

# Validity of The Coping Inventory for Stressful Situations - Short Form (CISS-21) in a Non-Clinical Turkish Sample

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## ABSTRACT

Validity of the Coping Inventory For Stressful Situations - Short Form (CISS-21) in a non-clinical Turkish sample

**Objective:** The Coping Inventory for Stressful Situations (CISS) is a promising psychometric instrument with sound psychometric properties. In this study, we aimed to examine psychometric properties of the Coping Inventory for Stressful Situations-Short Form (CISS-21) in a relatively large Turkish college sample.

**Method:** 978 undergraduates participated in the study. Mean age of the sample was 20.33 (SD±3.17). 33.33 percent of the sample were males (n=326). In the study, the Coping Inventory for Stressful Situations-Short Form (CISS-21), Positive and Negative Affect Schedule (PANAS), and Satisfaction with Life Scale (SWSL) were administered. To explore the validity of the psychometric instrument, confirmatory factor analysis and Pearson's correlations of subscales with psychological variables were computed. Later, internal consistency and test-retest correlations between two applications were obtained 15-day apart to evaluate reliability of the instrument.

**Results:** In the confirmatory factor analysis, three-factor structure model generated root mean square error of approximation (RMSEA) value of 0.07, comparative fit index (CFI) value of 0.91, incremental fit index (IFI) value of 0.91, a non-normed fit index (NNFI) value of 0.90, and SRSR value of 0.08. Confirmatory factor analysis provided evidence for the validity of three-factor structure in Turkish sample. Internal consistency estimates for the three dimensions of the scale were as follows: for the Task-oriented coping,  $\alpha=0.72$ ; for the Emotion-oriented coping,  $\alpha=0.77$ ; and for the Avoidance-oriented coping,  $\alpha=0.74$ . 15-day test-retest correlations for the sub-scales were as follows: for the Task-oriented coping,  $r=0.79$ ; for the Emotion-oriented coping,  $r=0.75$ ; and for the Avoidance-oriented coping,  $r=0.66$ . Positive affect was significantly associated with Task-oriented coping ( $r=0.36$ ) and negative affect was significantly associated with Emotion-oriented coping ( $r=0.44$ ).

**Conclusion:** Confirmatory factor analysis solution replicated the original three-factor structure of the CISS-21 in Turkish college sample. The scale is a valid and reliable instrument to be used in research purposes among Turkish sample.

**Key words:** Coping, assessment, confirmatory factor analysis, validity, reliability

## ÖZET

Stresli Durumlarla Başa Çıkma Envanteri Kısa Formu'nun (SDBÇE-21) klinik dışı Türk örnekleminde geçerliliği

**Amaç:** Stresli Durumlarla Başa Çıkma Envanteri, güçlü psikometrik özellikleri nedeniyle umut vaadeden bir ölçme aracı niteliği taşımaktadır. Bu çalışmada, Stresli Durumlarla Başa Çıkma Envanteri-Kısa Formunun psikometrik özelliklerinin, ülkemizde bir üniversitede lisans eğitimi almakta olan Türk öğrenciler üzerinde sınanması amaçlanmıştır.

**Yöntem:** Araştırmaya toplam 978 üniversite öğrencisi katılmıştır. Öğrencilerin yaş ortalaması 20.33'dür (SS±3.17). Çalışmanın örneklemini oluşturan grubun %33.33'ü erkektir (n= 326). Bu çalışmada, Stresli Durumlarla Başa Çıkma Envanteri-Kısa Form (SDBÇE-21), Pozitif ve Negatif Duygulanım Ölçeği (PNDÖ), Yaşam Doymu Ölçeği (YDÖ) uygulanmıştır. Ölçme aracının geçerlik düzeyine ilişkin doğrulayıcı faktör analizi ve SDBÇE-21 alt ölçeklerinin psikolojik değişkenlerle Pearson korelasyonları hesaplanmıştır. Sonrasında, envanterin güvenilirlik düzeyini belirleyebilmek için ölçeğin iç tutarlılık ve 15 günlük test-tekrar test güvenilirliği değerlendirilmiştir.

