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ARAŞTIRMA MAKALESİ / RESEARCH ARTICLE

THE TURKISH VERSION OF THE COPING RESPONSES INVENTORY ADULT FORM (CRI-A) AND TESTING ITS PSYCHOMETRIC PROPERTIES

BAŞA ÇIKMA TEPKİLERİ ÖLÇEĞİ TÜRKÇE YETİŞKİN FORMUNUN (BTÖ-Y) PSİKOMETRİK ÖZELLİKLERİNİN SINANMASI

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Abstract

Lazarus and Folkman's Transactional Model of Stress and Coping highlights the significance of community-individual interaction in coping. Accordingly, CRI-A, as developed by Moos involves four sub-dimensions for each of approach and avoidance coping responses. The aim of this research to evaluate the psychometric properties of CRI-A. Data were collected from a total of 400 university students whose ages vary between 17-48. Of the 250 participants, the validity of the Inventory has been tested through exploratory factor analysis (EFA), and correlations with Stress Coping Styles (SCSI), Locus of Control (LCI), and Eysenck Personality (EPI) Inventories. With the remaining 150 students, a confirmatory factor analysis (CFA) has been conducted. The results indicate that alpha coefficients of approach and avoidance subtests of CRI-A range between .60-.70, and .53-.68, respectively. CRI-A and most SCSI subtests, CRI-A's avoidance and LCI scores, and CRI-A and EPI scores yielded significant correlations. The CFA showed good fit indices for the factor structure extracted from EFA. The findings provide acceptable evidence for the validity and reliability of CRI-A.

Keywords: Coping, Approach, Avoidance, Validity and Reliability

Öz

Lazarus ve Folkman'ın Transaksiyonel Stres ve Başa Çıkma modeli, başa çıkmada çevre-birey etkileşiminin önemini vurgulamıştır. Bu eksende Moos tarafından geliştirilen Başa Çıkma Tepkileri Ölçeği Yetişkin formu

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(BTÖ-Y), yaklaşma ve kaçıngan başa çıkma yaklaşımlarına ait dörder alt boyuta sahiptir. Bu araştırmada BTÖ-Y'nin psikometrik özelliklerinin değerlendirilmesi amaçlanmıştır. Yaşları 17-48 arasında değişen 400 üniversite öğrencisinden veri toplanmıştır. Örneklemdeki 250 katılımcıda, ölçeğin geçerliği için açımlayıcı faktör analizi (AFA) yürütülmüş ve Stresle Başa Çıkma Tarzları Ölçeği (SBTÖ), Kontrol Odağı Ölçeği (KOÖ) ve Eysenck Kişilik Envanteri (EKE) ile korelasyonları hesaplanmıştır. Örneklemdeki 150 katılımcıda ise AFA sonucu elde edilen faktör yapısı doğrulayıcı faktör analizi (DFA) ile sınanmıştır. Analiz sonuçları, BTÖ-Y'nin yaklaşma alt boyutlarının alfa katsayılarının .60-.70 arasında; kaçıngan alt boyutlarına ait alfa katsayılarının ise .53-.68 arasında olduğunu göstermiştir. Geçerlik bakımından ise, BTÖ-Y ve çoğu SBTÖ alt testi, BTÖ-Y'nin kaçınma ve KOÖ puanları ve BTÖ-Y ile EKE puanları arasında belirgin korelasyonlar olduğu görülmüştür. DFA, EFA ile elde edilen yapı için iyi uyum iyiliği değerleri ortaya koymuştur. Bulgular, BTÖ-Y'nin geçerliği ve güvenirliği için kabul edilebilir kanıtlar sağladığını göstermektedir.

Anahtar Kelimeler: Başa Çıkma, Yaklaşma ve Kaçıngan Başa Çıkma Yaklaşımları, Geçerlik ve Güvenirlik

1. Introduction

When coping literature is reviewed, various conceptualizations such as ego processes and defense mechanisms (Haan, 1977), escape/avoidance (Overmier and Seligman, 1967), passive/active coping (Obrist, 1981), blunters/monitoring (Miller, 1980b) are observed. The first description is based on research results obtained from animal models of behavioural approach where coping is governed by physiological/autonomous processes of escape, avoidance or freeze against threat signal (Miller, 1980a; Overmier and Seligman, 1967; Ursin, 1980). The second branch is based on ego psychology and treats coping mostly as mental reactions to a stressor that are further evaluated in two dimensions of structure and function. Structural explanations assume that coping has a hierarchical array, i.e., breaking up the functions of ego at the lowest level. Within the context of functionality, concerns are on whether the method employed poses a threat to the integrity or distorts the reality testing capacity of the ego; efforts that do not undermine functionality is called coping (Haan, 1977; Vaillant, 1995).

