





RESEARCH ARTICLE

Validity and reliability of the Benevolent Childhood Experiences (BCEs) Scale in Turkish

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ABSTRACT

Objective: This study aims to adapt the Benevolent Childhood Experiences (BCEs) Scale into Turkish and to investigate its psychometric properties. The scale was developed to assess positive childhood experiences and has recently gained more importance in the literature.

Method: A total of 175 adults with a mean age of 25.1 years participated in this study. A Turkish version of the BCEs was prepared and administered with other psychological measurement scales. To investigate the construct validity, exploratory and confirmatory factor analyses were conducted, and criterion-related validity was tested using the Symptom Check List 90 and the Satisfaction With Life Scale. Internal consistency and test-retest coefficients were calculated to assess the reliability of the scale.

Results: The Turkish version of the scale was found to consist of two factors that were related with psychopathological symptom severity and life satisfaction, as was expected. In addition, reliability values for the 10-item scale were satisfactory. The internal consistency coefficient was 0.61, the test-retest validity coefficient was 0.91.

Conclusion: This study has demonstrated that the Turkish version of the BCEs Scale can be used as a valid and reliable tool in Turkey. Psychometric properties of the scale were also found to be similar to the original English version.

Keywords: Childhood, life experience, psychometrics, psychological, psychopathology, resilience

INTRODUCTION

Childhood experiences are known to be important for lifelong development, just as negative experiences like neglect and abuse may cause negative results including adjustment disorder; thus, positive childhood experiences may preserve wellbeing in adults (1-3).

In the literature, the majority of research is focusing on the effects of negative childhood experiences. This research found experiences like neglect, abuse, long-term separation, and early loss to be related with several factors, such as psychiatric disorders (4-6), personality disorders (7-10), a risk of developing chronic disease

(11,12), alcohol and substance abuse (13), and delinquency (14) in adulthood. In this area, Felitti et al. (15) developed a 10-item Adverse Childhood Experiences (ACE) questionnaire to assess negative childhood experiences such as neglect and abuse suffered during the first 18 years of a person's life. Validity and reliability of the Turkish version have been confirmed by Gunduz et al. (16).

Though not to the same extent as studies on the effect of ACE on adulthood, recently work on the effect of beneficial childhood experiences like healthy attachment, effective parenting, and availability of social resources has begun to appear in the literature,

How to cite this article: Gunay Oge R, Pehlivan FZ, Isikli S. Validity and reliability of the Benevolent Childhood Experiences (BCEs) Scale in Turkish. Dusunen Adam The Journal of Psychiatry and Neurological Sciences 2020;33:146-154.

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Received: November 15, 2019; **Revised:** February 07, 2020; **Accepted:** March 20, 2020

particularly regarding the acquisition of resilience in adversity and lifelong development (1-3). In parallel with the ACE questionnaire (15), Narayan et al. (3) developed the Benevolent Childhood Experiences (BCEs) Scale to evaluate positive experiences during the first 18 years of life, such as internal and external perceived safety and support or positive and predictable qualities, thought to help prevent or override long-term effects of adverse experiences in early life.

Positive childhood experiences have been seen to protect not only against certain psychopathologies like adult depression (17) and personality disorder (18), but generally in a range of different areas of physical, cognitive, and social health (19). Therefore, evaluating BCEs is not only relevant in its own field but may offer directions to healthcare professionals, families, and decision-makers in order to strengthen healthy child development and reduce the effect of ACE. Thus, in addition to reducing those negative childhood experiences, increasing positive childhood experiences can be initiated.

Our study aimed to adapt the recently developed original BCEs to Turkish and test its adequacy for use in Turkey, examining its psychometric properties in order to introduce a scale for measuring positive childhood experiences to a country where such a research instrument is not yet available.

