

Empathy Assessment Scale

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ABSTRACT

OBJECTIVE: Empathy is a prosocial ability and communication skill to feel, understand, and respond to emotions of others; it includes affective and cognitive behavioral aspects of therapeutic communication. For instance, physicians should communicate empathically with their patients. Thus, empathy levels of medical students should be improved during their education. It is important to comparatively evaluate the dimensions of empathy to have a clearer picture of this ability. The aim of this study is to determine the validity and reliability of the Empathy Assessment Scale (EAS) and its subscales.

METHODS: Data were collected between October and December in 2021 from 651 students studying medicine in Istanbul Medeniyet University. Item pool of the scale was developed by the researcher based on the literature review. Two counseling psychologists, two clinical psychologist, and two psychiatrists evaluated the items to detect the face and content validity in the final application form. Both explanatory and confirmatory factor analyses (EFA and CFA) were carried out. The Toronto Empathy Questionnaire was also applied for concurrent validity. IBM SPSS 25 and AMOS 24 were utilized to analyze the construct and concurrent validities, internal consistency, and test-retest reliabilities.

RESULTS: KMO and Bartlett's sphericity tests showed that the dataset was suitable for factor analyses (KMO=0.812, Chi-square=5535.718, df=78). A three-factor structure with 13 items was confirmed by EFA, 67.1% of the variance was explained by these three factors. According to CFA, the factor loads of the items varied between 0.39 and 0.98 and data model fit was suitable according to the fit indices (CFI=0.95, TLI=0.91, RMSEA=0.049, SRMR=0.055, and Chi-square/df=1.316). Concurrent validity of the scale was also confirmed by the Pearson correlation ($r=0.467$, $p<0.001$). The test-retest reliability values (r) within four weeks interval were all above 0.60 at 0.01 significance level. Cronbach's alpha coefficients were 0.845 (EAS total scale score, 13 items), 0.696 (social interaction subscale score, 4 items), 0.802 (cognitive behavior subscale score, 5 items), and 0.964 (emotional identification subscale score, 4 items).

CONCLUSION: EAS is a valid and reliable measurement tool to assess the empathy levels of individuals in three dimensions: Social interaction, cognitive behavior, and emotional identification. EAS can be used to evaluate the empathy levels for research, educational, and other interventional purposes.

Keywords: Communication; empathy; medical education.

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In a large context, empathy can be defined as feeling, understanding, and appropriately responding to the emotional feelings of others. Likewise any other social aspects of life, empathy is also essential for health care in all forms [1]. During their education, medical students should learn about how to be more empathic with others to pro-

vide a better health care when they become physicians. Empathy can be taught and learned to deliver the better care to protect both patients and physicians from possible medical and moral injuries, and also malpractices [2]. Empathy should be placed in all layers of the curriculum to ensure its improvement throughout medical education.



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There are many definitions of empathy and it is usually misunderstood or confused [3]. Even medical professionals may have some difficulty in defining and explaining it to others. According to the relevant literature, empathy has some core aspects. First of all, it has a high level social value when interacting with others in real-life interpersonal relationships [4]. Not only in our difficult times, but also when we share happiness and other positive moments with others, we need some empathy to sustain a well-functioning mentality. Empathy has also cognitive and affective dimensions in relation with its social foundation in connecting to others: Understanding and feeling as responding to social experiences [5]. Accurately sensing and perceiving, and actually feeling the others' emotions are absolute requirements for empathizing with others; sharing feelings by cognitive self-other differentiation is another aspect of empathy [6]. Therefore, social, cognitive, and affective components of empathy work together to reach out a higher quality interpersonal communication.

Assessment of empathy has been attracted to many researchers, educators, and clinicians for years and numerous measurement tools have been developed to assess empathy [7]. Since the definitions of empathy are diverse, some differences in these instruments have occurred as well. Most of the discrepancies are due to the subdimensions of the construct. One of the mostly used empathy scales in research about medical education is the Jefferson Scale of Physician Empathy with three factors named as Perspective Taking, Compassionate Care, and Standing in Patient's Shoes [8]. An example from the Perspective Taking subscale is "Physicians should try to stand in their patients' shoes when providing care to them" (item 9); however, there is also another subscale named as the Standing in the Patient's Shoes. This conflict casts a shadow on the validity of the scale. There are similar kinds of inconsistency problems with other scales for measuring empathy.

