Bartın University Journal of Faculty of Education
BUEFAD Volume 13, Issue 4

941-954
dergipark.org.tr/buefad
DOI: 10.14686/buefad.1340157

Challenging Life Events Indications Scale: Validity and Reliability

Abdullah Aldemir [a*], ***İbrahim Şenel*** [b], ***Kübra Yanar*** [c], ***Burak Aydoğmuş*** [d]

a phD, Tokat Rehberlik ve Araştırma Merkezi, https://orcid.org/ 0000- 0001-5887-1050,
b Psychological Counselor, Tokat Rehberlik Ve Araştırma Merkezi , https://orcid.org/0000-0001-5563-7525
c Psychological Counselor, Tokat Rehberlik Ve Araştırma Merkezi, https://orcid.org/0000-0003-4978-3889, kubrayanar91@gmail.com
d Psychological Counselor, Tokat Rehberlik Ve Araştırma Merkezi, https://orcid.org/0000-0002-8526-8609

Research Article
Received: 9.8.2023
Revised: 22.11.2023
Accepted: 25.12.2023

Abstract

The main purpose of the current study was to develop a valid and a reliable measurement tool, Challenging Life Events Indications Scale (CLEIS), for the measurement of adults' reactions to challenging life events. The study was carried out with four different samples/research groups. The data were analyzed using exploratory and confirmatory factor, and ROC analyses via IBM SPSS and SPSS AMOS 24®. The factor loadings and corrected item-total correlations were found to be above the acceptable level, and the variance explained was 62.95%. The scale was observed to have a three-factor structure with an eigenvalue greater than 1, and fit indices of the relevant structure were at acceptable levels. According to the ROC analysis, the cut-off score of the CLEIS was found to be 78.5 for people needing psychological support after a challenging life event. In addition, the sensitivity of the tool was found to be able to discriminate people who showed symptoms of a challenging life event with a probability of 0.527. When analysing the specificity of the measure, it was found that the scale was able to identify people who showed symptoms of difficult life events with a probability of 0. 050. The criterion validity of the scale was examined through the Perceived Stress Scale, and the results produced a correlation of .72 between CLEIS and perceived stress, and .46 between perceived coping and CLEIS. Overall Cronbach's alpha was found to be .96. The scale was found to be a valid and a reliable tool. The findings were discussed within the related literature and suggestions were made accordingly.

Keywords: Challenging life events, psychological support, adaptation disorders

Zorlayıcı Yaşam Olayları Göstergeleri Ölçeği: Geçerlik ve Güvenirlik

Öz

Bu çalışmanın temel amacı, yetişkin bireylerin zorlu yaşam olaylarına yönelik vermiş oldukları tepkileri belirlemek için geçerliği ve güvenirliği sağlanmış olan bir ölçme aracı geliştirmektir. Bu araştırma bir ölçek geliştirme çalışmasıdır. Araştırma dört farklı çalışma grubu ile yürütülmüştür. Ulaşılan verilerin analizinde açımlayıcı, doğrulayıcı faktör analizi ve ROC analizi kullanılmıştır. Araştırmanın analizleri SPSS ve AMOS programları ile yapılmıştır. ZYOBÖ ölçme aracının maddelerinin faktör yükleri ve düzeltilmiş madde toplam korelasyonlarının kabul edilebilir seviyenin üstünde olduğu, ölçme aracının açıkladığı varyansın % 62.95 olduğu tespit edilmiştir. Ölçme aracının özdeğerinin 1'den büyük olduğu üç faktörlü bir yapıya sahip olduğu anlaşılmış olup, ilgili yapının uyum iyiliği değerlerinin kabul edilebilir seviyede olduğu anlaşılmıştır. ROC analizine göre ise, zorlu yaşam olayı sonrasında psikolojik desteğe ihtiyaç duyan kişiler için ZYOBÖ kesme puanı 78.5 olduğu, ölçme aracının duyarlığının 0.527 olasılıkla zorlu yaşam belirtisini gösteren kişileri ayırt edebildiğini ve özgünlük değeri ise 0.050 olasılıkla gerçek durumda zorlu yaşam olayları belirtisi gösteren kişileri belirleyebildiği anlaşılmıştır. Ölçme aracının ölçüt geçerliği ise, Algılanan Stres Ölçeği ile incelenmiş, sonuçlar ZYOBÖ ile algılanan stres arasında .72, algılanan baş etme arasında .46 ilişkili olduğunu ortaya koymuştur. Güvenirlik katsayısının ise, ölçeğin tümü için .96 olduğu bulunmuştur. Bu veriler ışığında Zorlu Yaşam Olayları Belirti Ölçeği'nin geçerli ve güvenilir bir ölçme aracı olduğunu ortaya koyulmuştur. Ulaşılan bulgular alanyazın bağlamında tartışılmış, önerilerde bulunulmuştur.

Anahtar Sözcükler: Zorlayıcı yaşam olayları, psikolojik destek, uyum bozuklukları

To cite this article in APA Style:

Aldemir, A., Şenel, İ., Yanar, K., & Aydoğmuş, B. (2024). Challenging life events indications scale: Validity and reliability. *Bartın University Journal of Faculty of Education, 13*(4), 941-954. https://doi.org/10.14686/buefad.1340157

INTRODUCTION

Challenging life events emerged as a result of a number of reasons such as wars and security problems in the history of communities and their impacts appeared in the forms of daily life hardships and adaptation disorders (Özen, 2017). Today, challenging life events or trauma are becoming threats that the societies and institutions have to face directly or indirectly.

