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Original Research

The Psychometric Properties of the Turkish Version of the Trait Emotional Intelligence Questionnaire–Child Form

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Abstract

The aim of this study was to adapt the Trait Emotional Intelligence Questionnaire–Child Form (TEIQue-CF) into Turkish and to examine the psychometric properties of the Turkish version of the form. The participants of the study consisted of 208 children between the ages of 8 and 12 who were recruited from a primary and a secondary school in Antalya, Turkey. In terms of validity, construct and criterion-related validity analyses were conducted. The confirmatory factor analysis revealed a construct of nine facets and two factors. In terms of the criterion-related validity, significant correlations ($p < .01$) were found between the scores of the Index of Empathy for Children and Adolescents (IECA) and the Socioemotionality, Emotion Control, and total scores of TEIQue-CF. For the examination of the reliability, the internal consistency coefficients were computed. Cronbach's alpha coefficient for the total questionnaire was found to be .91. According to the results, this study provides an instrument that can be used for assessing the trait emotional intelligence of children in a Turkish sample.

Keywords

trait emotional intelligence, TEIQue-CF, psychometric properties

Introduction

Intelligence has consistently been a concept that researchers have attempted to understand and explain due to its structure and characteristics. Throughout this process, different views have emerged and it is widely accepted that intelligence has multiple structures. In this regard, different types of intelligence have been classified, such as emotional intelligence (Akın & Güven, 2014; Caruso, 2008; Warwick & Nettelbeck, 2004). Emotional intelligence was first defined by Salovey and Mayer (1990) as an individual being aware of his or her own and others' emotions and the ability to differentiate them, and then use that information in thinking and actions. According to their definition, emotional intelligence is a cognitive skill involving an individual's cognitive processing of emotional information. Bar-On (2006), however, defined emotional intelligence as a combination of personal, emotional, social competence, and skills, which allow an individual to effectively understand and express him or herself, understand and establish relations with others, and manage daily demands effectively. Tett et al. (2005) classified emotional intelligence as a multidimensional trait domain including a number of distinguishable facets. According to Petrides and Furnham (2000), there are two types of emotional intelligence, namely, trait emotional intelligence (trait EI) and ability emotional intelligence (ability EI). Ability EI describes an individual's actual ability to identify, process, and use emotional information (Papadogiannis et al., 2009; Petrides et al., 2004), whereas trait EI describes an individual's self-perception regarding emotional abilities, individual recognition, processing and using emotional information, and behavior aptitudes and perceptions (Petrides, 2009; Petrides et al., 2007b). Petrides et al. (2007a) defined trait EI as a construct consisting of dispositions and self-perceptions concerning recognizing, processing, and utilizing emotion-related information. This construct includes personality traits such as empathy. As a construct of emotion-related information, empathy refers to the ability to understand the emotions of other people by relating the information to one's own experiences (Ioannidou & Konstantikaki, 2008). According to Mayer and Salovey (1997), the measurement of trait EI may provide consistent information about an individual's behaviors and emotions as a comprehensive measure of such emotion-related information.

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Although the research on trait EI has been prominently based on adult samples, evidence highlights the importance of trait EI, not only in the adult population but also in children and adolescents. In a number of studies, it was shown that, in children and adolescents, higher Trait EI is associated with higher empathy and less behavioral problems (Baroncelli & Ciucci, 2014; Gugliandolo et al., 2015a, 2015b; Peres et al., 2020; Poulou, 2014), better problem-solving skills (Austin et al., 2005a), affective decision-making (Sevdalis et al., 2007), higher social competence (Mavroveli et al., 2007), better peer relationships (Mavroveli & Sanchez-Luis, 2011; Petrides et al., 2006), and higher academic performance (Ferrando et al., 2011; Parker et al., 2004). Based on these findings, it could be argued that the level of trait EI is a significant determinant of children's and adolescents' psychosocial adaptation throughout their development. The emergence of emotional intelligence starts from an early age (Humphrey, 2018; Sparrow & Knight, 2006; Zeidner et al., 2009), and it is crucial that it is fostered during childhood to raise children who can define, express, and control emotions; develop emotional awareness and empathetic skills; can understand others' emotions; and develop healthy relations with their environment (Hoffmann et al., 2018; Kremenitzer et al., 2008). Therefore, there is a need to measure the trait EI in children, as assessing and improving the emotion-related perceptions of children may result in successful adjustment across their lifespan. The development of measurement instruments to identify children's emotional intelligence levels and the examination of the impact of emotional intelligence on children's development may also contribute to the studies regarding the nature of emotional intelligence.

