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| Research Article / Araştırma Makalesi |

Investigating the Psychometric Characteristics of Critical Thinking in Everyday Life Scale

Günlük Yaşamda Eleştirel Düşünme Ölçeği'nin Psikometrik Niteliklerinin Belirlenmesi

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Keywords

1. critical thinking
2. everyday life
3. validity
4. reliability
5. scale

Anahtar Kelimeler

1. eleştirel düşünme
2. gündelik hayat
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Abstract

Purpose: Critical thinking, regarded as one of the main goals of education, is considered an important skill in the lifelong learning process. The purpose of this research is to determine the psychometric properties of the Critical Thinking Scale in Everyday Life and to contribute to the field with a tool that can make valid and reliable measurements in this regard.

Design/Methodology/Approach: The study group of the research consists of 425 students aged between 14-19. Within the scope of the research, data were collected from two different groups. Exploratory factor analysis was performed with the data obtained from the first group, and confirmatory factor analysis was performed with the data obtained from the second group. Cronbach alpha internal consistency coefficients were calculated for the scale and its sub-dimensions using both data sets.

Findings: Findings obtained revealed that it is a measurement tool that makes measurements with high reliability and validity and thus this scale can be used to determine the critical thinking skills in young people aged between 14-19 everyday life in Turkey.

Highlights: In line with the findings obtained from research in which this scale was used, educational studies can be planned to develop students' critical thinking skills.

Öz

Çalışmanın amacı: Eğitimin temel hedeflerinden biri olarak kabul edilen eleştirel düşünme, yaşam boyu öğrenme sürecinde önemli bir beceri olarak kabul edilmektedir. Bu araştırmanın amacı, Günlük Yaşamda Eleştirel Düşünme Ölçeği'nin psikometrik niteliklerini belirlemek ve bu konuda geçerli ve güvenilir ölçmeler yapabilecek bir araçla alana katkıda bulunmaktır.

Materyal ve Yöntem: Araştırmanın çalışma grubunu 14-19 yaş arası 425 öğrenci oluşturmaktadır. Araştırma kapsamında iki farklı gruptan veri toplanmıştır. İlk gruptan elde edilen verilerle açımlayıcı faktör analizi, ikinci gruptan elde edilen verilerle doğrulayıcı faktör analizi yapılmıştır. Her iki veri seti ile de hem ölçeğin tamamı hem de alt boyutlar için Cronbach alfa iç tutarlılık katsayıları hesaplanmıştır.

Bulgular: Elde edilen bulgular bu ölçeğin Türkiye'de 14-19 yaş arası gençlerin günlük yaşamda eleştirel düşünme becerilerinin belirlenmesinde kullanılabilecek, güvenirliği ve geçerliği yüksek ölçmeler yapan bir ölçme aracı olduğunu ortaya konulmuştur.

Önemli Vurgular: Ölçeğin kullanıldığı araştırmalardan elde edilen bulgular doğrultusunda öğrencilerin eleştirel düşünme becerilerini geliştirmeye yönelik eğitim çalışmaları planlanabilir.

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INTRODUCTION

Today, people's news sources and means of accessing the news are quite diverse. In recent years, websites and social media have been added to conventional mass media such as newspapers, radio, television and magazines. Due to its nature, the rate of dissemination of news on the internet and social media and the rate of individuals reaching them is much higher than newspapers and televisions. People are exposed to an intense information bombardment every time they take their phones, open websites or when they use search engines. This situation has made critical thinking, which is a reflective way of thinking, an even more important cognitive skill that needs to be developed in recent years.

Critical thinking is defined by Ennis (1996, p.166) as “reflective thinking, the focus of which is to decide what to believe and what to do”. Reflective thinking is defined as the effective, permanent and careful handling of a belief or hypothetical form of knowledge in the light of supporting reasons (Dewey, 1997). The term "critical" comes from the Greek word "Kritikos (κρίσιμος)" and includes the meaning of judgment and evaluation. In this respect, it can be said that critical thinking is an investigative thought. In addition, critical thinking is different from every day or ordinary thinking in many ways and is seen to be related to high-level thinking skills such as problem solving, decision making and creative thinking (Kılıç & Şen, 2014; Aşkın Tekkol & Bozdemir, 2018; Çam Aktaş, 2016).