DSM V (2013) identifies trauma or destructive events as facing death, serious injury or sexual abuse. Traumatic events may create destructive impacts on individuals' behavior systems that form a sense of attachment, control and meaning. Most people may suffer traumas distinctively, which are caused by events occurring at a time or in a sequence (Herman, 2019). According to DSM V (2013), individuals suffering trauma may develop reactive attachment disorder, disinhibited social engagement disorder, acute stress disorder, post-traumatic stress disorder, and adaptation disorder. Of these, acute stress disorder is the sort of disorder in which nine or more symptomatic behaviors including dissociation, negative affect, avoidance and sensitivity, which develop or exacerbate after the first three days or within one month of the traumatic event, are observed. Post-traumatic stress disorder indicates the re-experience of the event in sustained vivid flashbacks, refrainment from the destructive event, negative attitude towards the experience, and specific alterations in impulsive reactions which emerge after or with the event. However, the literature shows studies on post-traumatic stress disorder, even if sufferers are not life-threatened or their personal boundaries are not assaulted. For example, Dreman (1991) found that divorcing was a traumatic experience and that the divorced parents' defensive behaviors were similar to of those suffering post-traumatic stress disorder. In EMDR therapy, experiences which are defined as minor "t" traumas, which occur in early ages and do not threaten life safety but may have negative impacts emotionally, are observed to have impacts on mental health as much as major traumas do (Mol, Arntz, Metsemakers, Dinant, Vilters-van Montfort, & Knottnerus, 2005; Wong, 2018). In addition, minor "t" traumas are addressed as micro-traumas in positive psychology and they stem from conflicts and from moments of negligence in early ages (Cope, 2014; Trans. Yılmaz-Dinç & Sapmaz, 2022).

There are two basic views on PTSD: (a) an alteration in behavior after the traumatic event and (b) a person's liability before the traumatic event. However, it is stressors which have direct effect on whether the event will be traumatic for the individual or not (Breslau, Davis, Andreski, Peterson, & Schultz, 1997). Also, various factors including race, culture, mentality, socio-economic level, marital status (divorced, separated etc.) and heredity have crucial roles on whether the person will suffer trauma or not (Cervatoğlu-Geyran, 2000; Mason, Giller, Kosten, Ostroff & Podd, 1986). Besides these, the sufferer may develop some cognitive, emotional, and behavioral reactions such as anxiety, insomnia, vigilance, increased blood pressure, sweating, trembling, muscle stress, learned helplessness, avoidance, feelings of isolation, worthlessness and insecurity towards the world, and regarding people as unhelpful (Breslau, Davis, Andreski, Peterson, & Schultz, 1997; Cervatoğlu-Geyran, 1995; Southwick, Morgan, Darnell, Bremner, Nicolaou, Nagy, & Charney, 1995; Sungur, 1999). The study by Ramsay (1990) showed that soldiers who went into the American Civil War displayed negative reactions both physically and mentally (dizziness, chest pain, palpitations etc.). The study by Volkan (2000) revealed that fathers who were badly treated during the invasion tended to hide it from their children -if the children did not witness it and unwittingly stayed away from emotional interaction with their children. Moreover, adults asked their children to keep the negative events in schools during the invasion as a secret when they went back to school and that this led to psychological problems in children.

Particularly with the increase of social media use, people all around the world now have the chance to be informed about recent climate crises, civil and international wars, pandemics etc., meaning that individuals may negatively be affected by events, both directly or indirectly. According to Güran-Yiğitbaşı (2016), social media users mostly witness the sufferings of war victims. A study done in pandemics period, some of the participants displayed negative cognitive and affective reactions basing on what they learnt about COVID-19 even before they caught it (Aldemir, Yanar, Aydoğmuş & Şenel, 2021). Considering the factors of PTSD, witnessing what causes trauma and re-experiencing the details of the destructive event, those who indirectly witness traumatic experiences through social media and blog sites may be said to potentially develop symptoms of PTSD.

Taken altogether, studies aiming to increase the life quality of those who display symptoms of PTSD in intellectual, emotional, behavioral and physiological aspects are needed. However, the literature shows, as far as is known, studies which intervene trauma cases through interviewing or group therapies (Altun, 2016; Çiller, Köskün, & Akça, 2022). Hence, the purpose of the current study is to measure the evidence-based levels of PTSD

symptoms of the participants. Following this, the impacts of these symptoms are to be specified and re-framed and intervened through individual or group therapies. This scale development is expected to increase the quality of counseling services in schools or mental health centers and the efficiency of critical intervention.

METHOD

Design

The current study is of quantitative research which is for examining correlations among variables and testing objective theories. The measurement of these correlations is usually provided with scales, questionnaires etc. Raw data transformed accordingly are analyzed through statistical calculations (Creswell, 2014).

Participants

Sample I

For the exploratory factor analysis, 748 participants (410 females, 54,8%; 338 males, 45,2%) were selected with convenient sampling. They ranged in age from 20 to 65 ($\overline{X}$ = 38.9, SS= 8.9).

Sample II

For the confirmatory factor analysis, 245 participants (124 females, 50,6%; 121 males, 49,4%), ranging in age from 21 to 65 ($\overline{X}$ = 38.2, SS= 8.8) were selected with convenient sampling

Sample III

For the criterion-related validity, 372 participants (257 females, 69,1%; 115 males, 30,9%) ranging in age from 20 to 64, were selected with convenient sampling ($\overline{X}$ = 31.6, SS= 6.4).

Sample IV

For the ROC analysis, 310 participants (169 females, 54,5%; 141 males, 45,5%), ranging in age from 18 to 64, were selected with convenient sampling ($\overline{X}$ = 36.4, SS= 9.9).

Data Collection Tools

Developing Challenging Life Events Indications Scale (CLEIS)

The initial step was to specify the structure to be measured. The literature was reviewed and the related studies were examined to help create an item pool which was consisted of 52 items in total. The items were related, clear and plain, and not to be ambiguous. The scale was formed as 5-Likert type (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree). Five experts in psychology were asked to examine the scale to ensure its relatedness, reliability, validity, comprehensibility, and specificity. A draft form for content validity was formed and presented to the experts through the electronic media. Considering the feedback from the experts, the suggestions and evaluations of the items were discussed and the scale was finalized with 52 items after making the required corrections in the draft form.