Lazarus and Folkman (1984) criticize behavioural/psychopysiological approaches as they consider coping only in terms of avoidance-escape and do not yield knowledge concerning strategies such as cognitive coping or defenses. On the other hand, they find ego perspectives limited as they reduce coping to a style/personality trait. Another criticism of ego approaches is about their functionality-oriented explanations. For instance, "denial" in these approaches is considered to be a dysfunctional defense that destroys ego integrity (Goldstein, 1973). Lazarus and Folkman (1984) highlight the counterproofs and discuss that "denial" can be functional depending on the context. Accordingly, they have defined coping as efforts of adaptation that serve to restore the disturbed homeostasis due to perceived stress. They have clustered behavioral and cognitive efforts in two basic dimensions, problem and emotion-focused, the first to alter the source of stress, and the second to alleviate negative emotions (Folkman and Lazarus, 1980). They have stipulated those appraisals about the nature or the controllability of the stressor initiates the process, and that the impact of stress on health and

functionality can vary depending on the coping strategies employed following these appraisals (Lazarus and Folkman, 1984).

Lazarus and Folkman also made suggestions about how to measure coping. They have offered coping efforts to be studied longitudinally and specific for the stressor (Folkman and Lazarus, 1980). Their scale named Ways of Coping Questionnaire (Folkman and Lazarus, 1980), has been adapted to different languages including Turkish. The scale studies in Turkey, in both clinical and community samples, included adaptation and the development of a shorter version (Siva, 1991; Şahin and Durak, 1995; Şenol-Durak, Durak and Elagöz, 2011). Thus, Lazarus and Folkman's model provide both conceptual and methodological contributions to the field of stress, health and coping.

Another effort about measuring coping is seen in the writings of Billings and Moos (1981) and Moos (1984). In line with Lazarus and Folkman, Billings and Moos (1981) have also criticized traditional uni-dimensional approaches. Lazarus and Folkman's problem and emotion-focused conceptualizations have been renamed in their model as "focus of coping". Furthermore, they have grouped coping strategies in three groups of active/cognitive, active/behavioural and avoidance responses. Thus problem-focused and emotion-focused coping efforts can be active/cognitive, active/behavioural or behavioural/cognitive avoidance.

Moos then revised active coping under the heading of approach responses and developed Coping Responses Inventory (Moos, 1993; Moos, 2004). In this Inventory, the first factor covers the coping responses that include approach and avoidance responses that intearct with the second factor that covers cognitive and behavioural methods. Even though the Inventory has been adapted in different languages (Chinaveh, 2013; Kirchner et al, 2008) no measurement tool has been found in Turkey that addresses coping from the perspective of Billings and Moos (1981).

This research aims to adapt Coping Responses Inventory –Adult Form (CRI-A), which was originally developed by Moos in 1993, into Turkish and to test its validity and reliability in a sample of university students. With respect to construct validity, it is expected that cognitive/behavioural strategies grouped under approach/avoidance dimensions will yield similar factor structure with the original version. In terms of convergent validity, there will be significant correlations between CRI-A's approach dimensions and problem-oriented coping style dimensions of Stress Coping Styles Inventory, (SCSI; Şahin & Durak, 1995); and avoidance dimensions of CRI-A and emotion-oriented coping style dimensions of SCSI. Besides, based on Lazarus and Folkman's (1984) assumption that when the stressor is perceived as controllable, problem-oriented coping methods will be adopted while when it is perceived as uncontrollable, emotion-oriented coping method will be employed, it is believed that there will be significant correlations between control beliefs measured by Locus of Control Inventory (LCI; Dağ, 2002) and CRI-A. In the literature, associations between coping strategies and personality traits, especially neuroticism and extroversion are also considered (Moos & Holahan, 2003). Therefore, the correlations between CRI-A and Eysenck Personality Inventory (EPI) scores will be investigated. It is further expected that each dimension of the inventory will show

internal consistencies similar to the original version. It is hoped that the Turkish version of CRI-A will enable for testing different models on stress, coping and health.