**Bulgular:** Doğrulayıcı faktör analizi sonucunda, üç faktörlü orijinal yapıya ilişkin Hatanın Ortalama Karesinin Yakınlığı (RMSEA)=0.07, Karşılaştırmalı Uyum Endeksi (CFI)=0.91, Artan Uyum İndeksi (IFI)=0.91, Normlaştırılmamış Uyum Endeksi (NNFI)=0.90, Standardize Edilmiş Artıkların Ortalamalarının Karesi (SMRS)=0.08 olarak elde edilmiştir. Bu bulgular, doğrulayıcı faktör analiziyle ölçme aracının üç faktörlü orijinal yapısının Türk örnekleminde geçerliliğini göstermektedir. Alt ölçekler için hesaplanan iç tutarlılık değerleri sırasıyla Çözüm Dönük Başa Çıkma için  $\alpha=0.72$ , Duygusal Başa Çıkma için  $\alpha=0.77$  ve Kaçınmacı Başa Çıkma için  $\alpha=0.74$  olarak hesaplanmıştır. 15 günlük test-tekrar test korelasyonları sırasıyla Çözüm Dönük Başa Çıkma için  $r=0.79$ , Duygusal Başa Çıkma için  $r=0.75$  ve Kaçınmacı Başa Çıkma için  $r=0.66$  olarak bulunmuştur. Pozitif duygulanımın çözüme dönük başa çıkmaya ( $r=0.36$ ), negatif duygulanımın duygusal başa çıkmaya ilişkisinin ( $r=0.44$ ) orta düzeyde olduğu görülmüştür.

**Sonuç:** SDBÇE-21'in orijinal üç faktörlü yapısının Türk üniversite öğrencilerinden oluşan örnekleminde geçerli olduğu görülmüştür. Söz konusu ölçme aracı araştırmalarda kullanılabilecek yeterli geçerlilik ve güvenilirlik düzeyine sahiptir.

**Anahtar kelimeler:** Başa çıkma, değerlendirme, doğrulayıcı faktör analizi, geçerlilik, güvenilirlik

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## INTRODUCTION

Coping has been defined as "...continuously changing behavioral or cognitive efforts to meet inner and/or outer demands which compel subjective limits of the person or exceed his/her self-resources" (1). Coping behaviors towards stressful conditions are generally supposed to perform a multi-dimensional structure (2). Theoretical discussion of the subject has increasingly evolved in recent years (3). Successful coping with stressful conditions and relationship of different coping strategies with psychological and bodily health attracted attention of several researchers (4). On the other hand, results of studies examining the relationship of coping strategies with different variables may be directly affected by the magnitude of approaches and assessment tools which investigators use for coping strategies (2,5).

Psychometric studies and approaches about coping make up an important portion of discussions in research related to this field (3,6,7). Ways of Coping Check List (8), Ways of Coping Questionnaire (9), COPE inventory (10), Coping Responses Inventory (11) and Coping Inventory for Stressful Situations (12,13) are among widely accepted assessment tools developed for coping strategies.

Although several psychometric assessment tools were developed to assess behavioral strategies accepted by people to cope with stressful conditions, Coping Inventory for Stressful Situations (CISS) is superior to other assessment tools from many aspects. There is a tendency to assess several coping strategies simultaneously in other assessment tools. For example, Ways of Coping Check List assesses by 8 sub-scales and COPE Inventory assesses by 15 sub-scales. Approximately 400 classifications about strategies used by people to cope with stressful conditions have been proposed in this field (5). However, coping strategies were proposed to be collected under two (8,9,11) or three basic topics in studies done in this field (5,6,14-16). CISS assesses behavioral strategies preferred by people towards stressful conditions under three topics consistent with theoretical infrastructure: Task-oriented Coping, Emotion-oriented Coping and

Avoidance Coping. In studies evaluating longer form of assessment tool, several evidence showing validity of tri-dimensional structure of the scale were obtained (12,13,17-19). Moreover, as an indicator of common validity of the scale, statistically significant scale correlation coefficients were reported between sub-scales of CISS personality parameters and measurements indicating psychopathology (20-22). Additionally, continuously higher reliability levels were obtained in studies evaluating psychometric properties of CISS (12,13,17-22).