Perceived Stress Scale (PSS):

Originally developed by Cohen, Kamarck and Mermelstein (1983), the Perceived Stress Scale was adapted to Turkish by Bilge, Öğce, Ekti-Genç and Tuna-Oran (2009). The adaptation practice was performed with 162 participants (83 undergraduates and 79 employees). Exploratory factor analysis extracted a two-factor PSS structure: perceived stress and perceived coping. The Cronbach's alpha for the eight-item form was reported .81, and it was .84 for perceived stress dimension, and .69 for perceived coping. Item reliability analyses yielded .70 Cronbach's alpha, .082 Guttman split-half, and .082 Spearman-Brown.

Personal Information Form (PIF):

A personal information form was developed for demographic information (i.e., age, sex).

Data analysis

Exploratory and confirmatory factor analyses were performed for validity. For the exploratory analysis, rotation method was employed, and for the confirmatory analysis, modification indices were considered to get a better fit. For the confirmation of the three-factor structure, the fact that significance of *t* and that fit indices should be at least at the acceptable level were considered. Pearson's correlation analysis was performed for the criterion validity, and reliability was analyzed using bivariate correlation method. All reliability and validity analyses were performed using JAMOVI, SPSS 22.0 and SPSS AMOS 22.0®.

FINDINGS

Structure validity

Scale validity was examined with exploratory and confirmatory factor analyses. Promax rotation was run to examine the factor structure. For the interpretation of the factor analysis, Kaiser-Mayer Olkin and Bartlett's spherity tests results were considered. Normality was examined also using Bartlett's spherity. Criteria for determining the items were as follows: (a) factor loadings should be at least .30 or upper, (b) the items should gather to create a single factor, (c) there should be no overlapping items (variance should not be lower than .15), (d) a single factor should be comprised of at least three items, and (e) corrected-item total correlation coefficient should be over .20 (Şencan, 2005).

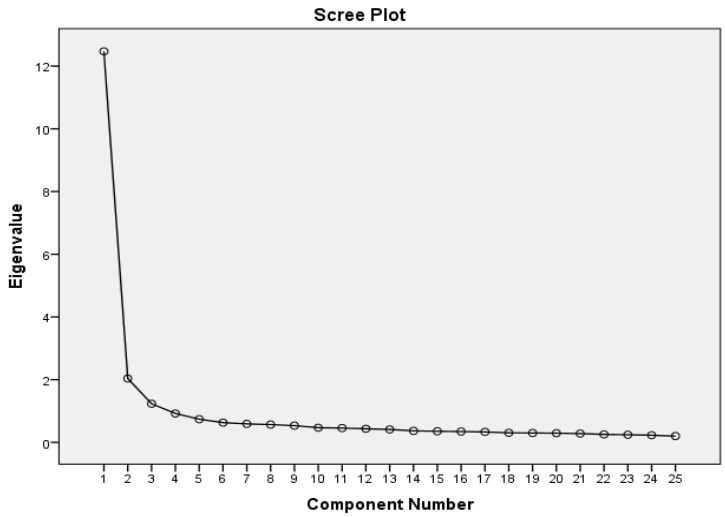
Exploratory factor analysis

Exploratory factor analysis was performed to reveal the inter-item communalities. The initial analysis yielded .96 KMO. KMO test is for determining if partial correlations are low or not, and if normality is adequate for exploratory factor analysis (Karagöz & Kösterelioğlu, 2008). Tavşancıl (2010) notes that KMO is considered perfect if it is close to 1, and unacceptable if it is lower than .50. KMO for the current study data is therefore acceptable. Bartlett's spherity test was 1.570 (p< .001). The significance of Bartlett's spherity test supports the hypothesis that the data consisted of multi-variant normality.

EFA was performed with no limits on the number of factors and seven factors of which eigenvalues were larger than 1 were specified. Total variance explained was 63,04%. The factor distribution was examined using varimax rotation and some of the items were observed as outliers (> .30). Varimax is a rotation method that minimizes the number of variables that have high loadings on each factor. This method was preferred because it makes it easier to interpret the factors. Accordingly, factor loading values were analyzed and the items which had a variance lower than .15 were eliminated (Büyüköztürk, 2012). Consequently, 27 items were removed and the analysis was re-run.

The re-run analysis yielded that all items gathered under three factors larger than 1 and that each factor had acceptable loadings (the lowest was .60; the largest was .82). Also, no outliers in more than one factor were observed. The eigenvalues ranged from 1.23 to 12.47. Total variance explained of the three-factor structure was 62,95%. Büyüköztürk (2012) states that the higher the variance explained is, the stronger the factor structure will be. In social sciences and the humanities, it is regarded difficult to achieve higher degrees of variances and they are accepted adequate in the range of 40% and 60% (Tavşancıl, 2010). These results corroborated that the total variance of the scale is on the expected level. Figure 1 displays factor structure scree plot.

Figure 1. Factor structure scree plot



As seen in Figure 1, the scale extracted a three-factor structure, namely emotional reactance, cognitive reactance and physiological reactance, of which eigenvalue was larger than 1. The emotional factor was comprised of eight items, the cognitive factor consisted of seven items, and the physiological factor included 10 items. Table 1 displays the factor loadings, item discrimination, and corrected-item correlations.

Tablo 1. Factor loadings, corrected-item total correlations and item discrimination

Factor (Total variance explained)	Item number	Factor loadings	Corrected-item total correlations	Item discrimination *
Physiological reactance (12.47%)	m16	.66	.59	.000
	m17	.69	.69	.000
	m18	.63	.73	.000
	m19	.72	.59	.000
	m20	.73	.62	.000
	m21	.68	.56	.000
	m22	.74	.65	.000
	m23	.64	.49	.000
	m24	.77	.64	.000
	m25	.75	.51	.000
Emotional reactance (2.03%)	m1	.82	.69	.000
	m2	.76	.67	.000
	m3	.73	.53	.000
	m4	.60	.53	.000
	m5	.65	.60	.000
	m6	.63	.67	.000
	m7	.68	.60	.000
	m8	.67	.70	.000
Cognitive reactance (1.23%)	m9	.66	.62	.000
	m10	.71	.62	.000
	m11	.67	.57	.000
	m12	.74	.65	.000
	m13	.61	.65	.000
	m14	.62	.63	.000
	m15	.62	.43	.000

* $p<.05$, n= 748

Table 1 shows the factor loadings, item discriminant values, and corrected item-total correlations indicating that the scale has a three-factor structure, the items carry acceptable loadings, and the corrected item-total correlations vary between .43 and .73. Additionally, no outliers in multiple factors were encountered.