According to Fisher (2011, p.8), critical thinking skill consists of the following skills: 1) Defining well the elements in the reasoning process, especially judgment and conclusion, 2) Defining and evaluating the assumptions, 3) Clarifying the statements, ideas and 4) Questioning the acceptability and especially credibility of claims, 5) Evaluating different types of claims, 6) Analyzing, evaluating and producing statements, 7) Analyzing, evaluating and making decisions, 8) Making inferences, 9) Generating claims .

Critical thinking can be considered as a stand-alone skill or as a complex high-level skill that requires different thinking skills. In addition to the researchers who treat critical thinking as a thinking skill, there are also authors who consider critical thinking as a disposition. For example, Ennis (1996) regards critical thinking as a thinking disposition that includes using different skills towards critical thinking rather than being a basic skill.

One of the most comprehensive projects on critical thinking is a panel study and qualitative research project carried out by the American Philosophical Association (AFA). Within the scope of this project, 46 scientists from the fields of educational sciences, social sciences and philosophy came together and discussed the place and necessity of critical thinking in education. As a result of these discussions, the participants defined the concept of critical thinking as an evidence-based, conceptual, contextual way of thinking that results in interpretation, analysis, evaluation and inference, and determined with certain criteria.

In addition, the ideal characteristics of the individual who has critical thinking skills are listed as; the researcher; knowledgeable; confident; open minded; flexible; unbiased in evaluation; can be honest in confronting personal prejudices; acting cautiously in making judgments; willing to re-evaluate things; be clear about specific issues; able to organize complex issues and eager to research relevant information; be able to set reasonable criteria; focusing on questioning and insisting on finding answers (Facione, 1990).

According to Halpern (2014), critical thinking skill is a thinking skill that can be taught and developed. Teaching critical reading skills is seen as a study that affects individuals' critical thinking skills positively (Özüdoğru, 2016). Similarly, there are studies showing that teaching text analysis skills (Karadeniz & Gürsoy, 2014) and argumentative writing education (Çakmak & Civelek, 2013) significantly increase critical thinking skills. It is reported that even just providing education about critical thinking skills contributes to the development of critical thinking (Avcı Akçalı, 2019). Some experimental studies have been performed in recent history in Turkey show that, the use of educational interface aided educational software (Schregleman and Karakuş, 2017), making individuals’ watch relevant and teacher themed movies (Kaşkaya and Çavuşoğlu, 2017), the problem-based learning and the teaching process with the scenario (Ersoy and Başer, 2014; Cantürk Günhan and Başer, 2009) in the development of critical thinking skills are effective. In addition, there are studies showing that there is a positive relationship between problem solving skills and critical thinking skills (Yıldırım & Şensoy, 2017; Özyurt & Özyurt, 2015; Tümkaya, Aybek, & Aldağ, 2009).

Oktay (2018) emphasizes that education aims to create a change in thinking as much as it aims to change behavior in individuals. In addition, raising individuals who are free and capable of scientific thinking is among the aims of Turkish national education (Töremen, 2010, p.3). Therefore, educational institutions and teachers should be expected to plan and implement a number of teaching activities that will improve students' critical thinking skills in line with this purpose. However, in a meta-synthesis study in which 18 qualitative studies on critical thinking were

examined, it was found that teachers and pre-service teachers saw themselves inadequate in terms of critical thinking skills and stated that the classroom environment was a factor preventing them from gaining this skill (Polat, 2015). In addition, studies of teachers and teacher candidates in Turkey, shows that their critical thinking skills and critical thinking dispositions in the medium and low levels (İskifoğl in 2018; Access and the Erdem 2018; Aries Erdamar and Bang Alban, 2017; Pekdog and Bayar, 2016; Piji Küçük and Uzun, 2013; Kartal, 2012; Deniz and Kaptan, 2011; Beşoluk and Önder, 2010). In a sense, it can be said that the critical thinking skills of teachers and teacher candidates who are expected to develop students' critical thinking skills are not at a

sufficient level. It is observed that teacher training programs in education faculties are far from developing teacher candidates' critical thinking skills. However, it is seen that university education positively affects critical thinking skills and disposition. There are research findings showing that university students studying in the last year have higher critical thinking skills and dispositions (Açışlı, 2015; Tümkaya, 2011).