2. Method

2.1. Participants

A total of 400 volunteer students from various departments of Istanbul University, aged between 17-48 (M: 20.87; SD: 2.84), 116 males, 284 females, who gave informed consent, participated in the study. Of the participants, 250 (aged between 18-48; M: 20.72; SD: 2.46; 68 males, 182 females) were included in the analysis concerning item analysis, EFA, the tests regarding internal consistencies, and inter-scale and convergent validity correlations. For confirmatory factor analysis (CFA), the rest of 150 participants (aged between 17-43; M: 21.10; SD: 3.37; 48 males, 102 females) were included in the analysis. None of the participants reported any history of psychiatric/neurological/hormonal disorders. Data collection and its entry were done between March 2014-October 2017.

2.3. Instruments

2.3.1. Coping Responses Inventory Adult Form (CRI-A)

CRI-A (Moos, 1993; 2004) is a 48-item scale, administered to people aged 18 and over, measured by a 4-point Likert type scale consisting of ''Definitely No", "Mainly No", "Mainly Yes" and "Definitely yes". The questions in the inventory are answered based on a problem experienced within the last 12 months. In the inventory, various cognitive/behavioural strategies are grouped under four subtests of approach and four subtests of avoidance dimensions (Moos, 1993):

Approach Dimension (AP):
Logical Analysis (AP-LA): Cognitive attempts such as understanding a stressor and its impacts and preparing mentally.
Positive Reappraisal (AP-PR): Cognitive attempts to restructure the problem in a positive manner.
Seeking Guidance and Support (AP-SGS): Behavioural attempts for knowledge, guidance or support.
Problem Solving (AP-PS): Behavioural attempts to deal the problem directly.
Avoidance Dimension (AV):
Cognitive Avoidance (AV-CA): Cognitive attempts to avoid thinking rationally about the problem.
Acceptance or Resignation (AV-AR): Cognitive attempts to react through accepting the problem.
Seeking Alternative Rewards (AV-SAR): Behavioural attempts to be occupied with alternative activities.
Emotional Discharge (AV-ED): Behavioural attempts to reduce tension by expressing negative emotions.
The internal consistencies of the above-given subtests are reported to be .65, .73, .61, .66, .71, .62, .70 and.60 respectively (Moos, 1993).

With respect to language adaptation of CRI-A, 3 translators advanced in both languages translated the inventory into Turkish. Turkish translations agreed to represent the items the best have been

accepted. The final form of the Turkish version was back-translated into English by another translator who also was advanced in both languages. The back-translation of the inventory was approved by the PAR company. The data were collected within the scope of the project named "Adult Norms of Coping Responses Inventory in Turkish university students" with the permission of PAR company.

2.3.2. Stress Coping Styles Inventory (SCSI)

SCSI, which is administered to test the convergent validity of CRI-A, was developed by Şahin and Durak (1995) based on Lazarus and Folkman's (1984) coping model. It's a 30 item 4 Likert type inventory evaluated between 0-3. It consists of 5 subdimensions measuring self-confident, inconfident, optimistic, submissive and seeking social support approaches. In this research, Croncbach alpha values were .83, .75, .75, .54 and .74 respectively.

2.3.3. Locus of Control Inventory (LCI)

LCI (Dağ, 2002), used to test for the construct validity of CRI-A, consists of 47 items of 5 Likert-type, in 6 dimensions of personal control, belief in luck, meaninglessness of efforts, fatalism, belief in an unjust world and total scores. In this research, Croncbach alpha values were .87, .79, .71, .81, .53 and.88 respectively.

2.3.4. Eysenck Personality Inventory (EPI)

In order to test for the construct validity of CRI-A, 44-item short form of EPI consisting of neuroticism and extraversion dimensions measured through a "yes" and "no" scale has been employed (Topçu, 1982; Özalp-Türetgen & Cesur, 2006). Test-retest reliability values of neuroticism and extraversion dimensions are .78 ve .90 respectively. In this research, Cronbach alpha value of extraversion and neuroticism subdimensions were .80 and .84, respectively.

Data analysis was conducted using SPSS v.21.

3. Results

In order to test the psychometric properties of CRI-A, an item analysis followed by an exploratory factor analysis (EFA) with principal components and oblique rotation in which the total scores of the final versions of the eight subtests (AP-LA, AP-PR, AP-SGS, AP-PS from Approach, and AV-CA, AV-AR, AV-SAR and AV-ED from Avoidance dimensions) according to item analysis was conducted. Internal consistencies were evaluated through Cronbach alpha values. In item analysis, items with item-total correlations lower than .20 were omitted. Eigenvalues above 1 were considered as constituting a single factor.