Still another problem with many empathy scales is the reverse scoring, which is also a significant issue considering the validity of scales according to the modern test theory. For instance, it may cause significant problems in factoring and item clustering [9]. Thus, most currently available scales should be reconsidered accordingly and revised if required.

Another widely used scale for measuring empathy in medical students is the Empathy Quotient; it measures empathy in three factors: Cognitive empathy, emotional

Highlight key points

- Empathy is a multidimensional psychological construct.
- Empathic people have better social interactions as seen in their prosocial attitudes and communication skills.
- Cognitive behavioral regulation of affective reactions in diverse social circumstances is an essential indicator of empathy.
- Empathy training and assessment should be included more in the curriculum of medical education.

reactivity, and social skills [10]. These constructs appear to be relevant to the related literature. However, there are some strange items in the scale, such as: "I prefer animals to humans." This item was assumed to measure negative empathy, however, human beings can be empathic toward animals as well as humans [11]. Some humans can also prefer animals to humans in certain circumstances. This preference has nothing to do with empathy but perhaps related to some other psychological attribute.

As a multidimensional instrument, the Questionnaire of Cognitive and Affective Empathy has also been commonly used in medical education and social research [12]. Perspective taking and online simulation are two components (subscales) of cognitive empathy scale; emotion contagion, proximal responsivity, and peripheral responsivity are three components (subscales) of affective empathy scale. According to the authors, perspective taking assesses how much someone can see the situation from the perspective of another person ("I am good at predicting what someone will do" – item 27), while online simulation assesses how people understand and mentally represent the another's feelings ("Before criticizing somebody, I try to imagine how I would feel if I was in their place" – item 6). However, prediction is also a kind of mental representation, and the situation in item 6 is a form of perspective taking. Therefore, the subscale naming leads to confusion. This is also a serious problem of validity.

Conceptual inconsistencies of empathy and its correspondingly confusive scales are causing some misconceptions. In fact, there are many conflicting conceptualizations of empathy measures [13]. For a long time, empathy has been confused with some other reactive emotional processes such as compassion and sympathy [14]. It is significantly important to differentiate empathy from other commonly confused concepts. In the development of Empathy Assessment Scale (EAS), these criticized inconsistencies in the abovementioned scales as examples were considered to eliminate misconceptions.

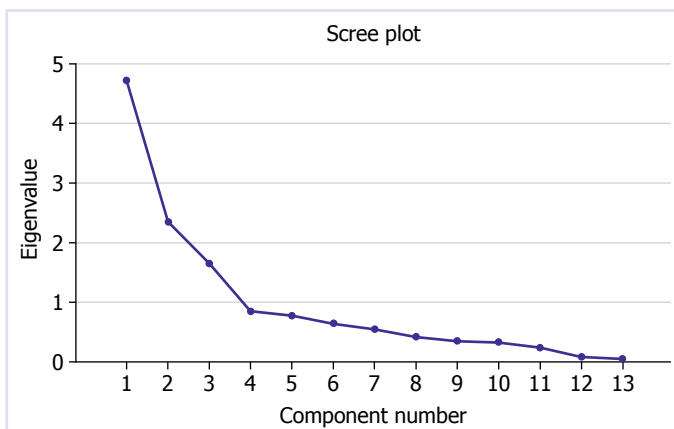


FIGURE 1. Scree plot graphic with three factors higher than Eigenvalue 1.

Empathy is certainly an affective reaction toward other's emotions, but more scientific support is needed to validate the multidimensional entity of the construct. A valid and reliable new scale with improved conceptualization of empathy including its social, cognitive, and affective components such as social interest, emotional comprehension, and affective response toward both real-life and fictitious characters, both animals and humans, and both positive and negative situations appears to be required. For one thing, such an empathy scale can be useful in medical education and designing empathy skill building programs for health-care professionals. The aim of this study is to determine the validity and reliability of the EAS and its subscales.