Critical thinking skill seems to be a cognitive skill that needs to be improved (Bayram, Kurt & Atay 2020). For this, valid and reliable measurement tools are needed to help determine the level of critical thinking skills of students. Critical thinking skill is a skill associated with reflective thinking (Eğmir & Ocak, 2020), and it is also associated with students' school success (Karahan & İskifoğlu, 2020). It has been shown that students who develop critical thinking skills have improved reading comprehension skills (Ummah, Anafiah & Rachmadtullah, 2020) and problem-solving skills (Üredi & Kösece, 2020). The aim of this study is to transform the Critical Thinking in Daily Life Questionnaire (CTDLQ), which was created by Mincemoyer, Perkins, and Munyua (2001) within the scope of the "Evaluation of young people's life skills project" and used frequently after, into the Critical Thinking in Everyday Life Scale (CTDLS), determine the psychometric qualities of this scale and contribute to the field with a tool that can make valid and reliable measurements in this regard.

METHODOLOGY

Study Group

The study group of the research consists of 425 students aged 14-19. Within the scope of the research, data were collected from two different groups. The first group is the group in which the exploratory factor analysis (EFA) is performed. The distribution of the gender and age of the participants in the EFA group is presented in Table 1.

Table 1. Distribution of EFA participants by gender and age

			Age						
			14	15	16	17	18	19	Total
Gender	Female	N	22	19	21	20	28	29	139
		%	15.8	13.7	15.1	14.4	20.1	20.9	100.0
	Male	N	8	16	13	23	11	11	82
		%	9.8	19.5	15.9	28.0	13.4	13.4	100.0
Total		N	30	35	34	43	39	40	221
		%	13.6	15.8	15.4	19.5	17.6	18.1	100.0

When Table 1 is examined, it is seen that 13.6% of the participants are 14, 15.8% are 15, 15.4% are 16, 19.5% are 17, 17.6% are 18 and 18.1% of them are 19 years old.

The second group is the group in which the confirmatory factor analysis (CFA) is performed. The distribution of the gender and age of the participants in the group with CFA is presented in Table 2.

Table 2. Distribution by gender and age of the participants who had CFA

			Age						Total
			14	15	16	17	18	19	
Gender	Female	N	16	16	20	26	30	24	132
		%	12.1	12.1	15.2	19.7	22.7	18.2	100.0
	Male	N	17	19	11	15	4	6	72
		%	23.6	26.4	15.3	20.8	5.6	8.3	100.0
Total			33	35	31	41	34	30	204
		%	16.2	17.2	15.2	20.1	16.7	14.7	100.0

When Table 2 is examined, it is seen that 16.2% of the participants are 14, 17.2% are 15, 15.2% are 16, 20.1% are, 16.7% are 18 and 14.7% are 19 years old. When Table 1 and Table 2 are examined together, it is concluded that the number of participants in both groups have similar distributions by age and gender.

Data Collection Tool

The Critical Thinking in Daily Life Questionnaire (CTDLQ) was developed by Mincemoyer, Perkins and Munyua (2001), within the scope of the “Assessing the life skills of young people”, as 20 items representing the dimensions of reasoning, questioning, analysis and information processing, flexibility, and evaluation. The questionnaire also has a short form consisting of 5 items. In this study, items in the 20-item questionnaire of Mincemoyer et al. (2001) were used after the permissions were obtained. In the questionnaire of the researchers, which consisted of 20 items, the participants were asked how often they did the situations stated

in the items in the last 30 days, and they were asked to indicate on a five-point Likert-type grading (1 never, 5 always). The researchers calculated only the reliability coefficient for the questionnaire and found it to be 0.75. For this reason, in this study, the related questionnaire was first converted into a scale (the latent structure was revealed by exploratory factor analysis) and then the structure was confirmed in a different group (with confirmatory factor analysis).

Procedure

In order to ensure that the CTDL questionnaire can be used as a scale in Turkish culture, the English-Turkish translation of the questionnaire was made by three philologist with the permission of the author. The Turkish form, created from translations made by three philologist, was translated back into English by three different philologist. Then, the translation appropriateness was checked by comparing the form translated from Turkish to English by three different philologist with the original English form, and the final Turkish form of the questionnaire was decided.