According to results of item analysis, with respect to Approach dimension of CRI-A, no items were removed from AP-LA, AP-PR, and AP-PS whereas item 43 of AP-SGS was excluded. In terms

of Avoidance dimension, all items in AV-CA fulfilled the criteria. On the other hand, item 38 of AV-A, item 7 of AV-SAR, and item 16 of AV-ED had to be omitted from the scale. Results recruited from item-analysis, and internal consistencies for each subtest of Approach and Avoidance dimensions of the 44 item final version of CRI-A are presented in Table 1.

Table 1: Item analysis, EFA, and internal-consistency results of Approach and Avoidance subtests.

Factor/Item Contents	ITC-WS[1]	Factor/Item Contents	ITC-WS
CRI-A/ Logical Analysis. Cr.α[2]=.62		*CRI-A/ Cognitive Avoidance.* Cr.α=.66	
1[6]	.37	**5**	.58
9	.28	**13**	.62
17	.44	**21**	.66
25	.40	**29**	.58
33	.32	**37**	.63
41	.38	**45**	.63
CRI-A/: Positive Reappraisal. Cr.α=.70		*CRI-A/ Acceptance or Resignation.* Cr.α=.64	
2	.47	**6**	.32
10	.37	**14**	.47
18	.51	**22**	.32
26	.46	**30**	.53
34	.39	**46**	.33
42	.43		
CRI-A/ Seeking Guidance and Support. Cr.α=.60		*CRI-A/ Seeking Alternative Rewards.* Cr.α=.67	
3	.41	**15**	.50
11	.42	**23**	.38
19	.26	**31**	.31
27	.46	**39**	.44
35	.21	**47**	.53
CRI-A/Problem Solving. Cr.α=.68		*CRI-A/ Emotional Discharge.* Cr.α=.53	
4	.50	**8**	.28
12	.54	**24**	.27
20	.38	**32**	.28
28	.50	**40**	.38
36	.38	**48**	.31
44	.29		

ITC-WS[1]: Within subtest item-total correlations. Cr.α[2]=Cronbach alpha.

As a result of EFA, a two factor structure consisting of approach and avoidance as in the original version of CRI-A was obtained (KMO=0.739; Bartlett $X^2_{(28)}$=427.81, p<.001). Yet it was observed that AV-SAR subtest of the Avoidance dimension, showing a communality value below .30, loaded to Approach dimension rather than the Avoidance in the pattern matrix. The results of this analysis were given in Table 2 along with Cronbach alpha values and descriptive statistics.

Table 2: EFA results and descriptives and internal consistencies of Approach and Avoidance dimensions.

Subtests	Mean±SD	FL[1]	COM[2]	ITC-WS[3]
CRI-A-Approach Eigenvalue=2.66; Variance[4]=%33.22; Cr.α[5]=.74	49.95±12.55[6]			
Problem Solving	10.75± 4.16	.77	.68	.55
Seeking Guidance and Support	7.60±3.12	.75	.56	.55
Positive Reappraisal	11.52± 3.83	.71	.50	.52
Logical Analysis	12.35±3.27	.76	.62	.58
Seeking Alternative Rewards	7.72± 3.48	.49	.27	.33
CRI-A Avoidance Eigenvalue=1.74; Variance=%221.73; Cr.α=.65	24.77±8.21[6]			
Acceptance or Resignation	7.43±3.56	.81	.66	.48
Cognitive Avoidance	10.95± 3.60	.80	.66	.53
Emotional Discharge	6.38±3.53	.66	.45	.38

[1]FL: Factor-loadings. [2]COM: Communalities. [3]ITC-WS: Within subtest item-total correlations. [4] Variance: Total variance explained by the subtest. [5]Cr. α= Cronbach alpha. [6]Descriptives calculated from dimension total scores.

Table 3: Inter-scale correlations among Approach and Avoidance subtests of CRI-A.