Confirmatory factor analysis

The number of participants in the confirmation of a scale structure is a crucial factor to consider. The literature suggests that for the development of Likert-type scales, a sample size of at least five or ten times the number of items in the scale should be reached (Tavşancıl, 2010). Accordingly, particular attention was paid to ensuring that the number of participants in the study was at least five times the number of items in the instrument. According to confirmatory factor analysis (CFA), latent variables were validated under a three-factor structure, and the *t*-values were found to be significant (p <.05). The model incorporates goodness-of-fit indices related to model acceptability. For goodness-of-fit values, the following criteria were considered: $\chi 2/df \leq 4\text{-}5$, IFI ≤ .95, CFI

≤ .95, AGFI ≥ .80, NFI ≥ .80, SRMR ≤ .08, RMSEA ≤ .10, PNFI ≤ .95, RMR ≤ .08, and PGFI ≤ .95 (Baumgartner & Homburg, 1996; Bentler, 1980; Bentler & Bonett, 1980; Browne & Cudeck, 1993; Hu & Bentler, 1999; Kline, 2011; Marsh, Balla & McDonald, 1988; Marsh, Hau, Artelt, Baumert, & Peschar, 2006). CFA results are displayed in Table 2 regarding the mentioned criteria. Figure 1 displays the three-factor structure of CLEIS (ER: Emotional Reactance, CR: Cognitive Reactance, PR: Physiological Reactance).

Table 2. Fit indices for the measurement model

Fit indices[1]	Scores	Notes
χ^2/sd	2.24*	Perfect fit
CFI	.92	Acceptable fit
IFI	.92	Acceptable fit
RMSEA	.07	Acceptable fit
SRMR	.04	Acceptable fit
RMR	.06	Acceptable fit
PNFI	.77	Acceptable fit
PGFI	.68	Acceptable fit
AGFI	.80	Acceptable fit
NFI	.86	Acceptable fit

* χ2= 601.773, *sd*= 268, *p*<.001

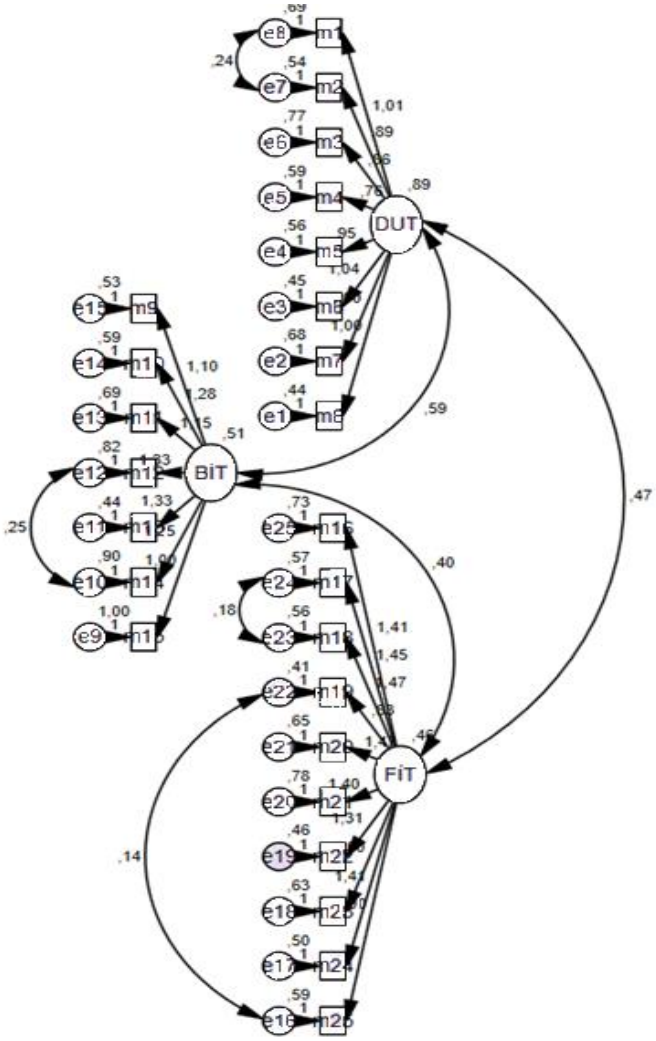


Figure 1.

Criterion-based validity

The two subscales of the Perceived Stress Scale (perceived stress, perceived coping) were utilized to establish criterion-related validity. The analysis was conducted using Pearson's correlation.

Table 3. Pearson's correlation content-based validity

	CLEIS-Total	Perceived Stress	Perceived Coping
CLEIS-Total	1		
Perceived Stress	.72**	1	
Perceived Coping	.46**	.40**	1

***p*<.01

Table 3 displays the Pearson's correlation analysis conducted for criterion-related validity. The criterion-related validity of the measurement instrument was assessed in relation to the two factors of the Perceived Stress Scale. The results revealed a significant positive relationship between CLEIS and perceived stress at a level of .72, and between CLEIS and perceived coping at a level of .46 ($p < .01$).

Validity and reliability

The term "validity" refers to the ability of a measurement instrument to accurately capture the intended construct, producing consistent results when applied across different time periods, locations, and participant groups (Şencan, 2005). The criterion mentioned as internal consistency in relation to reliability is based on the understanding that all items in the measurement tool measure the same attribute (Tavşancıl, 2010). In order to determine the internal consistency in Likert-type measurement tools, item analyses are conducted and Cronbach's alpha coefficient is obtained (Özdamar, 1999). The general consensus is that Cronbach's alpha coefficient should be at least .70 (Kılıç, 2016; Özdamar, 1999). The overall reliability was determined using Cronbach's alpha and McDonald's omega coefficient, and it was found .96. For the sub-scales, the Cronbach's alpha and McDonald's omega coefficients were found to be .91; for the emotional reactance dimension, .88 for the cognitive response reactance, and .92 for the physiological reactance dimension, respectively. Test-retest reliability was conducted with a two-week interval, and a reliability coefficient of .86 was obtained for the overall CLEIS.