It can be said that studies done with clinical samples considering the psychological structure assessed by CISS substantially contributed to this field. It was reported that despite task-oriented and avoidance coping strategy was found to be related with extrovercy in patients with major depression, emotion-oriented coping strategies were found to predict neurotic personality characteristics (23). In a longitudinal study done with a clinical sample having anxiety disorder and major depression, decreasing depression symptoms were found to be inversely correlated with task-oriented coping and decreasing anxiety symptoms were found to be directly correlated with emotion-oriented coping (24). Patients with eating disorders were found to use emotion-oriented coping strategies significantly higher than the control group (25).

Short forms of assessment tools have several advantages such as providing investigators cost- and time-saving, making possible to evaluate different variables and hindering reduced motivation of participants (26). Longer version of CISS consists of 48 items. When 48-item form of this tool was being developed, a shorter form with 21 items has also been developed by selecting items with highest validity for sub-dimensions in order to provide ease of administration (12,13,18). Inner consistency values between 0.70 and 0.84 were reported for sub-scales of CISS-21 at different samples (12,13,18). There is supporting evidence obtained from different studies about validity of this assessment tool (12,13,18). In a study done by corrective factor analysis on data collected from adolescents having chronic digestive

problems, a three-dimensional structure was shown to be valid (27). In another study with university students, although three-dimensional structure was found to be valid, better model consistent statistics were reported for four dimensions (28).

In this study, examining psychometric characteristics of Turkish version of CISS-21 through participation of university students was aimed. Validity of three-dimensional structure of the scale proposed at original development study was tested by corrective factor analysis for this purpose. Close relationship of coping strategies of individuals at stressful conditions with affect is a widely accepted fact supported by empirical studies (29-33). For this reason, correlation of sub-scales of assessment tool with positive-negative affect and subjective well-being levels were investigated. Additionally, reliability of the tool was also evaluated by calculating stability and inner consistency levels of the assessment tool.

## MATERIAL AND METHODS

### Participants

Nine-hundred and seventy-eight volunteers studying at university were participated in the study. 33.33% of participants were men. Mean age of

participants was 20.33 (SD±3.17). Descriptive statistics of demographic characteristics of the sample were given in Table 1.

### Assessment Tools

Demographic questionnaire prepared by investigators, Positive-Negative Affect Schedule, Life Satisfaction Scale and Coping Inventory for Stressful Situations – Short Form were used in the study.

**Coping Inventory for Stressful Situations – Short Form (CISS-21):** Scale was developed to evaluate coping styles generally preferred at stressful situations (12,13,18). It consists of 21 items and each item has a five-scale Likert type question. The tool has 3 sub-scales consisting of 7 items.

**Positive and Negative Affect Schedule (PNAS):** PNAS is an assessment tool to assess positive and negative affection and consists of 20 items with five-scale Likert type questions (34). Scale consists of two sub-sections: Positive affect and negative affect. Turkish adaptation study was conducted by Gençöz (35). Turkish version was found to be valid at Turkish sample. Inner consistency was  $\alpha=0.83$  for positive affect and  $\alpha=0.86$  for negative affect.

**Life Satisfaction Scale (LSS):** This scale was developed to determine the level of satisfaction from life (36). It represents the most general psychological structure related with subjective well-being. It consists of five items and seven-scale Likert-type questions. Turkish translation of assessment scale was done by Durak et al. (37).

### Procedure

The scale was translated to Turkish by five translators who can use both languages at advanced level. These translations were gathered to have the final version of Turkish form. Assessment tools set were administered to students at Ankara University, Gazi University and Kastamonu University undergraduate

**Table 1: Descriptive statistics for demographical variables**

		n	Percent (%)
<b>Gender</b>	Boy	326	33.33
	Girl	652	66.67
<b>Income</b>	Low	94	9.61
	Medium	786	80.37
	High	98	10.02
<b>Educational level of father</b>	Illiterate	21	2.15
	Primary school	295	30.16
	Secondary school	116	11.86
	High school	261	26.69
	Undergraduate or Graduate	285	29.14
<b>Educational level of mother</b>	Illiterate	39	3.99
	Primary school	514	52.56
	Secondary school	106	10.84
	High school	191	19.53
	Undergraduate or Graduate	128	13.09

programs. Volunteered students remained at classrooms after undergraduate courses were administered. Students were informed before administration and their written consent were obtained to use data. Test-re-test was administered to 87 volunteer students after a 15-day interval.