METHOD

Participants

A total of 175 individuals participated in this study, 76 students enrolled at Hacettepe University and 99 persons completing an online form. The number of participants was calculated in view of a 1:10 ratio: A number of studies recommends this ratio between sample size and number of items (20,21). A 1:10 ratio means that for every item on the scale, data of at least 10 participants should be collected for an ideal item:participant number ratio (22).

As an exclusion criterion, age below 18 and above 65 years was used (mean age=25.07 years, standard deviation [SD]=6.43) (Table 1). The sample included 137 females (78%) and 38 males (22%) (Table 1). There were 74 university graduates (42.3%), 67 high school graduates (38.3%), and 32 participants had a postgraduate degree (18.3%). As their marital status, 140 (80%) recorded single and 32 (18.3%) married. The mean score for the data retrieved from the first section of the Post-Traumatic Stress Symptom Scale (PTSSS) was 1.21 for the total sample, 1.25 for the online participants, and 1.16 for the university students (Table 1).

Procedure

The required permission was received from the developer of the original BCEs Scale (3), Dr. Angela Narayan, to adapt the instrument to Turkish and examine its psychometric properties. For the other scales to be used in the study, permission was obtained from the developers of the respective Turkish versions. After the ethics committee of Hacettepe University granted the required approval. After the research team completed the translation-retranslation of the original items, the resulting Turkish items were forwarded to 3 area specialists (1 associate professor and 2 assistant professors), and in the light of their feedback, the definitive Turkish form was designed.

After the Turkish translation was completed, participants were contacted in two different ways: Primarily, to constitute the group consisting of university students, the researchers explained students from the Psychology department of Hacettepe university the research project before the start of the lecture and collected data from students volunteering to participate in the research. A similar announcement of the project was posted on social media accounts via the internet, including a link to a form created with an online survey tool used for scientific studies, Qualtrics, reaching the remaining participants through the online survey. In the informed consent form, the aim of the study, adapting the scale to Turkish, was explained to reduce the potential bias towards positive experiences. The aim of administering the form online was to generate a sample with a more generalizable age and sex distribution, given that the student group was of similar age and mainly female. Of the participants completing the preliminary measurements during the lecture, 52 persons were administered the test again 3 weeks later during lecture time. None of the participants using pen and paper or those filling in the online form rejected the research or left their forms incomplete.

Measures

All participants were given the following forms in turn:

Sociodemographic Data Form: This form recorded the participants' sociodemographic information including age, sex, marital state, and duration of education. In addition, it inquired about the frequency of having experienced traumatic events, using the questions included in the first section of the PTSSS (23). The sociodemographic form was used to investigate potentially confounding variables. As the frequencies of experiencing traumatic events such as abuse and neglect are considered potential confounding variables, this

survey was used in order to determine any possible difference in the frequency of traumatic experiences between university students completing the pen-and-paper forms and participants in the online survey.

Benevolent Childhood Experiences (BCEs) Scale:

This self-report scale consisting of 10 items in the form of yes/no questions has been developed to collect data about positive experiences during childhood. The validity and reliability of the original English form has been studied by Narayan et al. (3).

Symptom Check List 90 (SCL-90-R): This instrument consists of 90 items scored on a 5-point Likert-type scale. The SCL-90-R is a self-report scale screening for psychiatric symptoms. The latest version of the original form was developed by Derogatis (24), and the validity and reliability of the Turkish version was confirmed by Dag (25). As benevolent childhood experiences were found to be negatively correlated with psychopathologic symptoms (3,17,19), the SCL-90-R was used to investigate criterion-related validity.

Satisfaction with Life Scale (SWLS): This instrument, developed by Diener et al. (26), consists of 5 items on a 5-point Likert-type scale. A study to confirm the validity and reliability of the Turkish version was made by Dagli and Baysal (27). As positive childhood experiences were found positively related with wellbeing in adulthood (17,19), the SWLS was used to investigate criterion-related validity.