ROC analysis and cut-off score

ROC analysis was conducted to calculate the cut-off score for determining whether individuals needed psychological support. Table 4 presents numbers and percentages regarding the participants' need for psychological support.

Table 4. Participant distribution according to need for psychological support (NPS)

Sample	N	%
Group positive (NPS diagnose = 1)	91	39.5
Group negative (NPS diagnose = 0)	219	60.5
Sample size	310	100

As observed, 39.5% (n = 91) of the participants stated "I need psychological support" while 60.5% (n = 219) stated "I do not need psychological support."

Table 5 displays ROC analysis cut-off scores for CLEIS regarding if the participants needed psychological support or not.

Table 5. CLEIS ROC analysis results

Cut-off score	Sensitivity	1- Specificity	Likelihood

24,0000	1,000	1,000	1
25,5000	1,000	,968	1,033019
26,5000	1,000	,963	1,037915
27,5000	1,000	,959	1,042857
28,5000	1,000	,950	1,052885
29,5000	1,000	,922	1,084158
30,5000	1,000	,909	1,100503
32,0000	1,000	,904	1,106061
33,5000	1,000	,900	1,111675
34,5000	1,000	,890	1,123077
35,5000	1,000	,881	1,134715
36,5000	1,000	,868	1,152632
37,5000	1,000	,863	1,15873
38,5000	1,000	,854	1,171123
39,5000	1,000	,836	1,196721
40,5000	1,000	,822	1,216667
41,5000	1,000	,817	1,223464
42,5000	1,000	,795	1,258621
43,5000	1,000	,772	1,295858
44,5000	1,000	,763	1,311377
45,5000	1,000	,740	1,351852
46,5000	1,000	,731	1,36875
47,5000	1,000	,712	1,403846
48,5000	1,000	,689	1,450331
49,5000	1,000	,662	1,510345
50,5000	1,000	,635	1,57554
51,5000	,978	,589	1,660363
52,5000	,967	,566	1,707905
53,5000	,945	,521	1,8155
54,5000	,945	,507	1,864568
55,5000	,934	,461	2,025351
56,5000	,923	,438	2,105769
57,5000	,901	,402	2,242507
58,5000	,901	,393	2,294659
59,5000	,890	,342	2,599121
60,5000	,890	,324	2,74555
61,5000	,890	,306	2,909464
62,5000	,879	,297	2,961961
63,5000	,868	,274	3,168681
64,5000	,868	,265	3,277946
65,5000	,857	,256	3,352041
66,5000	,835	,247	3,387057
67,5000	,824	,224	3,683561
68,5000	,802	,205	3,904029
69,5000	,780	,192	4,068289

70,5000	,769	,183	4,211538
71,5000	,714	,155	4,60084
72,5000	,692	,146	4,737981
73,5000	,670	,128	5,242936
74,5000	,626	,128	4,899137
75,5000	,582	,100	5,797702
76,5000	,571	,078	7,361345
77,5000	,549	,059	9,256128
78,5000	,527	,050	10,5015
79,5000	,505	,041	12,30037
80,5000	,495	,032	15,47096
81,5000	,462	,023	20,21538
82,5000	,451	,009	49,33516
83,5000	,429	,005	93,85714
84,5000	,396	,000	#SAYI/0!
85,5000	,374	,000	#SAYI/0!
86,5000	,352	,000	#SAYI/0!
88,0000	,330	,000	#SAYI/0!
90,0000	,308	,000	#SAYI/0!
91,5000	,253	,000	#SAYI/0!
92,5000	,220	,000	#SAYI/0!
93,5000	,209	,000	#SAYI/0!
94,5000	,165	,000	#SAYI/0!
95,5000	,132	,000	#SAYI/0!
96,5000	,110	,000	#SAYI/0!
99,0000	,099	,000	#SAYI/0!
101,5000	,088	,000	#SAYI/0!
103,0000	,077	,000	#SAYI/0!
105,0000	,066	,000	#SAYI/0!
108,0000	,055	,000	#SAYI/0!
113,0000	,044	,000	#SAYI/0!
117,0000	,033	,000	#SAYI/0!
119,0000	,022	,000	#SAYI/0!
120,5000	,011	,000	#SAYI/0!
122,0000	,000	,000	#SAYI/0!

Table 5 presents the sensitivity, specificity, and likelihood ratios corresponding to each cut-off score. It is evident that the cut-off score associated with a likelihood ratio of 10.5015, which represents the largest difference between sensitivity and 1-specificity, is 78.5. The use of likelihood ratios plays a significant role in clinical studies. Literature review indicates that a likelihood ratio of 10 is considered a critical value for accurate measurement (Coetzee, 2004). Therefore, the current criterion value was employed in the current study. Based on this, the cut-off score for individuals in need of psychological support is 78.5 on the CLEIS. The sensitivity of the scale, with a likelihood of 0.527, indicates its ability to differentiate individuals exhibiting symptoms of stressful life events, while the specificity value of 0.050 suggests its ability to distinguish individuals actually experiencing stressful life events.

Table 6. ROC analysis for 78.5 cut-off score

		Need for psychological support		
CLEIS		I need it (Positive)	I do not need it (Negative)	Total
	CLEIS (Positive)	46	11	57
	CLEIS (Negative)	208	45	253
	Total	254	56	310

According to Table 6, the calculated positive predictive value (PPV = 46/57 = 0.80) demonstrates that the question regarding symptom presentation in stressful life events accurately identifies individuals with symptoms at an 80% rate. The negative predictive value (NPV = 208/253 = 0.82), on the other hand, indicates that the question correctly identifies individuals without symptoms at an 82% rate. The area under the curve represents the proportion of accurate predictions made by the determined cut-off point.