MATERIALS AND METHODS

Procedure and Materials

This is a scale development study. Data of this study were collected online between October and December in 2021 from 651 students studying medicine in Istanbul Medeniyet University. An informed consent was taken from each participant according to the ethical committee approval (Decision no: 2021/0500). All procedures were carried out in accordance with the Helsinki Declaration. A pilot study was done with 31 students in advance to ensure that the items were clear enough to comprehend and not causing any confusion or misconception. A 5-point Likert-type grading was used as never, rarely, sometimes, often, and always. There is no reverse scoring and item scores can be added up to gather a total score to assess empathy levels of individuals. EAS items and scoring criteria can be found in the Appendix.

Item pool of the scale was developed by the researcher based on a comprehensive literature review. Two counseling psychologists, two clinical psychologist, and two psychiatrists evaluated the items to detect the face and content validity of the items in the final application form. The form included informed consent section, a short demographic information section, EAS items, and the Toronto Empathy Questionnaire [15, 16] for testing concurrent validity. To assess test-retest reliability, a second set of data was collected after four weeks from a random subgroup of the participants ($n=34$).

Statistical Analyses

After ensuring their applicability by testing assumptions, both explanatory and confirmatory factor analyses (EFA and CFA) were utilized. The number of participants (sample size) was enough to carry out factor analyses. Normality and other basic assumptions of the statistical analyses were also confirmed. In addition to content and construct validities, concurrent validity was also tested by the Pearson correlation since data were distributed normally. IBM SPSS 25 and AMOS 24 (SPSS Inc., Chicago, Illinois, USA) were utilized to analyze validities, internal consistency and test-retest reliabilities. The significance level of the statistical analyses was considered $p < 0.01$ at least.

RESULTS

There was no missing data, and 349 of the participants were female (53.6%) and 302 of them were male (46.4%). Their average age was 20.34 years old ($SD=2.67$) and the age range was 18–31. KMO and Bartlett's sphericity tests showed that the dataset was suitable for factor analyses ($KMO=0.812$; $\text{Chi-square}=5535.718$, $df=78$). There was no significant outlier or any other problems corrupting the data. No item was deleted. A three-factor structure with 13 items was extracted by EFA, 67.1% of the variance was explained by these three factors (Fig. 1). In EFA, the extraction method was principal component analysis and the rotation method was Oblimin with Kaiser Normalization (Table 1). Figure 2 shows the component plot of the items in rotated space as regards EFA.

According to CFA, factor loadings of items differ in a range between 0.39 and 0.98. Data model fit was suitable according to the fit indices: $CFI=0.95$, $TLI=0.91$, $RMSEA=0.049$, $SRMR=0.055$, and $\text{Chi-square}/df=1.316$. Factor 1 (F1) is SI, Factor 2 (F2) is CB, and Factor 3

TABLE 1. Component score coefficient matrix after rotation in EFA

Item	Statement	EI	CB	SI
1	Being together with a sad person, I feel sad too.	-0.024	0.010	0.355
2	I sincerely congratulate my successful opponent.	0.009	0.265	-0.057
3	I get angry at the wrongdoer character in a story.	0.254	0.006	-0.013
4	Somebody else's happiness makes me feel happy too.	0.013	0.021	0.272
5	I do not hesitate to help a harmless animal in hardship.	0.021	0.255	0.037
6	I try to calm someone who is afraid.	0.056	0.250	0.016
7	Watching dramatic movie scenes, I cry tears of sadness.	0.244	-0.028	0.015
8	I understand people's feelings from their behavior.	-0.067	0.280	0.070
9	A funny cartoon entertains me.	0.249	0.011	-0.028
10	Among worried people, I become anxious.	0.060	-0.069	0.335
11	I do not go after someone who is angry.	-0.030	0.297	-0.056
12	Seeing a person is made surprised, I feel excited too.	-0.054	-0.006	0.391
13	I get scared of the characters in horror movies.	0.257	-0.016	-0.006

EFA: Exploratory factor analysis; EI: Emotional identification; CB: Cognitive behavior; SI: Social interaction.

