. | | .39 |
| 22. Think that outcome would be decided by fate. | | .39 |
| 24. Keep away from people in general. | | .41 |
| 29. Try to put off thinking about the situation, even though you knew you would have to at some points. | | .43 |
| 30. Accept it; nothing could be done. | | .39 |
| 32. Yell or shout to let off steam. | | .53 |
| 38. Expect the worse possible outcome. | | .50 |
| 45. Try to deny how serious the problem really was. | | .42 |
| 46. Lose hope that things would ever be the same. | | .39 |
| 48. Do something that you didn't think would work, but at least you were doing something. | | .41 |



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**Table 5.**
**Sub-Construct, Item Number and Egienvalue of Coping Responses Inventory**

| Sub-Construct | Item Number | Eigenvalue |
|---|---|---|
| Approach Responses | 1, 2, 3, 4, 9, 10, 11, 12, 17, 18, 19, 20, 25, 26, 27, 28, 33, 34, 35, 36, 41, 42, 43, 44 | 18.199 |
| Avoidance Responses | 5, 8, 14, 15, 16, 21, 22, 24, 29, 30, 32, 38, 45, 46, 48 | 5.929 |

**Table 6.**
**The dropped items from adapted CRI**

| **Items** | **Loading value** |
|---|---|
| 6. Feel that time would make a difference-that the only thing to do was waiting. | .21 |
| 7. Try to help others deal with a similar problem. | .14 |
| 13. Try not to think about the problem. | .16 |
| 23. Try to make new friends. | .20 |
| 31. Read more often as a source of enjoyment. | .18 |
| 37. Wish the problem would go away or somehow be over with. | .27 |
| 39. Spend more time in recreational activities. | .24 |
| 40. Cry to let your feelings out. | .29 |
| 47. Turn to work or other activities to help you manage things. | .3**0** |

**Confirmatory factor analysis of CRI**

To perform the confirmatory factor analysis, inter-correlations for the two components (Approach and Avoidance responses) and the total CRI were computed. These inter-correlations are summarized in Table 7 along the means and standard deviations for the approach and avoidance responses and the total CRI. As shown in Tables 4 and 5, all correlation coefficients were significant ($p<.001$). The highest correlation ($r = .86$) was between the scores of approach responses and the total CRI and the lowest



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correlation (r =.39) was between the scores of approach responses and avoidance responses.

Next, the confirmatory factor analysis was carried out. When this type of analysis is conducted, models are set up for the data studies and the goodness-of-fit statistics are used to test the hypothesis. The confirmatory factor analysis for the CRI model included two latent factors (Approach responses, and Avoidance responses) that defined the general factor. It was hypothesized that the two factors would be related to the CRI general factor. The hypothesis was supported. The results showed that the two factors (Approach responses, and Avoidance responses) were significantly related to the CRI general factor (see Figure 1 and Table 8). In confirmatory factor analysis, numerical values between factor(s) and indicator(s) indicate the factor loadings in terms of beta weight (Schumacker, & Lomax, 2004). In the analysis of the CRI, all factor loadings were significant ($p < .05$). The fit indices for this model are excellent. The chi-square statistic divided by the degree of freedom should be less than three. In this study the chi-square statistic was 1410.31 with a degree of freedom of 527. In addition, the Goodness-of-Fit Index (GFI) was .97, the Adjusted Goodness-of-Fit Index (AGFI) was .95, and the Root Mean Square Error of Approximation (RMSEA) was .06 (see Table 8).

**Table 7.**
**Interrelationships, means and Standard Deviations among the Approach, Avoidance and Coping Responses**

| | AP | AV | CR |
|---|---|---|---|
| Approach Responses | 1 | | |
| Avoidance Responses | -.39 | 1 | |
| Mean | 21.53 | 17.48 | 33.91 |
| Standard Deviation | 11.56 | 11.31 | 17.48 |

AP=approach AV=avoidance CR=coping responses



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**Table 8.**
**Goodness-of-fit Summaries for Coping Responses Inventory**

| Goodness of fit summary | | | | |
|---|---|---|---|---|
| Df | X2 | GFI | AGFI | RMSEA |
| 527 | 1410.31 | 0.97 | 0.95 | 0.06 |

GFI=Goodness of fit index greater than .90 indicates adequate fit, AGFI=adjusted goodness-of-fit index greater than .90 indicates adequate fit, RMSEA=root mean square error approximation less than .08 indicates adequate fit ((Schumacker, & Lomax, 2004).