Data Analysis

Within the scope of the study, firstly missing values and outlier and multivariate outlier values were examined in both study groups. The outlier values were analyzed by converting item scores on the scale to standard z score, and calculating Mahalanobis Distances for multivariate outlier values analysis (Tabachnick & Fidel, 2001). Individuals whose standard scores were outside the ± 4 z range (Mertler & Vannata, 2005) and whose MU values were α = 0.001 and exceed the critical χ^2value in the relevant degree of freedom (Tabachnick & Fidell, 2001) were excluded from the data set. It was determined that 7 people in the exploratory factor analysis group and 3 people in the confirmatory factor analysis group were outlier values. Since the missing values are randomly distributed, the series mean is assigned. In order to determine the construct validity of the scale, first exploratory factor analysis and then confirmatory factor analysis were carried out by collecting data from another group in the final form of the scale. Within the scope of the study, principal component analysis was used as a factoring technique and varimax was used as a rotation method. In this study, principal component analysis is used, which assumes that common variances cover all variance, since the aim of factor extraction is to reduce the list of variables to a linear combination of smaller components. To simplify and separate the factor structure; since the factors are unrelated, the varimax rotation method, which is more appropriate in cases where there is a multi-factor structure than orthogonal rotation methods, was used (Tabachnick & Fidel, 2001). Model data fit in confirmatory factor analysis was examined by chi-square/sd (χ^2/sd), Standardized Root Mean Square Residual (SRMR), Root Mean Square Error Approximation (RMSEA), Comparative Fit Index (CFI), Goodness of Fit Index (GFI), Incremental Fit Index (IFI), and Non-Normed Fit Index (NNFI) values. Reliability proofs were obtained with Cronbach alpha coefficients. SPSS 24.0 and LISREL 8.80 package programs were used in the analysis.

FINDINGS

Exploratory factor analysis was carried out in order to obtain information about the construct validity of the Critical Thinking in Everyday Life Scale, which will be formed within the scope of the study. KMO and Bartlett tests were conducted to determine the suitability of the data set, which is the first step of the exploratory factor analysis, for factorization. Test results are presented in Table 3.

Table 3. KMO and Bartlett test results

Kaiser-Meyer-Olkin Test		0.809
Bartlett's Test of Sphericity	Chi-Square	1087.967
	df	136
	p	0.,000

When Table 3 is examined, it is seen that the KMO value (0.809) is high (Şencan, 2005) and the Bartlet test is significant, that is, the data set is suitable for factorization in terms of sample size and structure.

Within the scope of the study, the exploratory factor analysis was first performed without determining the number of factors, and by releasing the items in terms of factorization. The obtained scree plot graph is presented in Figure 1.

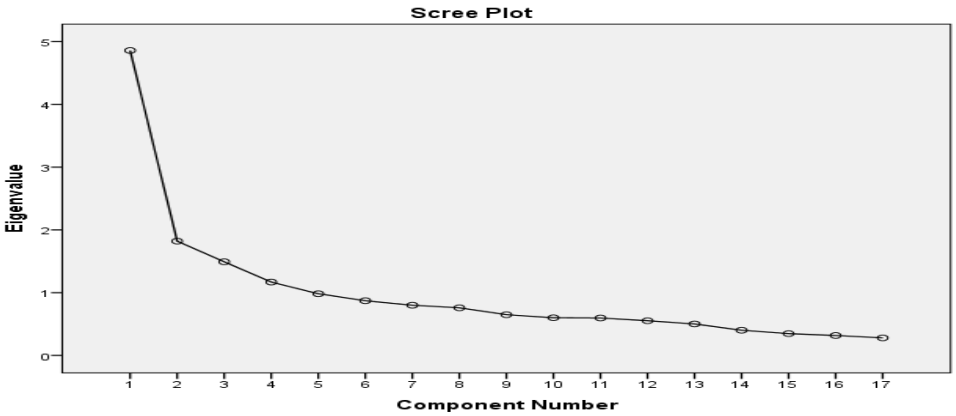

Figure 1. Scree Plot

It is decided that the structure has four factors after examining the variance table explained with the scree plot graph together, and after possible experiments on the factorization of the structure (does each factor contain at least three items after the overlapping items are removed, can the aggregated items be named, etc.).

The analyzes were repeated in a way that the structure was forced into four factors. Within the scope of the study, principal component analysis was used as a factoring technique and varimax was used as a rotation method. The three items (m16, m2, and m6) were excluded from the analysis, respectively, because they were overlapped and the analyzes were repeated. Common factor loading values of the items obtained after the analysis are presented in Table 4.