TABLE 2. Intercorrelation matrix of items in CFA

Item	1	2	3	4	5	6	7	8	9	10	11	12
1	1.000											
2	0.119	1.000										
3	0.199	0.196	1.000									
4	0.379	0.156	0.256	1.000								
5	0.180	0.442	0.313	0.314	1.000							
6	0.231	0.560	0.395	0.140	0.490	1.000						
7	0.154	0.136	0.829	0.237	0.248	0.344	1.000					
8	0.233	0.285	0.075	0.193	0.523	0.407	0.069*	1.000				
9	0.187	0.188	0.938	0.222	0.299	0.387	0.779	0.072	1.000			
10	0.349	0.054*	0.355	0.332	0.163	0.235	0.414	0.081	0.327	1.000		
11	0.095	0.367	0.110	0.087	0.385	0.458	0.058	0.551	0.124	0.074*	1.000	
12	0.414	0.090	0.082	0.235	0.168	0.240	0.123	0.194	0.057	0.475	0.084*	1.000
13	0.185	0.160	0.916	0.243	0.264	0.377	0.900	0.070*	0.861	0.375	0.083	0.086

CFA: Confirmatory factor analysis. Correlations significant at the level of 0.01 are marked*, the rest is significant at the level of 0.001.

(F3) is EI (Fig. 3). Only few modifications were made between error terms to increase the model data fit by controlling the covariances. Modifications are between error terms of items 5 and 8, items 8 and 11, and items 7 and 13. The Pearson correlation coefficients between factors are 0.312 (SI-CB), 0.274 (SI-EI), and 0.236 (EI-CB) ($p < 0.01$); correlations between each factor and

EAS total score are 0.665 (SI), 0.660 (CB), and 0.803 (EI) ($p < 0.001$). Correlations between items were all statistically significant at 0.01 level at minimum (Table 2).

The concurrent validity of EAS was tested by the Toronto Empathy Questionnaire and it was confirmed by the Pearson correlation ($r = 0.467$, $p < 0.001$). The test-retest reliability values (r) within 4 weeks interval

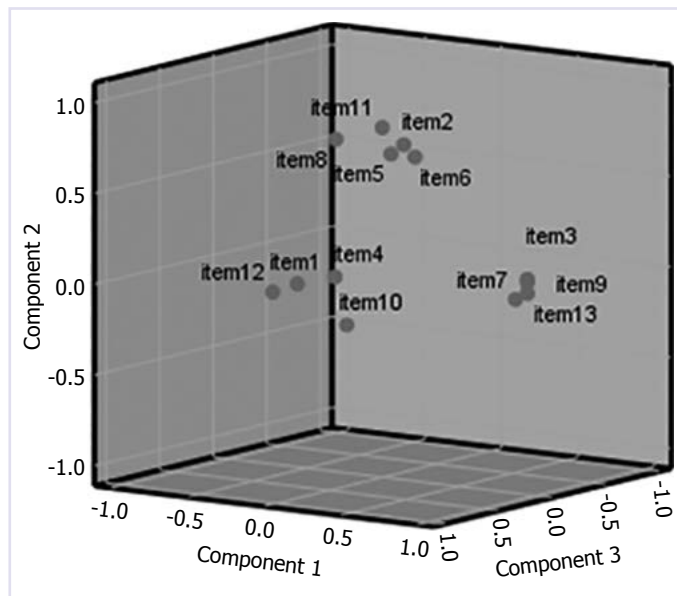


FIGURE 2. EFA component plot in rotated space.

were all above 0.5 at 0.001 significance level ($SI=0.652$, $CB=0.575$, $EI=0.754$). For assessing internal consistency reliability, Cronbach's alpha values were calculated. Stratified alpha was utilized for the total scale score because of multidimensionality. The alpha coefficients were 0.845 (EAS total scale, 13 items), 0.696 (social interaction subscale, 4 items), 0.802 (cognitive behavior subscale, 5 items), and 0.964 (emotional identification subscale, 4 items). All reliability coefficients are above and around the minimum requirements for accepting the scale and its three subscales reliable.