An examination of the literature reveals that the focus of the studies on EI is generally on adult samples and the data from children, and adolescent samples is limited due to the lack of appropriate data collection instruments, despite the fact that the emotional characteristics of children and adolescents fundamentally differ from those of adults. Hence, there is a specific need to understand the construct of trait EI across individuals' lifespans, particularly in children, to assess its developmental milestones. As in the international literature, there are few measures designed to examine trait EI in the Turkish population. The short (Deniz et al., 2013) and long (Ulutaş, 2019) adult forms of Trait Emotional Intelligence Questionnaire (TEIQue) have been previously adapted into Turkish. However, no instruments are available in Turkish for identifying the trait EI levels of children between the ages of 8 and 12, although a number of instruments are used to identify the emotional intelligence levels of 7-year-old children (Ekinci-Vural and Kocabaş, 2011), 6-year-old children (Ulutaş & Ömeroğlu, 2007), high school students (Ergin et al., 1999), and adults (Çakan & Sadegül, 2005; Göçet, 2006; Mumcuoğlu, 2002). Consequently, there is a specific need for instruments to identify the emotional intelligence levels of school-age children in Turkey. Within this context, in this study, the aim was to translate the Trait Emotional Intelligence Questionnaire–Child Form (TEIQue-CF) into Turkish and to conduct its validity and reliability study. TEIQue was initially developed by Petrides and Furnham (2001) as a fundamental measure to comprehensively assess the domains of trait EI by conceptualizing emotional intelligence as a personality trait. The questionnaire has nine different forms and versions (Petrides, 2009). TEIQue-CF was developed specifically for children between 8 and 12 years old within the trait EI framework. It was originally developed based on a British sample and was later adapted into Italian (Russo et al., 2012) and Serbian (Banjac et al., 2016). The Form has a considerable advantage in that it depends on a comprehensive theoretical basis and assesses trait EI in distinctive facets (Mavroveli et al., 2008). Another advantage of TEIQue-CF is that it involves a self-report format and is easier for children to respond. Above all, the instrument is one of the very few tools used to assess trait EI in children. The adaptation of the instrument into Turkish may be beneficial in terms of providing data and extending the scope of the scientific studies on trait EI to a level of cross-cultural and comparative focus.

Method

Participants

The participants of the study were children between the ages of 8 and 12 who were recruited from a primary and secondary school in Antalya, Turkey. The Turkish Form of the TEIQue-CF was administered to second, third, fourth, and fifth grade students in the primary school, and sixth and third grade students in the secondary school. In terms of the determination of the sample size in the adaptation study of a measure, it should be twice the amount of test items taken into analysis, as recommended by Kline (1994). In this respect, the 75-item TEIQue-CF was planned to be administered to a minimum of 150 children in the 8 to 12 years age group, with at least 30 children from each age range. The two schools were chosen according to the degree to which they represented the sociodemographic characteristics of the overall population, such as the socioeconomic profiles of the students. The questionnaire was administered to a total number of 208 children in these two schools. A total of 48.1% (n = 100) of these children were female and 51.9% (n = 108) were male. In terms of their ages, 17.3% (n = 36) were 8 years old, 23.1% (n = 48) were 9 years old, 21.2% (n = 44) were 10 years old, 19.7% (n = 41) were 11 years old, and 18.8% (n = 39) were 12 years old.

Instruments

In the study, the Individual Information Form, Trait Emotional Intelligence Questionnaire–Child Form, and Index of Empathy for Children and Adolescents were administered to the participating children.

Individual information form. To gather sociodemographic information about the children, an Individual Information Form was prepared and administered by the authors. The information form included questions on the age, gender, and grade of the students.