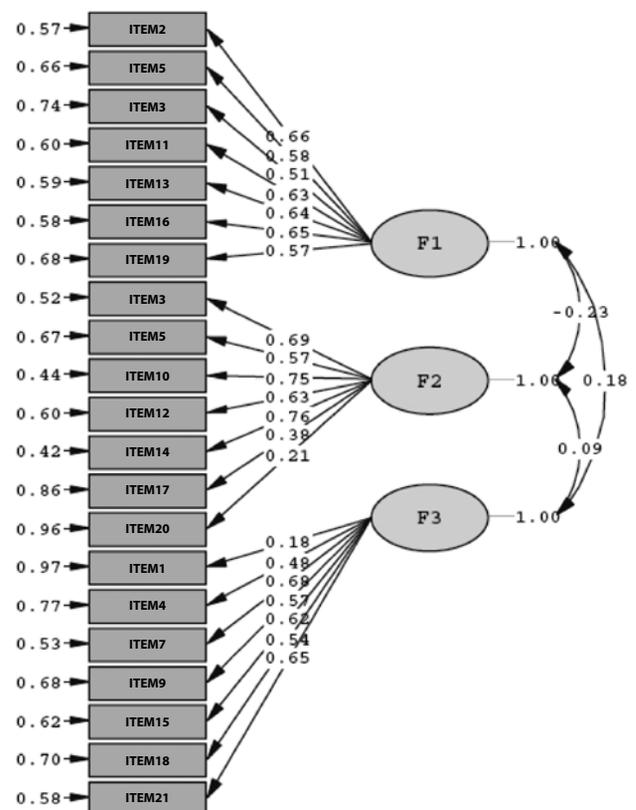
### Statistical Analysis

Descriptive statistics on demographic characteristics of the sample were calculated. In order to test the three-dimensional structure of scale at Turkish sample, its asymptotic co-variance matrix was calculated and normality-adjusted confirmatory factor analysis was used. In structural equation analysis done by using adjusted chi-square values, obtained values were found same with non-adjusted parametric estimates in the case that observed data showed normal distribution (38). Model consistency statistics estimated according to structural equation modeling were calculated. As a result of the analysis made, the following values were determined as validity proof of the model: for model fit to three-dimensional structure Root Mean Square Error of Approximation (RMSEA) value is under 0.10, Comparative Fit Index (CFI) equals to or is over 0.90, Incremental Fit Index (IFI) equals to or is over 0.90, Non-Normed Fit Index (NNFI) equals to or is over 0.90 and Square of Standardized Mean Residues (SMRS) is under 0.10 (39). Scale correlation coefficients of sub-scales of assessment tool with other psychological variables were obtained. Finally, in order to evaluate reliability levels of the scale, inner consistency and 15-day test-re-test correlations were calculated. Statistical significance level was taken as  $p < 0.005$  at the analyses.

### RESULTS

Analyses in which psychometric properties of assessment tool were evaluated was started with testing the validity of three-factorial original structure at Turkish sample using confirmatory factor analysis. In order to evaluate validity of original three-factorial structure of assessment tool at Turkish sample,

structural equation analysis was used. After confirmatory factor analysis, corrected chi-square value for three-factorial original structure was calculated  $\chi^2 = 843.20$  ( $p < 0.01$ ). Higher chi-square values are expected when wider sample is considered (28). Root Mean Square Error of Approximation (RMSEA) value of the model was found 0.07, Comparative Fit Index (CFI) was found 0.91, Incremental Fit Index (IFI) was found 0.91, Non-Normed Fit Index (NNFI) was 0.90, Square of Standardized Mean Residues (SMRS) was found 0.08. These values indicate validity of Turkish form of three-factorial original structure (28). Three-factorial structure explains 33% of total variance. Contribution to variance of first factor was found 32%, second factor 37% and third factor 31%. Path diagram of the model obtained by structural equation modeling was shown in Figure 1 (Figure 1).