	Approach					Avoidance				
	AP-LA	**AP-PR**	**AP-SGS**	**AP-PS**	**AP-T**	**AV-CA**	**AV-AR**	**AV-SAR**	**AV-ED**	**AV-T**
AP-LA	1	.45**	.42**	.47**	.75**	.26**	.13*	.29**	.28**	.36**
AP-PR		1	.39**	.41**	.75**	.18**	.09	.25**	.02	.20**
AP-SGS			1	.49**	.73**	.10	-.04	.25**	.17**	.18*
AP-PS				1	.80**	-.10	-.21**	.22**	.01	.02
AP-T					1	.14*	-.02	.33**	.15*	.24**
AV-CA						1	.49**	.12	.36**	.75**
AV-AR							1	.09	.30**	.71**
AV-SAR								1	.13*	.51**
AV-ED									1	.69**
AV-T										1

Within the scope of construct validity, inter-scale correlations were also calculated. It is observed that the subtests in Approach dimension had correlations varying between r=.39 and r= .77 (p< .001). All subtests also showed strong correlations with Approach total score (p< .001). For Avoidance dimension, except for the correlation between AV-SAR and AV-AR scores (r= .09, p>.05) and AV-SAR and AV-CA scores (r= .12, p>.05) it was observed that all other subtests had significant relations (Table 3).

The significant correlations between the subtests of Approach and Avoidance dimensions ranged between .13 and .36. On the other hand, for AV-AR no correlations were found with AP-PR, AP-SGS and Approach total scores. Similarly, no correlations were observed for AV-CA scores with AP-SGS and AP-PS scores; AV-ED with AP-PR and AP-PS; and finally between Avoidance total score and AP-PS scores (Table 3).

Within the scope of convergent validity, CRI-A's Avoidance and Approach subtest correlations with SCSI has been analyzed. The highest correlation with SCSI-self-confident score was for AV-CA (r=-.29, *p*'s<.001). For SCSI-inconfident score, AV-CA and AV-ED scores showed the highest values (r= .39, r=.33, *p*'s<.001). AP-PR had the strongest correlation with SCSI-optimistic scores (r= .39, p<.001). On the other hand, AV-AR scores had the strongest relation with SCSI-submissive scores (r= .33, p<.001). AP-SGS had the highest correlation with SCSI-social support scores (r=.36, p<.001) (Table 4).

With respect to locus of control, the only significant correlation of LCI-personal control score was found to be with AV-AR subtest (r=.14, p<.05). AV-CA scores had the strongest correlation with LCI-belief in luck score (r=.34, p<.001). AV-AR subtest showed the highest relation with LCI-meaninglessness of efforts scores (r=.26, p<.001). AP-PR scores had the strongest correlation with LCI-fatalism scores (r= .26, p<.001). It was observed that LCI-belief in an unjust world scores had the weakest correlations with AV-AR and total Avoidance scores (r=.16, r= .15, *p*'s<.05 respectively). Finally, AV-CA and AV-AR scores revealed the highest relations with LCI-total score (r=.25, r= .26, *p*'s<.001 respectively). (Table 4)

In terms of personality, EPI-extraversion had weak correlations with AP-PS, Approach total and AV-SAR scores (r= .16; r= .16, r= .13, *p*<.05 respectively). On the other hand, EPI-neuroticism score showed the strongest relation with AV-ED subtest (r= .46, p< .001). All these correlations and the descriptives of SCSI, LCI, and EPI subtests are presented in Table 4.

Table 4: CRI-A subtest correlations with SCSI, LCI, and EPI.

		CRI-A Approach					**CRI-A Avoidance**				
	Mean±SD	**AP-LA**	**AP-PR**	**AP-SGS**	**AP-PS**	**AP-T**	**AV-CA**	**AV-AR**	**AV-SAR**	**AV-ED**	**AV-T**
EPI											
Extraversion	12.85/4.27	.12	.11	.08	.16*	.16*	.03	.01	.13*	-.02	.06
Neuroticism	12.39/5.28	.23**	-.11	.06	-.07	.02	.32**	.21**	-.07	**.46****	.34**
SCSI											
Self-confident	13.91/3.93	.10	.27**	.14*	**.27****	.27**	**-.29****	-.24**	.20**	-.21**	-.22**
Inconfident	10.66/4.48	.16	-.08	.07	-.09*	-.00	**.39****	.27**	-.05	**.33****	.35**
Optimistic	8.50/2.99	.07	**.39****	.03	.21**	.24**	-.12	-.10	.18*	-.32**	-.13*
Submissive	5.08/2.75	-.03	.12	-.10	-.09	-.03	.23**	**.33****	-.09	.07	.20**
Social support	7.28/2.57	.10	.21**	**.36****	.12	.25**	.05	-.10	.03	-.02	-.01
LCI											
Personal control	47.09/9.96	-.11	.01	-.05	-.12	-.09	.10	.14*	-.05	0	.07
Belief in luck	31.39/6.40	.04	.09	.02	-.05	.03	**.34****	.18**	.02	.19**	.28**
Meaningless. of ef.	21.73/5.35	.04	.01	-.07	-.11	-.04	.18**	**.26****	-.01	.16*	.22**
Fatalism	9.90/3.25	.09	**.26****	-.03	.08	.14*	.08	.14*	.08	.02	.12
Unjust world	10.57/2.96	.01	-.07	-.04	-.06	-.06	.12	.16*	.02	.07	.14*