**Reliability of CRI**

To answer the question of "How reliable is coping responses inventory?" First of all, split-half coefficient was calculated. For the split-half coefficient, the scale was split into two halves such that the two halves would be as equivalent as possible. In splitting the items are taken into account the sequencing of the items as well as whether the item indicated control of coping responses or expression of coping responses. The first half included items 1, 2, 3, 4, 5, 8, 9, 10, 11, 12, 14, 15, 16, 17, 18, 19, 20, 21, 22, 24, while the other half items 24, 25, 26, 27, 28, 29, 30, 32, 33, 34, 35, 36, 38, 41, 42, 43, 44, 45, 46, 48. The split-half coefficient was .82 and the value for the coefficient alpha was .83. Each value indicates satisfactory reliability for overall scale and subscales.

According to the results, the approach responses and avoidance responses that make up coping responses were .79 and .71, respectively for alpha coefficient and values for split-half coefficient were .75 and .70, respectively. These results indicate that the items are reliable to measure the approach and avoidance responses. Overall coping responses, approach responses and avoidance responses also exhibited significant test-retest reliability. Table 9 gives an overview of sub-scales and overall scale means, standard deviation, and reliability.



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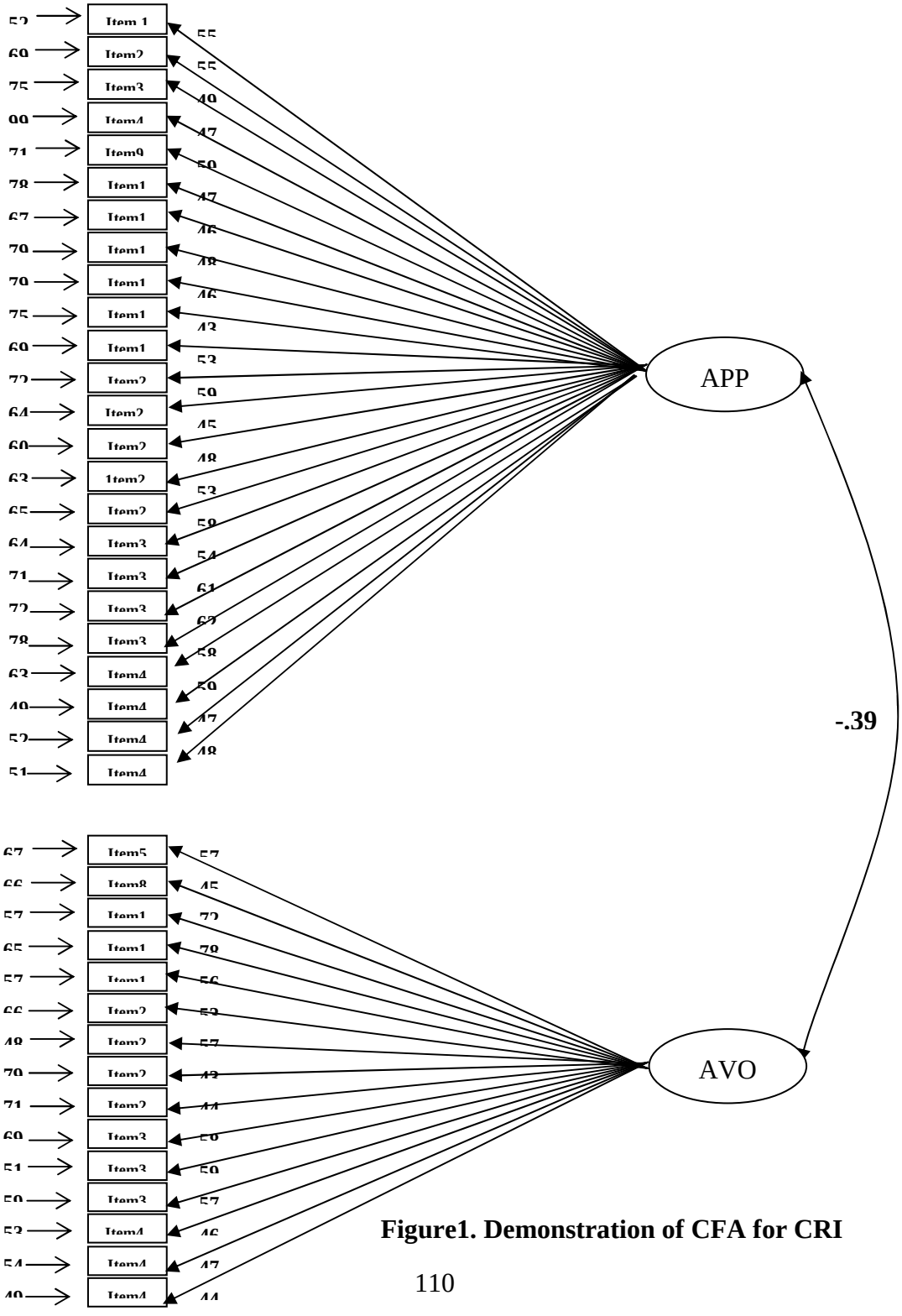