Statistical Analysis

The adaptation of the form was carried out following the qualitative and statistical methods laid out by Savasir (28), especially the translation-retranslation procedure from English to Turkish and back. SPSS version 24 was used to for the statistical analysis of the study. In the first step, descriptive statistics for all values in the study were calculated, including minimum and maximum values, arithmetic means, and standard deviation. Independent groups t-test was used to determine if there was a significant difference in age and PTSSS scores between the online survey participants and the university students participating in pen-and-paper format; chi-square test was performed to examine if there was a significant sex difference between the participant groups.

The construct validity of the scale was tested by exploratory factor analysis (EFA); additionally, the factor structure was investigated through parallel analysis. The factors established by EFA were tested by confirmatory factor analysis (CFA) using the AMOS package. For criterion-related validity, the correlation of

data from the Turkish form of the BCEs with results from the SWLS and SCL-90-R was investigated. In order to establish the reliability of the instrument, test-retest reliability was used, administering the form to 52 participants from the sample group 3 weeks later under identical conditions for a second time. For the scores reached in the two iterations, Pearson correlation coefficient was calculated to obtain the reliability coefficient for the scale. For internal consistency, Cronbach's alpha coefficients were calculated for all items of the scale and for the subdimensions of the scale.

RESULTS

This section lists the results for the psychometric characteristics of the BCEs adapted to Turkish.

Independent Groups T-Test and Chi-Square Test

Independent groups t-test was used to establish possible differences in mean age between the university student group and the online survey participant group. This test, comparing mean values between two groups (female-male, control-trial group, etc.) is used in order to decide if differences between groups are random or statistically significant (29). Independent groups t-test showed a statistically significantly higher age in the online participant group (mean=27.76 years, SD=6.94, n=99) compared to the university students completing the form with pen and paper (mean=21.57 years, SD=3.30, n=76), $t(173)=-7.17$, $p<0.001$ (Table 1).

The same analysis was performed to test for a possible difference between university students filling in the paper forms and online survey participants regarding the incidence of having experienced traumatic events. No statistically significant difference was found in the incidence of traumatic events experienced between the online survey participants (mean=1.25, SD=1.22, n=99) and the university students using paper forms (mean=1.16, SD=1.15, n=76), $t(173)=-0.52$, $p>0.05$ (Table 1).

Chi-square test of independence was used to determine if there was a sex difference between the pen-and-paper group and the online group. This test is used to decide if there is a correlation between 2 categorical variables or if the two categorical variables are independent from each another. If the results are statistically significant ($p<0.05$), a correlation between the variables has been demonstrated, while if they are not statistically significant ($p>0.05$), the two variables are independent (30). Our analysis found a significant

Table 1: Descriptive statistics

Age	Min-Max	Mean	SD	n (%)	t	df	p
Total sample (n=175)	18-54	25.07	6.43	175 (100)	-7.175	173	0.001
Online (n=99)	18-54	27.76	6.94	99 (56.57)			
Pen-and-paper (n=76)	18-31	21.57	3.30	76 (43.43)			
Sex	Female n (%)		Male n (%)		χ^2	df	p
Total sample (n=175)	137 (78.3)		38 (21.7)		12.356	1	0.001
Online (n=99)	68 (68.7)		31 (31.3)				
Pen-and-paper (n=76)	69 (90.8)		7 (9.2)				
PTSSS	Mean	SD	n		t	df	p
Total sample (n=175)	1.21	1.92	175		-0.520	173	0.604
Online (n=99)	1.25	1.22	99				
Pen-and-paper (n=76)	1.16	1.15	76				

SD: Standard deviation, df: Degrees of freedom

correlation between group membership (pen-and-paper or online format) and participants' sex, $\chi^2(1)=12.36$, $p<0.001$ (Table 1).