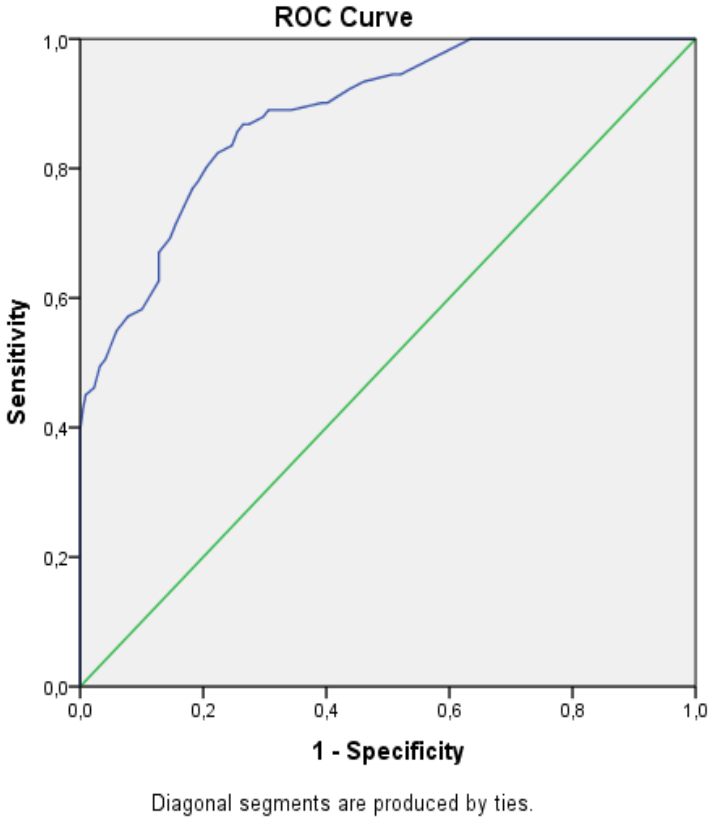


Figure 2.

Table 7. Area under the ROC Curve (AUC) for CLEIS

				95% CI
AUC	S.E.	*p*	Lower Bound	Upper Bound
.884	0.005	0.000	0.696	0.716

The area under the ROC curve (AUC) for CLEIS was found to be 0.884. AUC values between 0.80 and 0.90 are interpreted as "good discriminative ability" (Hanley and McNeil, 1983; Zou, O'Malley, and Mauri, 2007). The cut-off score is in agreement with the actual values at a rate of 88.4%.

DISCUSSION AND CONCLUSION

In the present study, the construct and content validity were considered for the validity practice of the scale, while Cronbach's alpha coefficient was taken into account for the reliability. For content validity, items related to the construct were developed, and three different experts in the field, including two associate professors

and one doctoral faculty member, were asked to give feedback. Confirmatory Factor Analysis (CFA) was conducted for construct validity with a sample size of 748, and it was revealed that the scale consisted of a three-factor structure, with the total variance explained by these factors reaching an acceptable level of 62.95%, as commonly accepted in social sciences (Tavşancıl, 2010). Item factor loadings (ranging from .60 to .82) and corrected item-total correlations (ranging from .43 to .73) for the scale were observed to be above the levels reported in the literature (Şencan, 2005). Moreover, the findings confirm the three-factor structure through confirmatory factor analysis (CFA) (n= 245) ($\chi 2/df=2.24$, CFI= .92, IFI= .92, RMSEA= .07, RMR= .06, SRMR= .04). The results obtained from CFA meet the goodness-of-fit criteria mentioned in the literature (Baumgartner and Homburg, 1996; Bentler, 1980; Bentler & Bonett, 1980; Browne & Cudeck, 1993; Hu & Bentler, 1999; Kline, 2011; Marsh, Hau, Artelt, Baumert, & Peschar, 2006). Upon examining the literature regarding the three factors of the scale, it is evident that there are difficulties in the individual's ability to establish connections and in the behavioral systems that generate a sense of control and meaning in the presence of traumatic events (Herman, 2019). In another study, it was found that soldiers who had participated in the American Civil War exhibited negative mental and physical responses, such as dizziness, chest pain, and palpitations (Ramsay, 1990). Similarly, Rienks (2020) states that behavioral, emotional, and physiological symptoms can emerge by trauma. The same researcher reported emotional symptoms as irritability and emotional numbness, while behavioral symptoms include hypersensitivity and loss of concentration. Figley (1995) also stated that individuals who have directly or indirectly experienced a traumatic event often face situations involving frequent exposure to emotions and thoughts related to the event, unwillingness to engage in any activities, withdrawal from people, inability to plan for the future, irritability, sudden outbursts of anger, difficulty falling asleep, and physiological responses to triggering events. In another study, it is indicated that individuals who have experienced a traumatic life event, either directly or indirectly, may exhibit reactions such as perceiving the world as unfair, experiencing eating problems, increased heart rate and breathing, experiencing hypertension and sweating (Kaya, 2015).

Some other research reported that individuals may exhibit cognitive, emotional, behavioral, and physiological reactions following a traumatic event based on their personal characteristics. These reactions include fear, hyperarousal, vigilance, increased blood pressure, sweating, trembling, feelings of loneliness, self-perception of worthlessness, and a sense of insecurity towards the world (Breslau, Davis, Andreski, Peterson, & Schultz, 1997; Cervatoğlu-Geyran, 1995; Southwick, Morgan, Darnell, Bremner, Nicolaou, Nagy, & Charney, 1995; Sungur, 1999).

The results indicated that CLEIS total scores were significantly correlated with perceived stress at a level of .72 and with perceived coping at a level of .46. Aksöz-Efe (2018) reported a significant positive relationship between challenging life events and the level of stress. According to DSM-5, it is stated that challenging life events can lead to negative changes in cognition and mood, resulting in secondary level symptoms of stress (Oginska-Bulik, Gurowiec, Michalska, & Kędra, 2021).