TEIQue-CF. TEIQue-CF was developed by Mavroveli et al. (2008) to assess the emotional intelligence of children between the ages of 8 and 12. The Form includes 75 self-reported 5-point Likert-type items, with answers ranging from (1) *strongly disagree* to (5) *strongly agree*. Example items include "I'm interested in my friends' problems" and "I find it difficult to understand what others are feeling." The scale has nine facets: adaptability, emotion expression, emotion perception, self-motivation, self-esteem, low impulsivity, peer relations, emotional regulations, and affective disposition. The calculation of the response scores of the scale is performed through a scoring table. High scores indicate a higher trait EI level. In two independent studies, TEIQue-CF was shown to have satisfactory levels of internal consistency ($\alpha = .76$ and $\alpha = .73$, respectively) and temporal stability over a 3-month interval ($r = .79$ and r[corrected] $= 1.00$) (Mavroveli et al., 2008).

Index of Empathy for Children and Adolescents (IECA). The scale was developed by Bryant (1982) to evaluate the empathy skills in children and adolescents. In this study, IECA was used as a criterion measure to examine the criterion-related validity of the Turkish Form of TEIQue-CF, as it assesses a similar construct to TEIQue-CF. The scale, which can be administered to children and adolescents between the ages of 8 and 14, includes 21 self-reported items with answers ranging from yes (1) to no (0). While scoring, Items 2, 8, 9, 14, 15, 16, 17, 19, 20, and 21 are scored reversely. High scores received from the scale indicate a high level of empathy skill (Bryant, 1982). In the reliability study of the IECA, Cronbach's alpha coefficients were found to vary between .54 and .79. The IECA was adapted into Turkish by Gürtunca (2013). The KR 20 coefficient of the Turkish version of IECA was found to be .70.

Procedure

In the study, permission to adapt the questionnaire into Turkish was initially obtained from S. Mavroveli. Prior to commencing the data collection process, the administrators of the schools in which the study was planned to be conducted were given information about the study and their permission to conduct the study was obtained. In each classroom, the teachers and the students were also informed, and their consent was obtained. During the course of the study, the ethical guidelines of the 1964 Declaration of Helsinki were followed, and anonymity of the participants was ensured.

In the study, TEIQue-CF was initially translated from English into Turkish by two translators. After the forward translation was completed, two other independent translators back-translated the questionnaire from Turkish to English. After all translations had been completed, all of the Turkish and English forms were brought together individually to investigate the compatibility of the differences between the translations. Finally, four professionals from the fields of child development, psychological counseling, and psychology were consulted to assess the convenience of the translated form in terms of the Turkish language, suitability of the form for Turkish culture, the effectiveness of the items in assessing the trait EI of the children, and the comprehensibility and the clarity of the items for children. The feedback provided by the experts for each item was recorded on a form. The items upon which the experts agreed with a rate of at least 90% were included in the Turkish version of the questionnaire without any revisions. The items that the experts agreed upon with a rate of 70% to 80% were revised according to their suggestions.

Prior to the pilot study, the preliminary Turkish form was administered to 10 children in the form of a pre-pilot study. After completing the questionnaires, the children were asked if they had experienced any difficulties understanding or responding to the items. Some spelling mistakes in the questionnaire were corrected based on the feedback of the children, and the final form to be conducted in the pilot study was ultimately prepared. In the pilot study, the Turkish form of TEIQue-CF was administered to a total number of 208 children. Both LISREL (ver. 8.80) and SPSS 22 software were used for the statistical analysis of the data collected in the pilot study.

Results

In the adaptation of TEIQue-CF into Turkish, validity and reliability studies were conducted, respectively. In terms of the validity analysis, initially the construct validity and then the criterion-related validity of the Turkish form were examined. In the reliability study, Cronbach's alpha coefficients of each facet were computed for the purpose of investigating the internal consistency.

Validity

Construct validity. To examine the construct validity of TEIQue-CF, confirmatory factor analysis (CFA) was conducted. It was expected that a two-factor structure would underlie the nine facets, as in the original version (Mavroveli et al., 2008). In the study, the factor structure was examined based on the nine facets of the original version. The reason for examining the factor structure on a facet basis rather than an item basis was that the nine facets represent the sampling domains of trait EI, while validity can be tested on the facets as well as on the items.