Validity Analysis

Construct Validity: EFA was performed to test the construct validity of the BCEs. Factor analysis aims to reveal unobservable and non-measurable hidden dimensions as multiple causes of a measurable and observable characteristic. EFA is used to reveal and discover the factor structure underlying the expressions representing the items of a scale that has been translated from one language to another (31). Before performing EFA, the adequacy of the data for factor analysis was assessed through Bartlett test and Kaiser-Meyer-Olkin (KMO) measure. For data to be adequate for factor analysis, the Bartlett test needs to be statistically significant ($p<0.01$) (32) and the KMO measure is expected to be above 0.50 (33). Bartlett test and KMO measure showed our study data to be adequate for analysis (KMO=0.66 and Bartlett's test $\chi^2=167.81$, $SD=45$, $p<0.001$). To examine the factor structure of the scale and determine subdimensions, factor analysis was performed using varimax rotation. In the first step, a 4-factor structure with an eigenvalue above 1 explaining 57.43% of the total variance was found. However, when evaluating the eigenvalue graph (scree plot), the elbow of the curve was found after the 2nd factor; therefore, the number of factors to retain was cut off at 2, because the contribution of factors beyond that point is relatively small and almost identical (34).

To determine the number of factors of the scale, Horn's (35) parallel analysis based on random data production was used. In parallel analysis, a random data set parallel to the actual data is generated with the

Monte Carlo simulation method and the expected eigenvalue of the parallel data is calculated. Subsequently, the eigenvalue of the parallel data and the expected eigenvalues are compared. As a result of this comparison, the point where the eigenvalue of the parallel data is greater than the eigenvalue in the actual data set is considered significant to determine the number of factors (35). Having decided for a 2-factor structure of the scale, parallel analysis was performed using the syntax developed by O'Connor (36). Comparison of the eigenvalues obtained from parallel analysis and the eigenvalues resulting from EFA supported a 2-factor structure of the instrument (Table 2). Items 8 and 10 were found to load on both factors. However, given that item 8 loaded on factor 1 with a higher value and considering its content, it was decided to keep it in factor 1. Though item 10 also loaded with a higher value on factor 1, it was kept in factor 2 as it seemed to fit its content better.

When the analysis was repeated on this basis, eigenvalues for the factors of the instruments were found to be 1.96 for the first factor and 1.68 for the second. The first factor explained 19.62% of the total variance, the second factor 16.83%, and both factors together explained 36.45% of the total variance (Table 3). In the end, in the light of examining the items constituting the factors, the first factor consisting of items 1, 2, 6, 7, and 8 was named "perceived safety and support" and the second factor, including items 3, 4, 5, 9, and 10, was called "internal and environmental motivation." Results of the EFA of BCEs are presented in Table 3.

As the factor structure had not been investigated in the process of developing the original instrument, we performed CFA with the AMOS package for the factor

Table 2: Eigenvalues obtained by exploratory factor analysis and parallel analysis

Factors	Eigenvalues obtained by exploratory factor analysis	Eigenvalues obtained by parallel analysis	Decision
Perceived safety and support (Factor 1)	2.34	1.39	Accept
Internal and environmental motivation (Factor 2)	1.30	1.27	Accept
Factor 3	1.09	1.18	Reject
Factor 4	1.00	1.09	Reject
Factor 5	0.94	1.02	Reject
Factor 6	0.83	0.95	Reject
Factor 7	0.76	0.89	Reject
Factor 8	0.66	0.81	Reject
Factor 9	0.57	0.74	Reject
Factor 10	0.50	0.65	Reject