LCI Total Score	120.7/18.76	-.02	.08	-.05	.05	-.04	**.25****	**.26****	.01	.13*	.24**

AP-LA: Logical Analysis, AP-PR: Positive Reappraisal, AP-SGS: Seeking Guidance and Support, AP-PS: Problem Solving, AV-CA: Cognitive Avoidance, AV-AR: Acceptance or Resignation, AV-SAR: Seeking Alternative Rewards, AV-ED: Emotional Discharge *p <.05; **p<.001

For further evidence for construct validity, a confirmatory factor analysis (CFA) was conducted in a distinct sample of 150 students in order to confirm the factor structure of the final model extracted from EFA presented in Table 2, using LISREL 8.51. With respect to CFA, the extracted model (Model 1) was compared with the alternative model (Model 2) of a two-factor structure proposed in the original version. It was expected that the current extracted model would yield better fit indices than the one in the original version. The fit indices and the beta statistics along with the t values are presented in Table 5. According to the results of CFA, although the current model did not significantly differ from the original alternative model ($X^2(1)=29.18$, $p>.05$), the goodness of fit indices for the former were observed to fit the expected model better than the alternative model.

Table 5: The goodness of fit indices, beta and t-values of the current extracted model (Model 1) and the orginal / alternative model (Model 2).

	Model 1	Model 2
X^2 /df	32.53 / 19	61.71 / 19
RMSEA[1] / %90 CI	.069 / (.02-.11)	.123 / (.09-.16)
GFI[2]	.95	.91
AGFI[3]	.90	.82
CFI[4]	.92	.74
sRMR[5]	.066	.13
	Beta values / t values	Beta values / t values
Problem Solving (AP)	.68 / 7.82**	.70 / 7.36**
Seeking Guidance and Support (AP)	.54 / 5.98**	.53 / 5.65**
Positive Reappraisal (AP)	.53 / 5.94**	.51 / 5.39**
Logical Analysis (AP)	.58 / 6.53**	.60 / 6.34**
Seeking Alternative Rewards[6] (AP/AV)	.87 / 6.93**	.19 / 2.00*
Acceptance or Resignation (AV)	.89 / 6.94**	.84 / 7.35**
Cognitive Avoidance (AV)	.58 / 6.58**	.50 / 5.22**
Emotional Discharge (AV)	.53 /5.26**	.55 / 5.62**

[1]RMSEA: Root mean square error of approximation; [2]GFI: Goodness of fit index; [3]AGFI: Adjusted goodness of fit index; [4]CFI: Comparative fit index; [5]sRMR: Standardized root mean square residual; [6]Seeking Alternative Rewards subtest is loaded on approach dimension in Model 1 and avoidance dimension im Model 2.
*p <.05; **p<.001

4. Discussion

In this research, for the purpose of testing the psychometric properties of CRI-A developed by Moos (1993), an item analysis followed by EFA were carried out and correlations of the inventory with coping, locus of control and personality constructs were calculated in a sample of 250 university

students. In order to confirm the factor structure of the model extracted in the current study, a further confirmatory factor analysis using structural equation modeling was conducted in a second sample of 150 university students. The findings concerning the results of these analysis will be discussed separately for exploratory analysis that include item analysis, EFAs, CFA; correlations, internal consistencies, and CFAs, in the following sections, respectively.