CFAs were performed to examine the fit indexes that correlated this nine facet and two-factor model. The path diagram related to the construct analysis is shown in Figure 1.

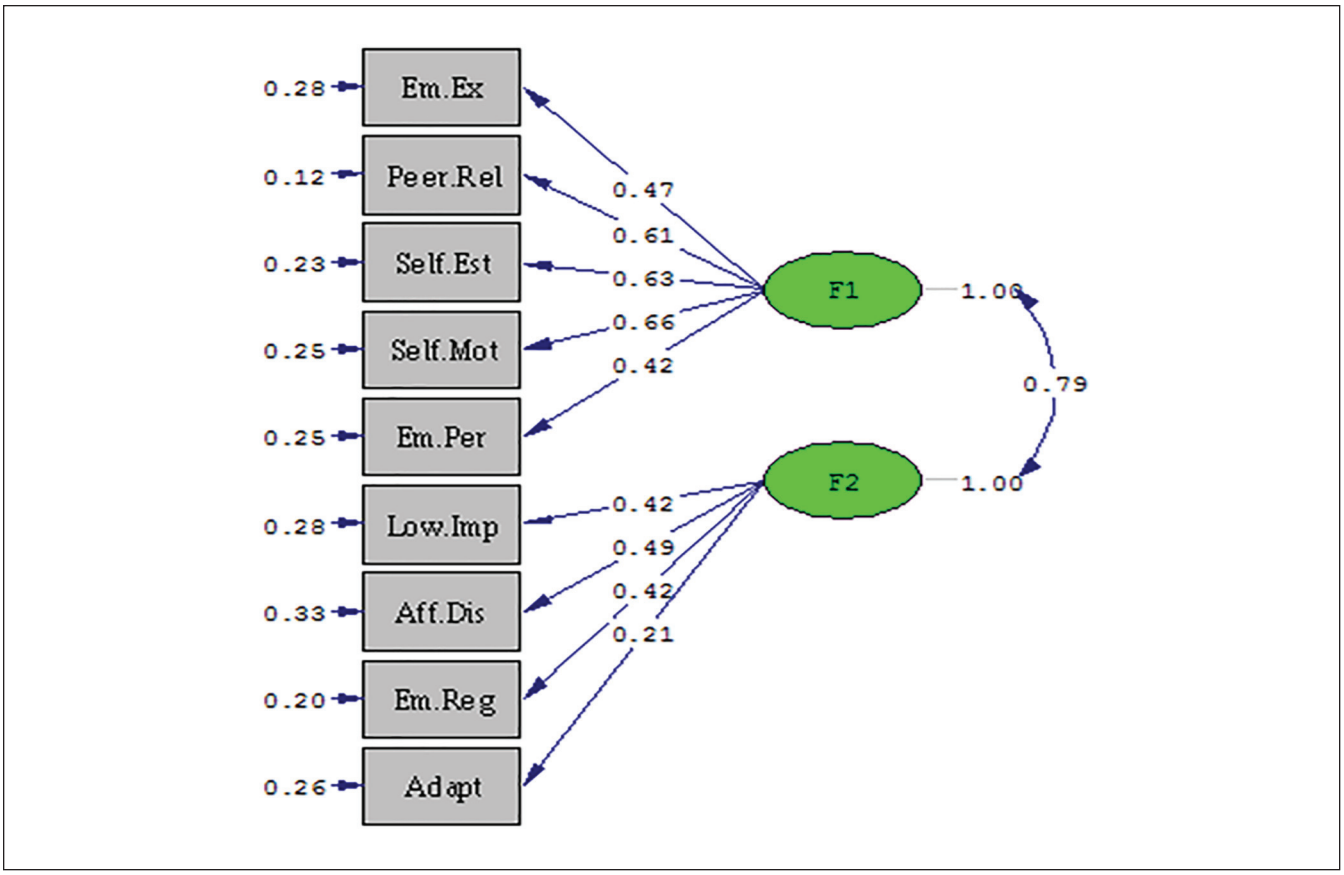


Figure 1. Path diagram for TEIQue-CF.
Note. TEIQue-CF = Trait Emotional Intelligence Questionnaire–Child Form.