**Figure 1: Path diagram for confirmatory factor analysis (F1= Task-oriented Coping; F2= Emotion-oriented coping; F3= Avoidance Coping)**

**Table 2: Pearson correlations between variables**

	Task-oriented Coping	Emotion-oriented Coping	Avoidance Coping
<b>Task-oriented Coping</b>	1		
<b>Emotion-oriented coping</b>	- 0.13 **	1	
<b>Avoidance Coping</b>	0.10 **	0.14 **	1
<b>Life Satisfaction Scale</b>	0.18 **	- 0.20 **	0.08 *
<b>Positive Affect</b>	0.36 **	- 0.08 *	0.11 **
<b>Negative Affect</b>	- 0.18 **	0.44 **	0.02

\*:p&lt;0.05; \*\*:p&lt;0.01

In order to present other evidence about structural validity of assessment tool, scale correlation coefficients of dimensions of CISS-21 with other psychological variables were also calculated. Task-oriented Coping was found to be correlated with positive affect, Emotion-oriented coping was found to be moderately correlated with negative affect. Correlations obtained between sub-scales were found to be low as expected. Scale correlation coefficients were given at Table 2 .

In order to evaluate reliability levels of assessment tool, inner consistency and 15-day test-re-test correlations of sub-scales were calculated. As can be seen at Table 3, inner consistency values for sub-scales of CISS-21 were found to be high. It can also be seen that 15-day stability coefficients of assessment tool were adequate (Table 3).

**Table 3: Reliability values for assessment tool**

	Inner consistency	15-day Test-Re-Test Correlation
<b>Task-oriented Coping</b>	0.72	0.79**
<b>Emotion-oriented coping</b>	0.77	0.75**
<b>Avoidance Coping</b>	0.74	0.66**

\*\*:p&lt;0.01

## DISCUSSION

This study aimed to investigate psychometric properties of Turkish version of CISS-21 in a non-clinical group. In this study, validity of original three-factorial structure of CISS-21 at Turkish sample was tested firstly. Scale correlation coefficients between assessment tool and other variables were obtained. Furthermore, in order to evaluate reliability levels of sub-dimensions of assessment tool, inner consistency and stability coefficients were calculated.

Three-factorial original structure tested by structural equation algorithm was found to be valid in Turkish sample. Results obtained are consistent with results from previous studies. In two studies tested by confirmatory factor analysis, results towards validity of three-factorial structure were generally obtained (27,28). However, in a study conducted in university students, model fit of four-factorial structure of the scale showed better model fit than three-dimensional structure (28).

Coping strategies were found to be directly related with emotional organization capacity, mood and life satisfaction of the individual in several studies (29-31). In studies done with original version of the scale showed that particularly emotion-oriented coping strategies were found to be moderately correlated with indicators of psychopathology (20,21,40). Although task-oriented coping strategies are inversely correlated with anxiety and depression; a positive correlation was found between emotion-oriented coping strategy and psychopathology (21,23-25,40). Also there are studies showing that task-oriented coping and positive mood and life satisfaction and positive and negative mood are negatively correlated (29-31). In Turkish university students, task-oriented coping which is a sub-dimension of CISS-21 was found to be moderately correlated with positive mood and emotion-oriented coping was found to be moderately correlated with negative mood. Results are expected for sub-scales of short form of the assessment scale.

Inner consistency levels obtained up-to-date for CISS-21 were between  $\alpha = 0.78 - 0.87$  for task-oriented coping,  $\alpha = 0.78 - 0.88$  for emotion-oriented coping and  $\alpha = 0.70 - 0.85$  for avoidance coping (13,18, 27, 28, 41). Cronbach alpha values found in this study were

also quite high. These values indicate inner consistency of sub-scales. However, it is noteworthy that inner consistency values of Turkish forms were found lower than values found in previous studies. In this study which aimed to determine reliability level of the assessment tool, 15-day test-re-test statistics were also calculated. Stability level was never reported in studies evaluating psychometric properties of CISS-21. Test-re-test coefficients first calculated for the scale showed that Turkish form has adequate stability level.

This study has several limitations. First, although study was done in a wide sample, it was conducted in a group consisted of only university students. Further studies are required to re-evaluate findings obtained from adults and other clinical groups. The assessment

tool is a tool used to evaluate general coping styles which people use in stressful conditions. In our study, determining stress experienced by participants was not preferred. Testing psychometric properties of assessment tool in samples grouped according to acute and chronic life stress will give us important information. Finally, in order to evaluate stability of the tool in time, correlation values between two administrations done in 15-day interval were calculated. There is need for re-evaluation of stability values of the scale between repetitive administrations done in longer intervals. However, high validity and reliability values for Turkish form of CISS-21 were obtained. Findings showed that assessment tool is a scale which can be of benefit for further studies in Turkish sample.

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