Table 4. KMO and Bartlett test results (I=Item)

Item	Common Factor loading values	Item	Common Factor loading values	Item	Common Factor loading values
I1	.317	I9	.658	I15	.553
I3	.570	I10	.685	I17	.342
I4	.406	I11	.454	I18	.579
I5	.556	I12	.542	I19	.651
I7	.643	I13	.663	I20	.364
I8	.661	I14	.696		

When Table 4 is examined, it is seen that the common factor loading values of the items vary between 0.317-0.696. There is no item with a common factor loading values below 0.30.

The eigenvalues related to the structure obtained by the exploratory factor analysis and the explained variance percentages are presented in Table 5.

Table 5. Eigenvalues and variance percentages related to the structure

Component	Values for All Possible Factors			Values for a Determined Number of Factors			Rotated Values for a Determined Number of Factors		
	Eigenvalue	Explained Variance Percentage	Cumulative Explained Variance Percentage	Eigenvalue	Explained Variance Percentage	Cumulative Explained Variance Percentage	Eigenvalue	Explained Variance Percentage	Cumulative Explained Variance Percentage
1	4.858	28.578	28.578	4.858	28.578	28.578	2.566	15.097	15.097
2	1.821	10.709	39.286	1.821	10.709	39.286	2.436	14.331	29.428
3	1.492	8.777	48.063	1.492	8.777	48.063	2.331	13.710	43.138
4	1.169	6.875	54.938	1.169	6.875	54.938	2.006	11.800	54.938
5	.983	5.782	60.720						
6	.871	5.126	65.846						
7	.800	4.705	70.552						
8	.759	4.465	75.016						
9	.649	3.818	78.835						
10	.600	3.531	82.365						
11	.597	3.509	85.875						
12	.553	3.250	89.125						
13	.502	2.952	92.077						
14	.402	2.364	94.441						
15	.347	2.044	96.485						
16	.318	1.869	98.354						
17	.280	1.646	100.000						

When Table 5 is examined, the eigenvalue of the first factor obtained after the rotation about the four-factor structure is 2.566, the variance explained is 15.097%, the eigenvalue of the second factor is 2.436, the variance explained is 14.331%, the eigenvalue of the third factor is 2.331, and the variance explained is 13.710%. It is seen that the eigenvalue is 2.006 and the variance it explains is 11.800%. The four-factor structure together explains 54.938% of the total variance.

The factor pattern obtained after seven iterations made with the exploratory factor analysis is presented in Table 6.

Table 6. Factor design of the critical thinking scale in everyday life

	Factor			
	1	2	3	4
I10	.783	.261	.026	.045
I9	.698	.392	-.059	.116
I11	.563	-.005	.274	.249
I17	.552	.056	.060	.176
I1	.449	.224	.234	.099
I7	.216	.752	.173	-.036
I8	.395	.707	.067	-.030
I3	.097	.694	.185	.211
I4	.102	.543	.197	.250
I14	.127	.134	.811	-.062
I13	-.269	.115	.747	.142
I15	.279	.097	.682	.037
I12	.311	.282	.599	.088
I19	.256	.070	.032	.761
I18	.148	-.070	.036	.742
I5	-.085	.388	-.069	.627
I20	.250	.197	.201	.471

When Table 6 is examined, it is seen that the factor loading values of the four-factor structure of the Critical Thinking in Everyday Life Scale range between 0.449-0.811. The first sub-dimension of the scale consists of five items (i1, i9, i10, i11 and i17). The factor loading values of the items in the first sub-dimension named as “analysis and information processing” range between 0.449 and 0.783. The second sub-dimension of the scale consists of four items (i3, i4, i7 and i8). The factor loading values of the items in the second sub-dimension called "questioning" vary between 0.543 and 0.752. The third sub-dimension of the scale consists of four items (i12, i13, i14 and i15). Factor loading values of the items in the third sub-dimension named as "flexibility" range between 0.599 and 0.811. The fourth sub-dimension of the scale consists of four items (i5, i18, i19 and i20). The factor loading values of the items in the last sub-dimension named as "Reasoning and Evaluation" range between 0.471 and 0.761.

Another validity evidence for the structure was obtained by confirmatory factor analysis. In the data obtained by applying the 17-item final form of the scale to a different group, it was determined whether the structure in question was confirmed or not.

In the final form of the scale (item rankings changed after the three items dropped), the first sub-dimension consisted of the items i1, i7, i8, i9 and i14, the second sub-dimension consisted of the items numbered i2, i3, i5 and i6, the third sub-dimension consisted of i10, i11, i12 and i13 and the fourth sub-dimension consisted of items i4, i15, i16 and i17.