As shown in Figure 1, the facets of emotional expression, peer relations, self-esteem, self-motivation, and emotional perception loaded on the first factor. The second factor included low impulsivity, affective disposition, emotional, regulation, and adaptability. The factor structure of the Turkish form was similar to the original version developed in the United Kingdom. Hence, as in the original version, the first factor was labeled as Socioemotionality and the second factor was labeled as Emotion Control. In Figure 1, it can also be seen that the factor loadings varied between .21 and .66. The *p*-value, which shows the difference between the expected and the observed covariance matrices (χ^2), is expected to be significant (Çokluk et al., 2014). In this study, the *p*-value was found to be significant ($p < .05$). Therefore, the difference between the expected and the observed covariance matrices was found to be statistically meaningful. The goodness of fit indexes related to the CFA of the TEIQue-CF are reported in Table 1.

In CFA, when the ratio of χ^2 to the degree of freedom (χ^2/SD) is below 3, the fitness is accepted to be perfect (Kline, 2005). As can be seen in Table 1, the ratio of these values to each other (χ^2/SD) was found to be 1.36. A root mean square error of approximation (RMSEA) value under .10 is accepted to show a good fit (Steiger, 1990). In this study. the RMSEA value was found to be .042. The comparative fit index (CFI) index, which is one of the most commonly used fit indexes in recent years, varies between 0 and 1 (Fan et al., 1999). A CFI value between .95 and 1 shows perfect fit (Hooper et al., 2008). The CFI value of .99 found in this study shows a perfect fit. The normed fit index (NFI) and nonnormed fit index (NNFI) indexes are alternatives to CFI (Çokluk et al., 2014). An NFI value of .97 and an NNFI value of .99 show perfect fit. The values of goodness of fit index (GFI), incremental fit index (IFI), relative fit index (RFI), and adjusted goodness of fit index (AGFI) vary between 0 and 1 (Schumacker & Lomax, 1996). In this study,

Table 1. The Goodness of Fit Indexes Related to the Confirmatory Factor Analysis of the TEIQue-CF.

χ^2/SD	RMSEA	SRMR	CFI	NFI	NNFI	GFI	AGFI	IFI	RFI
1.36	.042	.036	.99	.97	.99	.96	.94	.99	.96

Note. TEIQue-CF = Trait Emotional Intelligence Questionnaire–Child Form; RMSEA = root mean square error of approximation; SRMR = standardized root mean residual; CFI = comparative fit index; NFI = normed fit index; NNFI = nonnormed fit index; GFI = goodness of fit index; AGFI = adjusted goodness of fit index; IFI = incremental fit index; RFI = relative fit index.

Table 2. Pearson Correlation Coefficients Between the Factors of TEIQue-CF.

Scores	1	2	3
1. Socioemotionality	—		
2. Emotion Control	.619*	—	
3. Total TEIQue-CF	.947*	.836*	—

Note. TEIQue-CF = Trait Emotional Intelligence Questionnaire–Child Form.
*$p < .01$.

the GFI index was found to be .96, which shows a perfect fit. However, the IFI and RFI indexes were both found to be .99, and the AGFI value was found to be .93. The results related to these indexes show good fit. In addition, an standardized root mean residual (SRMR) value below .05 shows perfect fit (Hu & Bentler, 1999). In this study, the SRMR value was computed as .036. An examination of all these fit indexes reveals that the model obtained in CFA shows a good fit to the data and the model is statistically significant ($p = .038$; $p < .05$). In other words, the results of CFA verify the model and provide robust proof for the construct validity of the TEIQue-CF. The Pearson correlation coefficients between the factors of TEIQue-CF are shown in Table 2.

According to the results shown in Table 2, there are highly significant and positive correlations between the factors of Socioemotionality and Emotion Control ($r = .619$, $p < .01$). The total score of TEIQue-CF is also significantly and positively correlated with Socioemotionality ($r = .947$, $p < .01$) and Emotion Control ($r = .836$, $p < .01$). Based on these results, it is thought that the factor scores can be totaled to compute a total TEIQue-CF score.