4.1. Item Analysis

With respect to item analysis, item 43 containing ''pray for guidance or strength" of AP-SGS subtest, and item 16 containing ''take a chance and risky behaviour' of AV-ED subtest were excluded as they had a low item-total correlation. Aguilar-Vafaie and Abiari (2007) argue the possible effects of socio-cultural factors on ways of coping. Accordingly, these researchers added another subscale named "religious coping" to CRI-A in their study conducted with a group of Iranian university students. These factors can be considered as an explanation for the omitted item of 43, and item 16 in the current research. There may be a revision regarding religious coping in future studies. On the other hand, the content of item 16 was indeed different from other items of the subtest. While this item describes risk taking behaviour, others seem to cover approach strategies. Actually, in the current study, the correlation of this subtest with Approach total score was stronger than its correlation with Avoidance dimension total score. In the research of Aguilar-Vafaie and Abiari (2007), it was also reported that the correlation of AV-SAR strategy with AP-PS subtest was almost as high as with AV-CA.

Due to low item-total correlations, item 38 containing "*expect the worst outcome*" from AV-AR subtest, and item 7 containing "*help others having a similar problem*" from AV-SAR subtest were also omitted. When closely examining these items omitted from the Avoidance dimension, it can be argued that item they might have low variances due to cultural concerns. With respect to item 7, in Turkey, which is considered to be close to centre of the individualism-collectivism continuum (İmamoğlu et al., 2011), it can be assumed that most members of the community may show high motivation to help those in need. Accordingly, Kumru et al. (2004) in their study on individual and cultural predictors of positive social behaviour in university students from Turkey, reported that collectivistic values are strong predictors of emotional and altruistic positive social behaviour, and as age increases, emotional positive social behaviour level increase. Likely, Aguilar-Vafaie and Abiari (2007) discussed that coping may vary according to cultural characteristics. In this context, especially for item 7, it can be argued that the participants had similar properties and the obtained variance was low.

4.2. EFA, CFA, and Internal Consistencies

In the adaptation conducted by Chinaveh (2013) in Iran with a sample of university students, the two-dimensional approach consisting of avoidance and approach as suggested by Moos was confirmed where all items were tested together in factor analysis. In the present research, due to the limited sample size, the EFA had been conducted with the total scores of the inventory subtests. This strategy

has also been adopted by Kirchner et al (2008). According to the model extracted, a two-factor structure of approach and avoidance coping was verified. However, as have been observed in Kirschner et al (2008), AV-SAR of avoidance coping in the original model loaded on Approach coping factor in the current extracted version. The correlation between dimensions and subtests, which constituted another method that can be employed as a proof for the validity of the inventory, indicated that correlations between dimension subtests and dimension total scores of all subtests other than AV-SAR, are higher than their correlations with the other dimension subtests. The current factor structure was further tested and compared with the original factor structure via CFA, where the model in which AV-SAR loaded on approach dimension yielded better fit indices than the one in the original model. Together with all these findings and the eliminated item number 16, the AV-SAR subtest items of the inventory can be revised within the scope of risk-taking behaviour. Nevertheless, the present items can further be tested in a larger sample to see whether they load to the approach dimension.

After the elimination of one item from the Approach, and three items from the Avoidance dimensions, alpha values with the remaining 44-item version were similar with Moos' (1993) study. Even lower coefficients were reported (2008) by Kirchner et al.; AP-SGS and AV-ED subtests showed particularly lower values ranging between .50-.60 in both males and females (Kirchner et al., 2008). The reported coefficients in different studies indicate that the internal consistency of the subtests of the inventory are not high in general. These common findings may suggest that the structure of the inventory can be sensitive to cultural and various intergroup differences and that all items should be examined with an exploratory factor analysis in a larger sample. Thus, it is possible to obtain further data on the cultural sensitivity for the coping model suggested by Billings and Moos (1981).

4.3. Correlations

In this research, the validity of the inventory was also tested by comparing its relations with other inventories. For this purpose, SCSI, LCI and EPI were employed. SCSI was preferred as it had dimensions that contained structures similar to CRI-A (Şahin & Durak, 1995). Even though it does not represent a theoretical basis that matches that of CRI-A, SCSI, too, focuses on the person-environment interaction framework of Lazarus and Folkman's coping model (1984) (Şahin & Durak, 1995). In this context, as compared to other correlations, the stronger correlations observed especially between SCSI-social support scores and AP-SGS, AP-PR with SCSI-optimistic approach, and AP-PS with SCSI-self-confident scores can be considered as a proof for the validitiy of the Approach dimension of CRI-A. Besides, it was observed that AV-CA, AV-AR and AV-ED subtests had highest correlations with SCSI-inconfident, submissive and inconfident scores, respectively. These can be considered as evidence for the validity of CRI-A Avoidance dimension. However, confident and optimistic approach subtests that represent approach strategies in SCSI exhibited significant but weak correlations with AV-SAR scores. These parallel the above-stated arguments concerning the revision of AV-SAR.