The t values for the second level confirmatory factor analysis are presented in Figure 2.

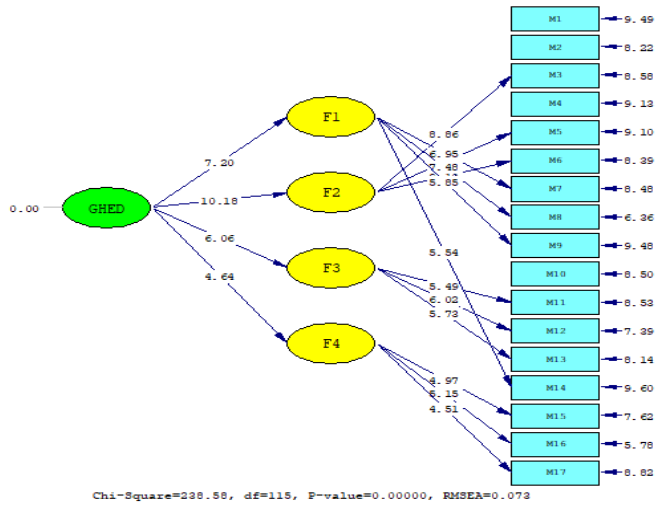

Figure 2. t values related to DFA

When Figure 2 is examined, it is seen that all t values of the items and the relationships between factors are significant at the 0.01 level. The p value for the model was found to be significant at the 0.01 level. However, the p value is likely to be significant in large samples (Yılmaz & Çelik, 2009).

Standardized factor loading values and error variances regarding the second level confirmatory factor analysis are presented in Figure 3.

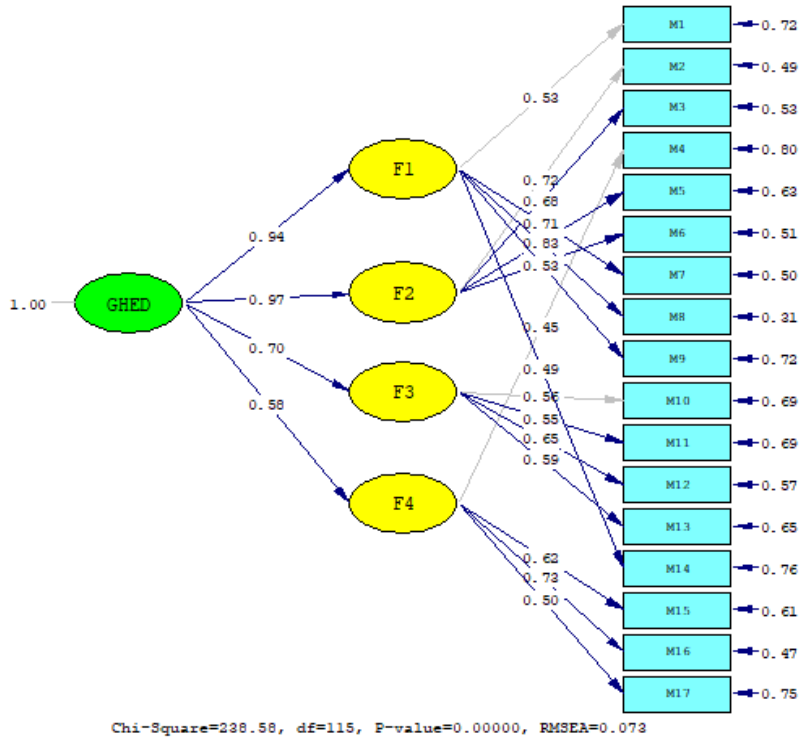

Figure 3. Standardized factor loading values and error variances for CFA

When Figure 3 is examined, it is seen that the standardized factor loading values for the items are between 0.45-0.83 and the error variances are between 0.31-0.80. Alternative fit indices obtained at the end of the analysis are presented in Table 7.

Table 7. Alternative fit index values

Fit Index	χ^2/sd	RMSEA	SRMR	GFI	IFI	NNFI	CFI
Value	2.07	0.073	0.073	0.88	0.95	0.94	0.95
Fit	Perfect	Good	Good	Acceptable	Perfect	Good	Perfect

When examined in Table 7; The χ^2/sd (238,58/115) ratio is calculated as 2.07. If this ratio is ≤ 3, it indicates perfect fit (Kline, 2005). RMSEA and SRMR values (≤0.08) correspond to the good fit criteria (Sümer, 2000; Brown, 2006; cited in: Çokluk, Şekercioğlu, & Büyüköztürk, 2010). Values greater than 0.85 for GFI are indicative of acceptable compliance (Yılmaz & Çelik, 2009). IFI, NNFI and CFI indexes above 0.95 correspond to perfect fit, and over 0.90 corresponds to good fit (Tabachnick and Fidell, 2001). As a result of the analysis, the proposed modifications were examined, but no modification was made because there was no theoretically supported modification proposal.