**Figure1. Demonstration of CFA for CRI**



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**Table 9.**
**Number of Items, Means, Standard Deviations and Reliability Coefficients for Coping Responses Inventory**

| Construct | N. of Items | Mean | Sd. | Alpha | Split-half | Retest |
|---|---|---|---|---|---|---|
| Approach Responses | 24 | 42.93 | 11.72 | .79 | .75 | .79 |
| Avoidance Responses | 15 | 21.43 | 5.49 | .71 | .70 | .76 |

**The Concurrent Validity of Coping Responses Inventory (CRI)**

The concurrent validity was computed for this group of students. In order to conduct this survey, correlations of the coping responses scale with mental health scale was evaluated in the sample group. Correlations of the coping responses with the mental health, physical symptoms, anxiety, social dysfunction and depression are reported in Table 8. The results showed that the scores of mental health and its sub-scales such as physical symptoms, anxiety, social dysfunction and depression had negative significant relation to approach responses. It means that the higher score of a person in approach responses is the less in the physical symptoms, anxiety, social dysfunction and depression and overall mental health. Conversely, the scores of mental health and its sub-scales such as physical symptoms, anxiety, social dysfunction and depression had positive significant relations to avoidance responses. It means that the higher is the score of a person in avoidance responses the higher is in the physical symptoms, anxiety, social dysfunction and depression and overall mental health.

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**Table 10.**

**Correlation coeficients between sub-scales, CRI, and GHQ**

| | APP | AVO | Phy | Anx | Sdy | Dep | GH |
|---|---|---|---|---|---|---|---|
| APP | | | | | | | |
| AVO | -.39* | | | | | | |
| Phy | -.484* | .43* | | | | | |
| Anx | -.40* | .39* | .31* | | | | |
| Sdf | -.53* | .47* | .28* | .22* | | | |
| Dep | -.44* | .46* | .22* | .23* | .23* | | |
| GH | -.48* | .38* | .38* | .41* | .48* | .45* | |

** correlation is significant at the 0.1 level (2-tailed)

* correlation is significant at the 0.5 level (2-tailed)

APP=Approach responses, AVO=Avoidance Responses, Phy=Physical disorder, Anx=Anxiety, Sdy=Social dysfunction, Dep=Depression, GH=General Health

## Discussion

The purpose of the present study was to adapt coping responses inventory for use in a sample of Iranian university students. There are forty-eight items in coping responses inventory (Moos, 2004). However, nine items from a total of forty-eight items, did not meet the requirement in translated coping responses inventory for Iranian students, and therefore these items were dropped. The subtracted items were in accordance with the following; a) the total of 9 items were deleted from the 24 items of the avoidance responses, remaining 15 items. b) no item was deleted from the 24 items of approach responses and remaining 24 items. The total suitable items for measuring the coping responses in the university students according to the items of the domains analysis were 39 items, and these are the items that fulfill the required criteria. Nine items were deleted for several reasons. Among these reasons: low domain loading, which was set at less than .35 or that the item has loaded on more than one domain. One of the items that were deleted was number 23 (Did you spend more time in



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recreational activities) in the avoidance construct dimension. The loading of this item was very low than the standard loading set in the analysis. The low loading of this item is due to the culture effect and the paucity of recreation activities in Iran. This in turn, could cause the item to receive the same rating/evaluation value from all the respondents that will affect its appropriateness due to its weak ability to discriminate, so, has to be deleted. In contrast, the item number 10 (Did you remind yourself how much worse things could be?) has the highest degree of factor loading of .71 in the approach responses domain.