DISCUSSION

Empathy includes a social element to interact with others, a cognitive element to decipher and take an appropriate cognitive position to a mindset, and an affective component to relate to an emotional reaction. EAS has all these interrelated elements in its subscales. They are all in accordance with the conceptualizations of Hess and Fila in 2016 on the empathy types and their relationships based on the factor analyses of various self-report scales of empathy [17]. This reflects the validity of EAS.

In this study, the results of statistical analyses illustrated a three-factor structure as dimensions of empathy: SI, CB, and EI. SI is to measure social interactivity component in empathy. Empathy is defined as a prosocial communication skill. Therefore, being socially interactive is an indicator of empathy as in line with the higher scores in SI

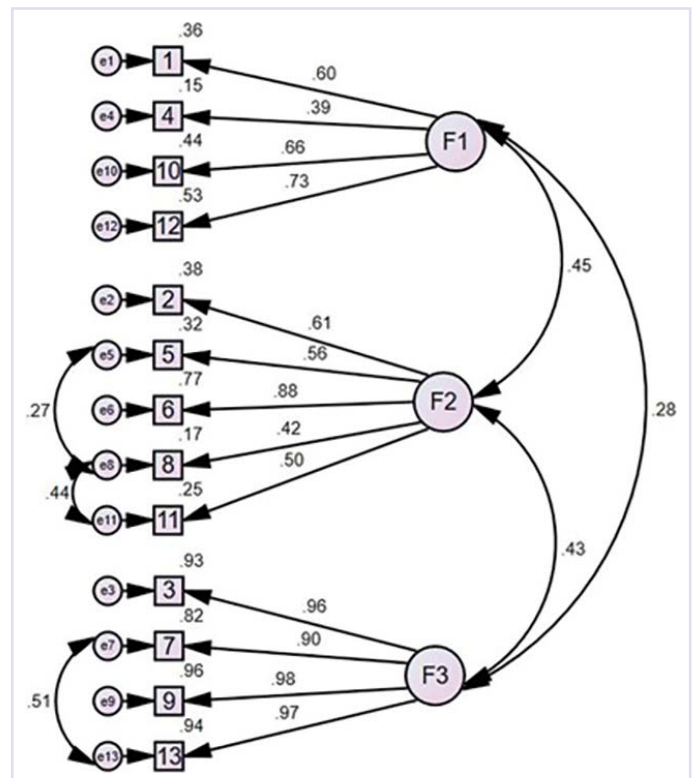


FIGURE 3. Factor structure according to CFA.

subscale of EAS. The second factor of the scale appeared as CB. This subscale implies the significance of cognitive behavioral component of empathy. In fact, the feelings of others should be cognitively processed and appropriate actions need to be targeted to respond others to make them feel emotionally understood. The last factor resulting from the statistical analysis was EI. Being emotionally identified with someone else even without being present in the same place or time is at the core of empathy. This identification makes us emotionally tuned with others. For example, artistic impressions in paintings, movies, stage performances, etc., are based on emotional identifications. The items in EI subscale evaluate the capacity to emotional attunement and adaptation. These three dimensions were composed in EAS to measure empathy levels of individuals.

Self-report scales have many drawbacks but currently, they seem to be the most practical way for evaluation of psychological constructs like empathy [18]. There are other ways of empathy assessment that might be more valid and reliable, such as directly observing and rating empathic behavior of individuals and asking their reliable others to evaluate accordingly. However, it takes a great deal of time and other resources to use more accurate assessment methods [19]. Therefore, some possi-

ble degree of measurement error due to false or distorted self-perceptions should be taken into consideration when interpreting self-report ratings. As a self-report scale, EAS has the same limitation.