Cronbach alpha internal consistency coefficients calculated to determine the reliability of data collected for exploratory and confirmatory factor analysis are presented in Table 8.

Table 8. Reliability Coefficients

	All items	Factor 1	Factor 2	Factor 3	Factor 4
Group 1 (EFA)	0,836	0,699	0,737	0,740	0,650
Group 2 (CFA)	0,872	0,745	0,770	0,690	0,663

When Table 8 is analyzed, it is concluded that the Cronbach's alpha internal consistency coefficients for all items in both groups have high reliability levels, Cronbach alpha internal consistency coefficients for the second and third factors in the EFA group and the first and second factors in the CFA group have high reliability levels, and Cronbach alpha internal consistency coefficients

reliability levels for the factors first and fourth in the EFA group and the third and fourth factors in the CFA group are moderately reliable (Özdamar, 2004).

DISCUSSION AND CONCLUSION

Researchers Mincomeyer and Perkins working at Penn State University created a 20-item questionnaire with the dimensions of reasoning, inquiry, analysis / information processing, flexibility and evaluation, using scales in the literature, within the framework of their life skills development project for adolescents. In the interview conducted with the researchers to use the questionnaire, it was informed that the psychometric analysis of the 20-item questionnaire was not carried out, and that they performed reliability analysis for the 5-item short form developed using the aforementioned questionnaire and reported that they found the Cronbach's alpha internal consistency coefficient as 0.72 (Mincomeyer & Perkins, 2005).

Various scales were developed after the experts meeting on critical thinking held in 1989 (Facione, 1991; Facione, Facione, & Sanchez, 1994). Mincomeyer et al. (2001), on the grounds of the high number of items in existing scales as a result of a comprehensive literature review, developed a less-item measurement tool to measure the critical thinking skills of young people, conceptualizing critical thinking as a way of thinking that reveals thoughts and actions in line with evaluations evaluating the reasons (Duerden et al., 2010). In the Turkish literature, there are scales that measure critical thinking and have similar sub-dimensions and item numbers between 28 and 51 (Kökdemir, 2003; Özgenel & Çetin; 2018; Semerci, 2016).

In this study, the Critical Thinking in Everyday Life questionnaire, developed by Mincomeyer et al. (2001), has been turned into a scale that can be used in Turkish culture and makes valid and reliable measurements. The validity and reliability studies of the scale were conducted on young people aged between 14-19. Exploratory and confirmatory factor analysis was performed in the validity studies of the scale. Within the scope of the study, the exploratory factor analysis was first performed without determining the number of factors, and by releasing the items in terms of factorization. After examining the variance table explained with the scree plot graph and possible experiments regarding the factorization of the structure together, it was decided that the structure has four factors. The analyzes were repeated in a way that the structure was forced into four factors. The three items (i16, i2, and i6) were excluded from the analysis, respectively, because they were overlapped and the analyzes were repeated. After the analysis, the common factor loading values of the items are 0.317-0.696, and the four-factor structure together explains 54.938% of the total variance. Dimensions of the scale; It has been named as "Analysis and Information Processing", "Inquiry", "Flexibility" and "Reasoning and Evaluation". Experts on the structure of critical thinking also defines critical thinking as "self-regulating judgment based on interpretation, analysis, evaluation and inference, as well as evidence-based, conceptual, methodological, critical or contextual evaluations on which this judgment is based", and as sub-dimensions of critical thinking they listed the features of interpretation, analysis, evaluation, inference, explanation, and self-regulation (Facione, 1990).

Another validity evidence for the structure was obtained by confirmatory factor analysis. Confirmatory factor analysis was performed with the data obtained by applying the 17-item final form of the scale to a different group. As a result of the analysis, the model fit of the structure created by exploratory factor analysis was verified.