Another variable evaluated in relation to the concept of coping is the locus of control (Bamber, 2006, p.28; Parkes, 1984). There are findings which suggest that as internal locus of control increases,

use of problem-focused strategies such as problem solving or planned behaviour increase, and as the external locus of control increases, the levels of employing methods such as belief in fate, submissive or helpless coping also increase (Kurtović, Vuković, & Gajić, 2018). Accordingly, in the present study, it was observed that belief in luck, which is one of the subdimensions of LCI, had the highest correlation with AV-CA, meaninglessness of efforts with AV-AR, fatalism with AP-PR scores. It was observed that LCI total scores had significant correlations only with Avoidance dimension total scores and AV-CA and AV-AR subtests. These results are generally consistent with the expectations of this study and the literature. For instance, Anderson's (1977) longitudinal research, which is one of the first studies relating performance in the workplace to coping and locus of control, reported that those who used task-oriented coping behaviour scored higher in internal locus of control whereas those who used emotion-focused methods had higher external locus of control. On the other hand, Groth et al (2019) emphasized locus of control functionality which they defined as a tendency to explain negative events with internal, positive events with external factors. In future studies, especially LCI personal control subtest scores, which did not correlate with any dimensions, or other insignificant correlations observed between CRI-A and LCI, can be studied in terms of locus of control functionality.

It is observed that the relationships between coping strategies and personality traits, especially neuroticsm and extroversion are also evaluated (Moos & Holahan, 2003). In the present study, it was found that EPI extroversion scores showed a significant yet weak correlation with only AP-PS, Approach total and AV-SAR scores. However, EPI neuroticism subtest had correlations with only AP-LA score of Approach dimension, whereas it was correlated with all subtests of Avodiance dimension except for AV-SAR and Avoidance total score. Literature reports neuroticism shows significant relations with avoidance dimension of coping (Moos & Holahan, 2003), and even it predicts post-traumatic stress symptoms in a group of burn cases through avoidant coping (Lawrence & Fauerbach, 2003). On the other hand, it is stated that extroversion correlate with problem-oriented coping (Moos & Holahan, 2011). Lawrence and Fauerbach (2003) also reported that although not as strong as neuroticism, extroversion, which is measured by NEO Five-Factor Personality Scale, is associated with active coping. In the current study, EPI was preferred as it is a shorter form as compared to alternative scales evaluating personality. In future studies, the validity of CRI-A can be reviewed using measures that represent five factor personality model.

Considering the limitations of the current study, sample size can be viewed as an important limitation. Even though Kline (1994) mentions different criteria for minimum sample size, he recommends achieving 10 cases per item for the minimization of measurement errors. Both the Spanish (Kirchner et al., 2008) and Iranian (Aguilar-Vafaie & Abiari, 2007; Chivaneh, 2013) versions of CRI-A meet this criterion. Therefore, in the current study, an EFA including all the items could not be conducted. Rather, an EFA was performed where only the subtest total scores were included. These findings should be interpreted with caution, repeating exploratory analyses including all items in a larger sample. Besides, as male participants were lower than females, gender differences could not be evaluated. However, it is reported that coping strategies differ according to gender (Kirchner

et al., 2008; Moos, 2004). Examining coping profiles according to gender in future studies can provide practical knowledge. In addition, as mentioned above, EPI, which is used to evaluate relationships of coping with personality, may have been insufficient in scope. It is recommended to evaluate these relationships with different measures in the future. Lastly, it is seen that the adult form of the scale is used in different occupational groups, those exposed to different stress sources, different age categories, and different clinical samples. (Moos, 2004). In the current study, the fact that sample included only a group of university students, can be considered as a specific restriction in terms of representation. Collecting data from heterogeneous samples can provide further evidence for discriminant validity.

Despite all these limitations, both the findings regarding the factor structure and internal consistency, and its correlations with the structures expected to be related indicate that CRI-A parallels the findings observed in literature, and provides acceptable evidence of its validity and reliability. It is hoped that CRI-A will contribute to the field in terms of testing current coping models. Besides, it is thought that the CRI-A, whose questions are defined over a problem experienced, will help us better understand how we deal with life events that are significantly restrictive or less important.

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