Empathy is a necessary ability for healthy interpersonal relationships since it regulates and controls emotions [20, 21]. Empathy is part of affective development and some university students may need psychological support and education to develop their empathy levels [22]. When their ideas about empathy were asked to the medical students, some of them responded with most prevalent answers like this: [23] (a) "Empathy is an important therapeutic factor in medical treatment," (b) "patients feel better when their physicians understand their feelings," (c) "understanding body language is as important as verbal communication in physician-patient relationships," (d) "a physician's sense of humor contributes to a better clinical outcome," and (e) "physicians should try to think like their patients in order to render better care," etc. On the other hand, some others replied with these kind of statements: (f) "Emotion has no place in the treatment of medical illness," (g) "physicians should not allow themselves to be influenced by strong emotions of their patients," (h) "attention to patients' emotions is not important in history taking," (i) "physicians' emotional ties with the patients do not have a significant influence in medical or surgical treatment," and (j) "it is difficult for a physician to view things from a patient's perspectives." Contrasts and conflicts in those answers reflect the importance of empathy training in medical education. EAS can be used to assess these contrasts and conflicts to design and implement courses related to empathy.

Although its significance is obvious, there are some difficulties in empathy training. One of the most widely used method for empathy improvement is promoting and facilitating team work [24]; however, students mostly learn to be competitive rather than becoming collaborative while they are working in groups. Considering someone empathic, it is important to be able to congratulate the successful opponent, rather than feeling jealous or hostile toward the members of other teams. When working in teams, empathic language should be introduced and encouraged beforehand. Although it is often accepted as prosocial, empathy can also be interpreted mistakenly and cause more polarizations, side taking, selfishness, etc. [25]. Thus, empathy should be clearly explained and well specified with appropriate realistic examples without making assumptions and generalizations. Assessing empathy with EAS can give some in-

sights to the instructors. Results of the assessment can be given to the students as feedback with emphasis on what dimension needs more care for improvement than others. With providing feedback of assessment, students can take advantage of self-awareness of their empathy levels.

Fostering empathy in medical education has been an issue for recent decades. One of the suggestions was to include various humanities courses in the medical curriculum [26]. Some novels and movies can be recommended to read and watch; empathic and non-empathic characters in stories and movies can be discussed with students. Research shows improvement in empathy levels when using stories [27]. It is worth trying new methods because some research indicates decline in empathy during medical school years [28]. Even current research in medical education indicates the same problem [29, 30]. These findings reflect urgent need for developments in including empathy within medical curriculum. All three dimensions of empathy as evaluated by EAS need to be taken into account when planning the education: Social interaction, cognitive behavior, and emotional identification. In the beginning and at the end of the courses, EAS can be applied to compare scores to see changes in empathy during the process.

Not only what is taught but also how it is taught should be considered. Cultural and other psychosociological factors should also be included when teaching empathy [31]. Personality styles of the students are also important for empathy training [32]. Some research in different settings can be done using EAS to compare the empathy levels of individuals having different personality types. These may contribute to the further development of EAS and other relevant instruments.

Current methods of classical instruction of empathy can be altered. Virtual reality and artificial intelligence may be used as new methods to teach empathy [33]. Not only real-life experiences but virtual ones are also critical for empathy development as reflected by the emotional identification subscale of EAS. People are spending more and more time in virtual space today and it will probably increase in the future. Likewise today, empathy will continue to be an important communication skill and prosocial ability in the future [34]. However, some new dimensions may become necessary to add on the construct. To be able to measure and evaluate empathy correctly, new scales like EAS are needed based on the developments in the literature and experiences in the field. In this study, EAS was applied to the students of one medical school. Hence, EAS is recommended to be used in the future research.