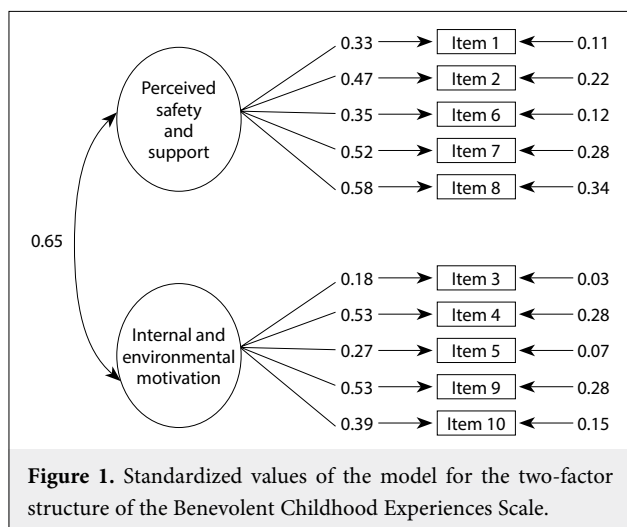
Table 3: BCEs subdimensions and item loadings obtained by exploratory factor analysis

Items	Perceived safety and support	Internal and environmental motivation
1. Did you have at least one caregiver with whom you felt safe?	0.57	-0.11
2. Did you have at least one good friend?	0.71	-0.07
6. Did you have good neighbors?	0.44	0.16
7. Was there an adult (not a parent/caregiver or the person from #1) who could provide you with support or advice?	0.61	0.12
8. Did you have opportunities to have a good time?	0.54	0.39
10. Did you have a predictable home routine, like regular meals and a regular bedtime?	0.38	0.34
3. Did you have beliefs that gave you comfort?	-0.20	0.51
4. Did you like school?	0.02	0.79
5. Did you have at least one teacher who cared about you?	0.12	0.40
9. Did you like yourself or feel comfortable with yourself?	0.27	0.57
Eigenvalue	1.96	1.68
Variance explained	19.62%	16.83%
Total variance	36.45%	

BCEs: Benevolent Childhood Experiences Scale

structure emerging as a result of the EFA in our study. The analysis showed that the first model tested had an adequate fit index (Model 1; χ^2 [34]=51.421, $p < 0.05$; $\chi^2/df = 1.512$; GFI=0.95, CFI=0.86, NFI=0.70, RMSEA=0.05). A ratio of chi-square to degrees of freedom (χ^2/df) smaller than 5, as in our model, indicates that the fit is good (37); a CFI value close to 1 points to a good fit (38), an RMSEA value ≤ 0.05 means an excellent fit (39,40), and a GFI index of 0.90 or above shows a good fit (41,42). All of these indices confirm the factor structure of the BCEs to be at an acceptable level. The factor loadings of items in the resulting model and their error variances are shown in Figure 1.

Criterion-related Validity: This type of validity tests if an instrument measures the intended construct, looking at the relation between scores from the instrument to be evaluated and results measured with an appropriate instrument (43). In this sense, the relevant literature indicates that positive childhood experiences are related with a person's psychological health and life satisfaction, and it is known that benevolent childhood experiences can be protective against psychopathologies in adult life. In this context, criterion-related validity was tested using SCL-90-R, expected to correlate negatively with BCEs, and SWLS, which should show a positive correlation. The



correlation of participants' SCL-90-R scores for severity of psychologic symptoms and their BCEs scores was examined using Pearson product-moment correlation coefficient, and a statistically significant weak negative correlation was found ($r=-0.25, p<0.001$). Between SWLS scores for life satisfaction and benevolent childhood experiences, a statistically significant moderate positive correlation was detected ($r=0.42, p<0.001$). Results of the correlation analysis performed to investigate the relation of BCEs with SCL-90-R and SWLS is presented in Table 4.

Reliability Analysis

Test-retest Reliability: To assess test-retest reliability, an instrument is administered for a second time to the same study group under similar conditions after a period that is long enough to ensure that participants do not remember the scale, but short enough to avoid significant changes in the construct to be measured. The correlation coefficient resulting from these two measurements is the reliability coefficient of the instrument (43). Thus, to examine the test-retest reliability of the BCEs, the scale was readministered to 52 participants after an interval of 3 weeks, resulting in a test-retest reliability coefficient of 0.91 for the entire scale. Test-retest reliability coefficients for the

Table 4: Results of the correlation analysis for the relation of BCE with SCL-90-R and SWLS

	BCEs	SCL-90-R	SWLS
BCEs	-	-	-
SCL-90-R	-0.25*	-	-
SWLS	0.42*	-0.48*	-

* $p<0.01$, BCEs: Benevolent Childhood Experiences Scale, SCL-90-R: Symptom Check List 90, SWLS: Satisfaction With Life Scale

subdimensions perceived safety and support and internal and environmental motivation were 0.85 and 0.84, respectively.