The Cronbach's alpha for the reliability was calculated as .96 (n=245). The obtained reliability value is consistent with the data in the literature (Kline, 2000). Additionally, the ROC analysis method was used to calculate the cut-off score. According to the analysis, the area under the curve for the total score of CLEIS was found to be 88.4%. Based on this, it can be inferred that CLEIS accurately identifies individuals in need of psychological support with an 88.4% likelihood. It is also noted in the literature that this range is considered to have a good discriminative ability (Hanley & McNeal, 1983; Zou, O'Malley, & Mauri, 2007). Furthermore, the presence of the likelihood ratio in measurement instruments is considered significant in clinical research. In this regard, when examining the literature, a likelihood ratio of 10 is considered a critical value for ensuring accurate measurement in health-related assessments (Coetzee, 2004). The cut-off score for CLEIS in identifying individuals in need of psychological support is 78.5. The sensitivity of CLEIS is 0.527, indicating that it can distinguish individuals who exhibit symptoms of stressful life events with a likelihood of 0.527. The specificity value is 0.050, indicating that it can distinguish individuals who truly exhibit symptoms of stressful life events with a likelihood of 0.050.

The CLEIS consists of 25 items and is composed of three factors: *Emotional Reactance, Cognitive Reactance,* and *Physiological Reactance*. The items are scored on a range from '1 = Strongly Disagree' to '5 = Strongly Agree'. There are no reverse-coded items. A total score can be obtained from each factor and from all factors combined. An increase in scores across all factors is interpreted as an increase in the corresponding response. In this context, the scale addresses the direction of symptoms exhibited by adults in response to stressful life events through a three-factor structure.

In summary, based on the conducted analyses, the developed scale can be considered valid and reliable. Additionally, a cut-off point was determined to enhance the utility of the measurement tool in determining individuals' need for psychological support. However, it is important to acknowledge certain limitations regarding the research sample and methodology. Therefore, it is recommended to conduct further scientific studies taking into account different age groups, various demographic variables, and potential symptoms that may be exhibited. Moreover, in order to establish the generalizability of the measurement tool, it is advised to particularly focus on individuals who have experienced stressful life events.

Statements of Publication Ethics

We declare that this study has no ethical conflicts or problems that may limit the article's publication.

Researchers' Contribution Rate

Authors	Literature review	Method	Data Collection	Data Analysis	Results	Conclusion
Author 1's name	☒	☒	☒	☒	☐	☒
Author2's name	☒	☒	☐	☒	☒	☒
Author 3's name	☒	☐	☒	☒	☒	☒
Author 4's name	☐	☒	☒	☐	☒	☒

Conflict of Interest

We declare that there is no conflict of interest in this study.

REFERENCES

Aksöz-Efe, İ. (2018). Olumsuz yaşam olayları, psikolojik danışma hizmeti alma, ruminasyon ve stres arasındaki ilişki. *Ankara University Journal of Faculty of Educational Sciences (JFES), 51*(2), 95-119.

Altun, F. (2016). Afetlerde psikososyal hizmetler: marmara ve van depremleri karşılaştırmalı analizi. *Çekmece İzü Sosyal Bilimler Dergisi*,*4*(8-9), 183-197.

Aldemir, A., Yanar, K., Aydoğmuş, B. and Şenel, İ. (2021). Covıd-19'a yakalanmış bireylerin olumlu yöndeki değişimlerine ilişkin nitel bir araştırma. *Elektronik Sosyal Bilimler Dergisi*, *20*(80), 2074-2093.

Baumgartner, H. ve Homburg, C. (1996). Applications of structural equation modeling in marketing and consumer research: A review. *International Journal of Research in Marketing, 13*(2), 139-161.

Bentler, P.M. (1980). Multivariate analysis with latent variables: Causal modeling. *Annual Review of Psychology, 31*, 419-456.

Bentler, P.M. ve Bonett, D.G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin, 88*, 588-606.

Bilge, A., Öğce, F., Genç, R. E. and Oran, N. T. (2009). Algılanan stres ölçeği (ASÖ)'nin Türkçe versiyonunun psikometrik uygunluğu. *Ege Üniversitesi Hemşirelik Yüksekokulu Dergisi*, *2*(25), 61-72.

Breslau, N., Davis, G. C., Andreski, P., Peterson, E. L. ve Schultz, L. R. (1997). Sex differences in posttraumatic stress disorder. *Archives Of General Psychiatry*, *54*(11), 1044-1048.

Browne, M.W. ve Cudeck, R. (1993). Alternative ways of assessing model fit. İn Bollen, K.A. ve Long, J.S. (Ed.), *Testing structural equation models* (s. 136- 162). Beverly Hills, CA: Sage.

Büyüköztürk, Ş. (2002). Faktör analizi: Temel kavramlar ve ölçek geliştirmede kullanımı. *Kuram ve Uygulamada Eğitim Yönetimi, 32*, 470-483.

Büyüköztürk, Ş. (2012). *Sosyal bilimler için veri analizi el kitabı* (17. baskı). Pegem Akademi.

Cervatoğlu-Geyran, P. (1995). Travma sonrası stres bozukluğu ile ilişkili nörobiyolojik kanıtlar. *Düşünen adam: Psikiyatri ve nörolojik bilimler dergisi, 8*, 9-18.

Cervatoğlu-Geyran, P. (2000). Psikolojik travma ve sonuçları: tarihsel arka plan ve güncel kavramlar üzerine gözden geçirme. *Psikiyatri Psikoloji Psikofarmakoloji Dergisi, 8*(1), 9-12.

Coetzee, J.F. (2004). Evaluating diagnostic tests. *Southern African Journal of Anaesthesia & Analgesia, 10*(5), 7-16.

Creswell, J. W. (2014). *Araştırma deseni: Nitel, nicel ve karma yöntem yaklaşımları* (S. B. Demir ve diğerleri, çev.). Eğiten Kitap.