There are some limitations of this study. First, it was carried out in a single setting. To increase external validity, it should be replicated in different settings. Second, the data were collected only through online forms due to the pandemic conditions. In the future, different data collection methods can be used to check in case any changes in the scale structure may occur. Third, EAS is a self-report scale, which may reflect some self-perception-related measurement errors like other self-report instruments. One prominent strength of the study is that the items are based on current literature of empathy research and a group of expert opinions practicing actively in the field. Another strength is the relative shortness of the scale for the ease of application in comparison to most other empathy scales available. Furthermore, the multidimensional structure of the scale can permit to compare the weaknesses and strengths between empathy dimensions to develop appropriate interventions and future research.

Conclusion

EAS is a valid and reliable measurement tool to assess the empathy levels of individuals in three dimensions: Social interaction, cognitive behavior, and emotional identification. EAS can be used to evaluate the empathy levels for research, education, and other interventional purposes.

Ethics Committee Approval: The Istanbul Medeniyet University Goztepe Training and Research Hospital Clinical Research Ethics Committee granted approval for this study (date: 06.10.2021, number: 2021/0500).

Conflict of Interest: No conflict of interest was declared by the author.

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APPENDIX. Empathy Assessment Scale (EAS)

There are 13 items in this scale. Please rate each with the single most suitable grade for you from 1 to 5

1=Never 2=Rarely 3=Sometimes 4=Often 5=Always

- 1 Being together with a sad person, I feel sad too. ____
- 2 I sincerely congratulate my successful opponent. ____
- 3 I get angry at the wrongdoer character in a story. ____
- 4 Somebody else's happiness makes me feel happy too. ____
- 5 I don't hesitate to help a harmless animal in hardship. ____
- 6 I try to calm someone who is afraid. ____
- 7 Watching dramatic movie scenes, I cry tears of sadness. ____
- 8 I understand people's feelings from their behavior. ____
- 9 A funny cartoon entertains me. ____
- 10 Among worried people, I become anxious. ____
- 11 I don't go after someone who is angry. ____
- 12 Seeing a person is made surprised, I feel excited too. ____
- 13 I get scared of the characters in horror movies. ____

Scoring: There is no reverse scoring, and the scale yields a total empathy score by adding up all points per items. For subscales: Item numbers: 1,4,10,12 = Social Interaction (SI) score; items 2,5,6,8,11 = Cognitive Behavior (CB) score; items 3,7,9,13 = Emotional Identification (EI) score.

APPENDIX. Empati Değerlendirme Ölçeği (EDÖ)

Bu ölçekte 13 madde yer almaktadır. Lütfen her bir maddeyi 1 ile 5 arasında size en uygun tek bir derecelendirme ile yanıtlayınız

1=Hiçbir zaman 2=Nadiren 3=Bazen 4=Çoğunlukla 5=Her zaman

- 1 Üzgün biriyle birlikteyken üzgün hissedirim. ____
- 2 Başarılı olan rakibimi içtenlikle kutlarım. ____
- 3 Bir hikayede haksızlık yapan karaktere kızarım. ____
- 4 Bir başkasının mutluluğu beni de mutlu eder. ____
- 5 Zor durumdaki zararsız bir hayvana yardım etmekten geri durmam. ____
- 6 Korkan birini sakinleştirmeye çabalarım. ____
- 7 Dramatik film sahneleri izlerken üzüntüden gözlerim yaşarır. ____
- 8 İnsanların duygularını davranışlarından anlarım. ____
- 9 Komik bir karikatür beni eğlendirir. ____
- 10 Endişeli insanların arasında kaygıya kapılırım. ____
- 11 Öfkeli birinin üzerine gitmem. ____
- 12 Birine sürpriz yapıldığını görünce ben de heyecanlanırım. ____
- 13 Korku filmlerindeki karakterlerden etkilenip korkarım. ____

Puanlama: Ters puanlama yoktur ve ölçek maddelerine verilen puanlar toplanarak toplam empati puanı elde edilebilir. Alt ölçekler için: Madde numaraları 1,4,10,12 = Sosyal Etkileşim (SE) puanı; maddeler 2,5,6,8,11 = Bilişsel Davranış (BD) puanı; maddeler 3,7,9,13 = Duygusal Özdeşim (DÖ) puanı.