Internal Consistency Reliability: This is a reliability measure used to establish the mutual consistency of all items included in an instrument (43). In this context, internal consistency reliability is evaluated by calculating Cronbach's alpha coefficient. This coefficient is used to test the reliability of the scale by calculating the ratio of the variances of each individual item on the scale to the total variance of the instrument (43). The analysis of our data found a reliability coefficient for the entire BCEs of 0.61; for the subdimension perceived safety and support, the value was 0.55 and for internal and environmental motivation, 0.45. An alpha coefficient of 0.6 or above shows that the items are unidirectional and can be gathered in one scale (44).

DISCUSSION

While numerous studies in the literature are investigating ACE, the number of publications examining positive childhood experiences is quite limited. Until now, no valid and reliable instrument to assess benevolent childhood experiences has been available in Turkey. Aim of our study was to adapt the BCEs, developed by Narayan et al. (3), to Turkish and thereby introduce an instrument to the Turkish literature that allows an evaluation of positive childhood experiences. The findings of this adaptation study indicate that the BCEs is a valid and reliable tool to be used in subsequent research.

While Narayan et al. (3) asserted that the items on their scale were related with perceived internal and external safety (beliefs that give comfort, at least one caregiver with whom one feels safe, etc.), positive and predictable quality of life (liking school, predictable home routine, etc.), and relational support (caring teacher, supportive adult other than caregiver, etc.), no factor analysis for the instrument had been carried out. Having contacted the authors with regard to the issue of factor analysis, it was learned that they are in the process of collecting data from a larger sample with the intention to perform factor analysis on the basis of this broader data. Later studies using the original scale also did not attempt factor analysis (19,45), only test-retest reliability, predictive validity, and validity of the scale in a different sample were included (45). Findings from EFA and CFA in the Turkish adaptation study revealed a 2-factor structure of the instrument.

In view of the item content, these 2 factors were named the “perceived safety and support” and the “internal and environmental motivation” subdimensions. According to our findings, all items except for item 8 (“Did you have opportunities to have a good time?”) and item 10 (“Did you have a predictable home routine, like regular meals and a regular bedtime?”) loaded on one subdimension only (either “perceived safety and support” or “internal and environmental motivation”), while items 8 and 10 loaded on both subdimensions. As the loading ratio of item 8 on the subdimension perceived safety and support was greater and its content was relevant to this subdimension, it was included with items 1, 2, 6, and 7 in the former. The difference in factor loadings of item 10 was small and its content was more suitable for the subdimension “internal and environmental motivation”; hence, it was included in this subdimension together with items 3, 4, 5, and 9. Parallel analysis and CFA showed that the data were consistent with this 2-factor model.

In our study, the subdimensions perceived safety and support and internal and environmental motivation were found to explain 19.62 and 16.83% of the variance, respectively. As Narayan et al. (3) did not perform factor analysis, it is not possible to compare the resulting variance values. The inadequate percentage of variance explained by the factors might be understood as an effect of the small number of participants. While the sample size in this study was sufficient for the number of items (46), the value for variance explained by the factors was low, which might be due to the sample size. In future studies with a larger sample, variance explained by the factors may be reassessed.

The original publication of the instrument focused on test-retest reliability and predictive validity (3), while another study using the original scale dealt with validity in a different sample and predictive validity (45). From this perspective, the only joint approach between previous research and our study is the examination of test-retest reliability. Similar to the original scale with a test-retest reliability of 0.80 and a high level of reliability (3), we found a test-retest reliability coefficient of 0.91, which is consistent with the original instrument.