Regarding the reliability of the scale, Cronbach alpha internal consistency coefficients were calculated for the data collected for exploratory and confirmatory factor analysis. Cronbach alpha internal consistency coefficients for all items in both groups had high reliability levels, Cronbach alpha internal consistency coefficients for the second and third factors in the EFA group, and the first and second factors in the CFA group were high; however, it was concluded that the Cronbach's alpha internal consistency coefficients reliability levels for the first and fourth factors in the EFA group and the third and fourth factors in the CFA group were moderately reliable (Özdamar, 2004). It is revealed that this scale can be used to determine the critical thinking skills in everyday life of young people aged between 14-19 in Turkey, since its final form consists of items that have desired features and capable of making highly reliable and valid measurements.

It is thought that the adaptation of the mentioned tool to Turkish culture will contribute to the literature. The final version of the scale is presented in the appendix.

Suggestions:

1) The developed scale can be used to determine the critical thinking skills of individuals in adolescence and youth.

2) The validity, reliability and factor structure of the scale can be tested on data obtained from participants of different age groups and different socioeconomic and educational levels.

3) Critical thinking scales can be developed for individuals from different occupational groups.

4) Different scales can be developed that measure individuals' critical thinking dispositions as well as critical thinking skills.

5) Mixed-method studies using this scale, supported by qualitative data, can be designed.

6) In line with the findings obtained from the studies in which the scale is used, educational studies can be planned to develop students' critical thinking skills.

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Statements of publication ethics

We hereby declare that the study has not unethical issues and that research and publication ethics have been observed carefully.

Researchers' contribution rate

The study was conducted and reported with equal collaboration of the researchers.

Ethics Committee Approval Information

"Ethics Committee Approval Certificate" was obtained with the decision number 14 from Kocaeli University Social and Human Sciences Ethics Committee at the meeting dated 19/03/2020 and numbered 2020/04.

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GÜNLÜK YAŞAMDA ELEŞTİREL DÜŞÜNME ÖLÇEĞİ

Yönerge: Aşağıdaki ifadeler günlük yaşamınızda gerçekleşen belirli durumlar ile ilgili nasıl düşündüğünüzü tanımlamaktadır. Aşağıdaki ifadeleri okuyarak, **son 30 günde,** belirtilen durumları ne sıklıkta yaptığınızı ilgili kutucuğa işaretleyiniz. Örneğin, bir madde için "Her zaman" yazılı beşinci kutucuğu işaretlemeniz, maddede bahsedilen durumu düzenli olarak yaptığınız yani her zaman yaptığınız anlamına gelmektedir.

Son madde no		Hiç Bir Zaman	Nadiren	Ara Sıra	Sık Sık	Her Zaman
1	Harekete geçmeden önce olası sonuçları düşünürüm.	1	2	3	4	5
2	Fikirlerimi bilgi toplayarak geliştiririm.	1	2	3	4	5
3	Bir sorunla karşılaştığımda çözüm seçeneklerini belirlerim.	1	2	3	4	5
4	Bir sorunla ilgili düşüncelerimi rahatlıkla ifade edebilirim.	1	2	3	4	5
5	Görüşlerimi desteklemek için bilgi toplamak benim için önemlidir.	1	2	3	4	5
6	Bir karar vermeden önce birden fazla bilgi kaynağına sahip olurum.	1	2	3	4	5
7	Bir konuyla ilgili nereden bilgi alacağımı planlarım.	1	2	3	4	5
8	Bir konu hakkında nasıl bilgi edineceğimi planlarım.	1	2	3	4	5
9	Fikirlerimi önem sırasına koyarım.	1	2	3	4	5
10	Aldığım yeni bilgilere göre kararlarımı yeniden düzenlerim.	1	2	3	4	5
11	Onlarla aynı fikirde olmasam da başkalarının fikirlerini dinlerim.	1	2	3	4	5
12	Bir konu hakkında düşünürken farklı fikirleri karşılaştırırım.	1	2	3	4	5
13	Bir karar vermeyi planlarken zihnimi farklı fikirlere açık tutarım.	1	2	3	4	5
14	Konuyu düşünmeme yardımcı olacak bir kontrol listesi hazırlarım.	1	2	3	4	5
15	Yaptığım şeyin doğru ya da yanlış olduğunu kolaylıkla söyleyebilirim.	1	2	3	4	5
16	Bir sorunun üstesinden gelmenin en iyi yolunu söyleyebilirim.	1	2	3	4	5
17	Kullandığım bilginin doğruluğundan emin olurum.	1	2	3	4	5