Criterion-related validity. To examine the criterion-related validity, the correlations between the TEIQue-CF and IECA were investigated. IECA was administered in this study as a criterion-related measure. It assesses empathy in children and adolescents and was previously adapted into Turkish. The Pearson correlation coefficients between the scores of the TEIQue-CF and IECA are shown in Table 3.

As shown in Table 2, there are significant positive correlations between the scores of IECA and Socioemotionality ($r = .223$, $p < .01$), Emotion Control ($r = .312$, $p < .01$), and the total TEIQue-CF scores ($r = .291$, $p < .01$).

Reliability

In terms of the reliability analysis, the internal consistency coefficients of TEIQue-CF were examined. The results of the analysis are shown in Table 3.

According to the results shown in Table 4, Cronbach's alpha coefficient for the total score of TEIQue-CF was found to be .905. Cronbach's alpha coefficients were found to be .898 for Factor 1 and .731 for Factor 2.

Table 3. Pearson Correlation Coefficients Between the Scores of the TEIQue-CF and IECA.

	TEIQue-CF		
Scale	Socioemotionality	Emotion control	Total
IECA	.223*	.312*	.291*

Note. TEIQue-CF = Trait Emotional Intelligence Questionnaire–Child Form; IECA = Index of Empathy for Children and Adolescents.
*$p < .01$.

Table 4. The Internal Consistency Coefficients of the TEIQue-CF.

	TEIQue-CF		
Internal Consistency	Socioemotionality	Emotion control	Total
Cronbach's alpha coefficients	.898	.731	.905

Note. TEIQue-CF = Trait Emotional Intelligence Questionnaire–Child Form.

Discussion

The aim of this study was to adapt the TEIQue-CF into Turkish and to examine the psychometric properties of the Turkish version of the form. As the first step, both forward and backward translations of TEIQue-CF were made. In the second step, four professionals were consulted to examine the form in terms of the language convenience and the suitability of the form to Turkish culture, the effectiveness of the items in assessing trait EI, as well as the comprehensibility and the clarity of the items by the children. The form was revised according to feedback provided by the experts. Before the pilot study, a pre-pilot study was conducted and the preliminary Turkish form was administered to 10 children.

In the analysis of the collected data, construct and criterion-related validity analysis were initially conducted to assess the validity of the Turkish Form of TEIQue-CF. In terms of the construct validity, CFA was conducted. The analysis revealed nine facets, as suggested in the original form of the questionnaire (Mavroveli et al., 2008), and all the fit indexes showed the good fit of the model to the data. As in the versions based on samples from the United Kingdom and Serbia, the analysis also revealed that a two-factor solution was appropriate for the Turkish Form, comprising Socioemotionality (Factor 1) and Emotion Control (Factor 2). The concept of socioemotionality refers to the emotional experiences of children, as well as their abilities to articulate feelings and understand the feelings of other people. Emotional control, however, refers to children's abilities to manage and regulate their emotions and behaviors. It also concerns the affective disposition of children and their need for achievement (Banjac et al., 2016).

However, different to the original English version, in this study, adaptability and affective disposition loaded on Emotion Control and self-motivation loaded on the Socioemotionality factor. However, in the Italian version of TEIQue-CF, Russo et al. (2012) suggested only a single-factor solution, as the second factor was not well differentiated, particularly for younger children. The adult version of TEIQue consisted of four factors (Petrides, 2009). Russo et al. (2012) argued that the differentiation in the factor structure between the adults' and the children's versions might be due to the fact that the responses of the children showed less differentiation compared with the responses of the adults, and age should be considered when examining the factor structure of trait EI to achieve a deeper comprehension of structural changes in trait EI across the lifespan. In the Serbian version, Banjac et al. (2016) suggested a bifactorial structure for the 10- to 11- and 12- to 13-year-old age-groups, whereas, similar to the Italian version, a monofactorial structure was suggested for the 8- to 9-year-old group. It is thought that typically linguistic and cultural differences could be among the possible sources of construct differences between any adapted versions of the same measure. However, age should also be considered as a prominent factor for measures designed for children. In this study, an age-specific assessment of the factor structure was not conducted. The future validations of TEIQue-CF in Turkish children should take the possible effects of age into account on the factorial structure of TEIQue-CF.