For internal consistency reliability, a reliability coefficient of 0.61 was found. As is known, Cronbach's alpha value is related with the number of items, a smaller item number leading to a lower alpha value (33). Thus, the alpha value for a 10-item scale is expected to be low. However, a value of or above 0.6 shows that the items are unidirectional and can be

included in a single scale (44). Therefore, the alpha value of the BCEs can be considered as acceptable.

Our study found a number of important results for the psychometric properties of the BCEs, but certain limitations remain. The first issue is sample size. Although several sources consider a number of 10 participants per item to be sufficient (20,21), others maintain that a sample size of at least 200 individuals is required (47). Especially for the BCEs subdimension items 5, 6, and 10, factor loadings close to the cutoff point (0.30) and high item-related error variances emerged. Furthermore, the results showed that in the Turkish adaptation of the BCEs, total variance explained was 36.45%, and criterion-related validity found a weak correlation with SCL-90-R ($r=-0.25$, $p<0.001$) and a moderate correlation with SWLS ($r=0.42$, $p<0.001$). As all these problems may be related to the small sample size, they should be reassessed in studies with larger samples. Another limitation might be the failure to use any instrument that includes ACE to investigate criterion-related validity. A recent study found a moderate correlation ($r=-0.32$, $p<0.001$) between BCEs and ACE (18).

Another limitation of this study is the uneven distribution of participants' sex, age, and level of education, not being representative of Turkish society as a whole: as we prioritized accessibility, the sample can be described as lopsided in this sense. Considering the significant age and sex differences between pen-and-paper and online survey participants, we can say that including the online data into the research created a more generalizable sample than the pen-and-paper group on its own. But even so, 78% of the sample consisted of female participants. This limitation could be overcome by repeating the study with a more balanced sample regarding the distribution of sex, age, and level of education.

Another limitation lies in the imponderability involved with online administration of the tests, even though this approach facilitated the recruitment of participants with more varied demographic characteristics. Considering the disadvantages of online test application compared to face-to-face administration, the test might not have been completed in a single session but been restarted after an interruption; it was not possible to control for confounding factors (like the presence of another person, noise, etc.) that may have arisen during the completion of the test, and online participants had no opportunity to ask the researcher directly when they did not understand certain sections. On the other hand, especially through the use of IP

address control, confounding situations like an individual participant's repeated access to the research could be averted.

Finally, the scale that we have adapted to Turkish is a self-report instrument requiring retrospective memory. As Narayan et al. (3) and Merrick et al. (45) already pointed out, reporting previous experiences may give rise to bias – which is the case for all self-report instruments based on retrospective memory. Future studies might help increase validity by administering the scale to individuals still in childhood age.

Despite these limitations, the results of our validity and reliability analyses reached an acceptable level; therefore, we have been able to demonstrate that the BCEs can be used in Turkey as a valid and reliable tool.

Contribution Categories		Author Initials
Category 1	Concept/Design	R.G.O.
	Data acquisition	R.G.O., F.Z.P.
	Data analysis/Interpretation	R.G.O., F.Z.P., S.I.
Category 2	Drafting manuscript	R.G.O., F.Z.P.
	Critical revision of manuscript	R.G.O., F.Z.P., S.I.
Category 3	Final approval and accountability	R.G.O., F.Z.P., S.I.
Other	Technical or material support	R.G.O., F.Z.P., S.I.
	Supervision	S.I.

Ethics Committee Approval: Hacettepe University Ethics Board has approved this study.

Informed Consent: Informed consent of participants were obtained.

Peer-review: Externally peer-reviewed.

Conflict of Interest: The authors declare that there are no conflicts of interest.

Financial Disclosure: All financial expenses have been met by the authors.

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