This is a strong indicator of its appropriateness as well as its power to discriminate among the sample elements. Whereby the construct indicates that there is a degree of disparity in the estimate of optimism from one individual to another, that is, due to the level of persevering struggle and effort encounter of surrender and avoidance. Consequently, individuals who believe that the goal is available try to gain that goal even when the work is very hard and difficult. If the goal is not available they will stop their effort and struggle (Skinner, Edge, Altm, & Sherwood, 2003; Sharoff, 2004). With respect to the remaining items, they all received a highest degree of domain loading required. Concomitantly, they were retained in the instrument, and where shown to have higher stability and validity above what is required. This means that the instrument (Coping responses inventory) is a suitable measuring tool for the population it is adapted for.

Goodness of fits for the general model results in Table 8 were the recommended values of GFI, AGFI, CFI, and RMSEA. All of the indexes support the construct validity of the general CRI factor, which is composed two factors; Approach and Avoidance (see Table 8 and Figure 1). According to Schumacker and Lomax (2004), when the Goodness-of-Fit and Adjust Goodness-of-Fit indexes are greater than .90, and the Root Mean Square Error of Approximately is less than .08, the analysis indicates adequate fit of the models (Schumacker, & Lomax, 2004). These indices supported theoretically that the construct of Coping Responses is psychometrically sound and fit the model for Iranian students. This result of the (GFI) indicates that coping responses data collected from Iranian



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university students are fit. This also points to the fact that the coping responses domains are replicable across Iranian cultures.

In order to determine the reliability of the CRI, the researchers used the Alpha-Chronbach coefficient and split-half coefficient as indicator to the internal consistency of the instrument. The value of this correlation for the sample consisting of 576 male and female university students and the value of the reliability coefficient for the instrument as a whole was .75. According to the results, the approach responses and avoidance responses that make up coping responses were .79 and .71, respectively for the alpha coefficient and the values for the split-half coefficients were .75 and .70, respectively. These results indicate that the items are reliable to measure the approach and avoidance responses. Similary, the instrument enjoys a high level of internal consistency. According to Hair, Anderson, Tantham, and Black (1998), high reliability (internal consistency) indicates that the items measuring the same construct are highly intercorrelated. The more the measures are reliable they provide the researchers with greater confidence that the individual indicators are consistent with their measurements. Overall coping responses, approach responses and avoidance responses also exhibited significant test-retest reliability. This means that the required reliability level in the measurement was fulfilled**.**

The CRI-Adult has been translated into several Western European Languages, including French, German, and Spanish; it also has been translated into Japanese. It has been used in studies in Spain (Kirchner & Mohino, 2003; Villaricencio Carrilo & Sebastian Herranz, 1999), Croatia (Rijavec & Donevski, 1994), India (Satija, Advani, & Nathawat, 1997), and Japan (Fukunishi, Hosaka, Neglishi, Moriya, Hayashi, & Matsumoto, 1997). A Spanish version of the CRI also has been used with Spanish–speaking individuals in the U.S.A. (Crean, 1995).These findings indicate that the model of coping responses is psychometrically sound and can be considered to be used to examine the human coping responses. Moos (2004) published a manual supplement that gives an overview of the body of research utilizing the CIR-A since its first publication. It contains data



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on study participants ranging from the young to the elderly, describes the inventory's utility, and offers evidence of the validity of CRI-A.

## Conclusion

In the present study, various analyses were used to obtain information on the reliability and validity of the coping responses inventory, CRI among Iranian college students. This study provides some evidence of a reliable and valid measure of coping responses in two sections: (a) Approach, (b) Avoidance. The results showed that CRI-Adult is a valid and reliable inventory to asses coping responses. The Coping Responses Inventory (CRI) is useful in counseling, stress management education, and other settings. The CRI has the potential to assist university counseling in identifying and monitoring the coping strategies in adults and adolescents, to develop better clinical case descriptions, and to plan and evaluate the outcome of treatment.

## Limitations of the study

The results of this study should be considered in light of a number of limitations. The first limitation relates to the self-report survey approach. Due to the nature of survey research, self-report data is relied upon the participants' responses which can be inaccurate because of the inherent dynamics of self-report (Antony & Barlow, 2002; Fisher & Corcoran, 2007). The gap in time between the experiences and responses may have influenced participants' current appraisal and may therefore not be an accurate reflection of past details. Although self-report data has inherent limitations, the topic of this research lends well to survey research in that participants can offer anonymous information about extremely sensitive information that might not be otherwise shared.

The second limitation is related to demographic variables. Participants were recruited from a population of undergraduate students. Undergraduate students are said to experience high levels of ongoing coping responses. However, the unique characteristics of the sample may restrict the generalizability of the findings to other populations.



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