The results of the correlation analysis between the factors of TEIQue-CF revealed highly significant correlations. Therefore, a total trait EI score can be computed by summing the factor scores. In terms of the criterion-related validity analysis, the correlations between TEIQue-CF and IECA scores were examined. While selecting empathy as a criterion-related construct, it was suggested that children with higher emotional intelligence should have higher levels of empathy, as the ability to understand emotions in others is a significant component of trait EI. As a result of the analysis, significant correlations were found between the scores of IECA and the Socioemotionality, Emotion Control, and total scores of TEIQue-CF. In the study, IECA was chosen as the criterion-related measure, as emotional intelligence was shown to be associated with empathy in adults (Abe et al., 2018; Austin et al., 2005b; Craig et al., 2009; Petrides, 2009; Petrides & Furnham, 2001). Another reason for choosing IECA was that there were no other similar measures in Turkish that could be administered to children between the ages of 8 and 12. Empathy was not implemented as a criterion-related measure in any of the versions. Hence, this finding of this study, which was in line with a number of findings in the literature (Castillo et al., 2013; Kokkinos & Kipritsi, 2012; Munoz et al., 2011), provided proof that empathy is a significant correlate of trait EI in children, as in adults.

In the study, Cronbach's alpha coefficients were computed in terms of the reliability of TEIQue-CF. According to Büyüköztürk (2004), a Cronbach's alpha value of .70 or higher is acceptable, whereas according to Nunnally (1988), a Cronbach's alpha value of .60 should be considered as acceptable for new measures. In this study, Cronbach's alpha coefficients were calculated as .90 for Socioemotionality, .73 for Emotion Control, and .91 for the total trait EI score, which indicates a high level of internal consistency. In comparison, the Turkish version had a higher internal consistency than the English version, which had an overall Cronbach's alpha of .76; the Serbian version, which had an overall Cronbach's alpha varying between .85 and .88; and the Italian version, which had an overall Cronbach's alpha of .89. As a result of the study, it is thought that the Turkish version of the TEIQue-CF is a statistically valid and reliable measure. The Turkish version of the form consists of 75, 5-point Likert-type items. The responses range from *disagree completely* (1) to *agree completely* (5). The form consists of nine facets, which are adaptability (eight items), emotion expression (eight items), emotion perception (eight items), self-motivation (eight items), self-esteem (seven items), low impulsivity (eight items), peer relations (12 items), emotional regulation (eight items), and affective disposition (eight items), as in the original version. High scores indicate a higher trait EI level.

This study provides a beneficial measure for assessing the trait EI of children in a Turkish sample. To the best of our knowledge, the Turkish form of TEIQue-CF is the only instrument that can be used to assess trait EI in a sample of children between 8 and 12 years of age in Turkey. It is thought that this instrument will be beneficial for providing a deeper understanding of the concept of trait EI and the effect of trait EI on the development of children, and will contribute to the studies conducted on the improvement of trait EI. However, some limitations of the study should also be mentioned. The study consisted of a limited number of children, which reduces the generalizability of the findings. The external validity of the instrument should be improved by testing it on larger samples. Another limitation is that the children may have responded in a socially acceptable manner, which may have affected the responses; in other words, the higher the social desirability tendency, the higher the trait EI may be. Therefore, in future studies, the effect of the social desirability tendency should be controlled. Another limitation of the study was that only one criterion measure was used due to the lack of reliable and valid alternative measures in Turkish that can be administered to the 8- to 12-year-old age group. In future studies, besides empathy, concepts such as peer relationships, aggression, academic success, impulsivity, and self-esteem, which are also related to trait EI, might be considered as criterion measures. The relevant data can be obtained from parents or teachers. This study was designed purely for psychometric purposes. Therefore, none of the children's personal information was kept, and no subsequent actions were taken in relation to the children who had low scores on TEIQue-CF. Future studies should offer services for cases where children might benefit from educational, social, and psychological support.

Declaration of Conflicting Interests

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Ethical Approval

All procedures performed in studies involving human participants were conducted in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent

Informed consent was obtained from all individual participants included in the study.

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