Çiller, A., Köskün, T. ve Akça, A.Y.E. (2022). Post traumatic stress disorder and behavioral therapy intervention techniques used in treatment. *Psikiyatride Güncel Yaklaşımlar-Current Approaches in Psychiatry*, *14*(4), 499-509.

Dreman, S. (1991). Coping with the trauma of divorce. *Journal of Traumatic Stress, 4*(1), 113- 121.

Amerikan Psikiyatri Birliği (2013). *Ruhsal bozuklukların tanısal ve sayımsal el kitabı, beşinci baskı (dsm-5), tanı ölçütleri başvuru elkitabı* (Çev. Ed.: E Köroğlu) Hekimler Yayın Birliği, Ankara, 2013.

Figley, C. R. (Ed.) (1995). *Compassion fatigue: Coping with secondary traumatic stress disorder in those who treat the traumatized.* Brunner/Mazel.

Güran-Yiğitbaşı, K. (2016). Medya ve Mültecileri Sivil Toplum Üzerinden Okumak: Mülteci-Der Örneği. *Marmara İletişim Dergisi, 25,* 53-76. DOI: 10.17829/midr.20162520717.

Hanley, J. A. and Mcneil, B. J. (1983). A Method of Comparing the Areas Under Receiver Operating Characteristic Curves Derived From The Same Cases. *Radiology, 148*(3), 839-843.

Herman, J. (2019). *Travma ve iyileşme*(Altıncı baskı). İstanbul: Literatür Kitabevi.

Hu, L. and Bentler, P.M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*(1), 1-55.

Karagöz, Y. and Köşterelioğlu, İ. (2008). İletişim becerileri değerlendirme ölçeğinin faktör analizi metodu ile geliştirilmesi. *Dumlupınar Üniversitesi Sosyal Bilimler Dergisi, 21*, 81-97.

Kaya, N. (2015). *Sağlık çalışanlarında ruhsal travma belirtilerinin incelenmesi (van depremi örneği)*. Master's Dissertation, Van Yüzüncü Yil University Institute of Educational Sciences.

Kılıç, S. (2016). Cronbach'ın alfa güvenirlik katsayısı. *Journal of Mood Disorders, 6*(1), 47-48.

Kline, P. (2000). *The handbook of psychological testing*. Routledge.

Kline, R.B. (2011). *Principles and practice of structural equation modeling*. The Guilford Press.

Marsh, H. W., Balla, J. R. and McDonald, R. P. (1988). Goodness-of-fit indexes in confirmatory factor analysis: The effect of sample size. *Psychological Bulletin, 103*(3), 391.

Marsh, H.W., Hau, K.T., Artelt, C., Baumert, J. and Peschar, J.L. (2006). OECD's brief self-report measure of educational psychology's most useful affective constructs: Cross-cultural, psychometric comparisons across 25 countries. *International Journal of Testing, 6*(4), 311-360.

Mason, J. W., Giller, E. L., Kosten, T. R., Ostroff, R. B. and Podd, L. (1986). Urinary free-cortisol levels in posttraumatic stress disorder patients. *Journal of Nervous and Mental Disease, 174*(3), 145-9.

Mol, S. S., Arntz, A., Metsemakers, J. F., Dinant, G. J., Vilters-van Montfort, P. A., and Knottnerus, J. A. (2005). Symptoms of post-traumatic stress disorder after non-traumatic events: evidence from an open population study. *Br J Psychiatry, 186*, 494- 499. DOİ: 10.1192/bjp.186.6.494.

Ogińska-Bulik, N., Gurowiec, P. J., Michalska, P. and Kędra, E. (2021). Prevalence and predictors of secondary traumatic stress symptoms in health care professionals working with trauma victims: A cross-sectional study. *PLoS One, 16*(2), e0247596.

Özdamar, K. (1999). *Paket programları ile istatistiksel veri analizi*. Kaan Kitabevi.

Özen, Y. (2017). Psikolojik travmanın insanlık kadar eski tarihi. *The Journal Of Social Science, 1*(2), 104-117.

Ramsay, R. (1990). Invited review: post-traumatic stress disorder; a new clinical entity?. *Journal of Psychosomatic Research, 34*(4), 355-365.

Rienks, S. L. (2020). An exploration of child welfare caseworkers' experience of secondary trauma and strategies for coping. *Child Abuse & Neglect, 110*, 104355.

Shapiro, F. (2012). *EMDR terapisi teknikleri ile acı anıları silmek*. İstanbul: Kuraldışı Yayıncılık.

Southwick, S. M., Morgan, C. A., Darnell, A., Bremner, D., Nicolaou, A. L., Nagy, L. M. and Charney, D. S. (1995). Trauma-related symptoms in veterans of operation desert storm: a 2-year follow-up. *The American Journal of Psychiatry, 152(*8), 150-5.

Sungur, M. Z. (1999). İkincil travma ve sosyal destek. *Klinik Psikiyatri, 2*(2), 105-108.

Şencan, H. (2005). *Sosyal ve davranışsal ölçümlerde güvenirlik ve geçerlilik*. Seçkin Yayıncılık.

Tavşancıl, E. (2010). *Tutumların ölçülmesi ve SPSS ile veri analizi*. Nobel Yayın Dağıtım.

Volkan, V. D. (2000). Traumatized societies and psychological care: Expanding the concept of preventive medicine. *Mind and Human Interaction, 11*, 177-194.

Yılmaz-Dinç, S. and Sapmaz, F. (2022). Küçük 't' travma etkisini belirleme ölçeğinin geliştirilmesi. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi*. DOİ:10.9779.pauefd.1032610

Zou, K. H., O'malley, A. J. and Mauri, L. (2007). Receiver-Operating Characteristic Analysis For Evaluating Diagnostic Tests And Predictive Models. *Circulation, 115*(5), 654-657.

Wong, S. L. (2018). EMDR-based divorce recovery group: A case study. *Journal of EMDR Practice and Research, 12*(2), 58-70.