RESEARCH ARTICLE

Psychometric Properties of Questionnaire of Cognitive and Affective Empathy (QCAE): Reliability and Factor Analysis Study in Turkish Sample

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ABSTRACT

Introduction: The Questionnaire Cognitive and Affective Empathy (QCAE) scale is a tool that is widely used because of its multi-dimensional assessment of ability for empathy and is currently available in many languages. The aim of the current study was to examine the psychometric properties of the Turkish version of QCAE, which evaluates cognitive and emotional empathy with its multi-dimensional structure, and to bring it into the Turkish.

Methods: The study was carried out in a Turkish population of 412 healthy volunteers. Internal consistency, confirmatory factor analyses and gender comparisons of the Turkish version of the scale were performed.

Results: The Turkish version of QCAE had good construct validity and reliability for the five-correlated factors model (i. e., Emotion Contagion,

Proximal Responsivity, Peripheral Responsivity, Perspective Taking and Online Simulation). Temporal reliability was high with a two week test-retest intra-correlation coefficient range of 0.69–0.79. A total of 3 models were tested with confirmatory factor analyses, including the models of the original investigation. Cognitive-Affective distinction was not supported by the pattern of correlations between the factors.

Conclusion: Our results support that it is appropriate to compute and interpret the 5 sub-dimensions of the Turkish version of QCAE separately and totally, but the limitations in its use in the Cognitive Empathy and Affective Empathy sub-dimensions should be heeded.

Keywords: Empathy, cognitive empathy, affective empathy, reliability, confirmatory factor analyses

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INTRODUCTION

Empathy is a complex psychological construct that plays a very critical role in social interaction. Although many studies have proposed different definitions of empathy that partially overlap with each other, there is no consensus yet on its exact definition (1). However, most authors agree that at the least, empathy entails the ability to put oneself in someone else's shoes and understand their feelings, thoughts, and behaviors (2). By reflecting oneself to the other person, he/she parallels him/her through internal imitation and tries to understand him. Thus, he/she gets the chance to touch and get to know the inner world of the other person (3). In recent years, empathy has been widely accepted to have a multidimensional structure that includes cognitive and affective processes (4, 5). Cognitive empathy is defined by social neuroscientists as a thought process that includes the ability of heeding the perspectives of others, understanding their emotional state, separating the feelings of others from their own, and using this acquired knowledge as a guide in interpersonal behavior. Affective empathy is defined as an automatic processing operation initiated by perceived social cues, which enables the sharing of emotional responses of the observed individuals (5, 6). It is believed that optimal and appropriate empathy capacity is achieved through the interaction between these coordinated processes.

Many scales have been developed to measure empathy based on the way they are handled. These scales, which are currently in use, evaluate either a single component or the entire structure of empathy. "Hogan Empathy Scale", one of the first empathy scales developed, investigated social skills such as social self-confidence and incompatibility, but did not include an affective empathy component (7). However, the reliability of the scale was found to be insufficient in the subsequent studies conducted (8). Following this, empathy was approached as a multi-dimensional concept, and scales that pay attention in this direction were developed (9). In the Interpersonal Reactivity Index (IRI), a commonly used scale that was developed by Davis in 1983, Perspective Taking and Fantasy dimensions, which are among its sub-dimensions, correspond to cognitive empathy, while Empathic Concern and Personal Distress dimensions correspond to affective empathy. The IRI scale was adapted to the Turkish by Engeler and Yargic in 2007 (10). Empathy Quotient (EQ) is another scale that was adapted to the Turkish, which examined psychometric properties in a Turkish sample (11). The Empathy Quotient (EQ) scale focuses more on the empathy process rather than cognitive and affective empathy (12). The researchers defined empathy within the scope of "the urge to determine the emotions and thoughts of another person and respond

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to them with an appropriate emotion", suggesting that a wide variety of features related to interpersonal functionality that are not related to empathy would have the potential to be effective in the scale scores, as this scale also evaluates social abilities.

Development of the Questionnaire of Cognitive and Affective Empathy (QCAE) scale: Reniers et al. developed a new scale named the Questionnaire of Cognitive and Affective Empathy (QCAE) scale in 2011 with the claim that the existing scales do not adequately represent the concepts of cognitive and affective empathy, and that they contain conceptual deficiencies and statistical insufficiencies (13). It is accepted that while developing the QCAE scale, the researchers used well-defined dimensions with narrow scopes when considering the definition of empathy, and that a psychometrically robust scale has been developed both in the context of the general population and clinical settings (14–18).

In this scale, empathy is evaluated in five sub-dimensions: Perspective Taking, Online Simulation, Emotion Contagion, Proximal Responsivity and Peripheral Responsivity. In the Perspective Taking sub-dimension, the ability to intuitively see things from another person's perspective is evaluated. In Online Simulation, the effort put in by an individual to put him/herself in another person's position by imagining the feelings of that person is evaluated. Emotion Contagion refers to the automatic reflection of other person's feelings. Proximal Responsivity addresses empathetic behavior whereby the emotive response of an individual when witnessing the mood of others in a close social context is assessed. Peripheral Responsivity, on the other hand, is considered as the responsiveness aspect of empathetic behavior in a detached context. There are two upper dimensions referred to as affective empathy and cognitive empathy, in the second-rank order of scale. However, there is disagreement about the factor structure and second-rank order of the QCAE. In this study, the convergent validity, construct validity and differentiation between genders of the scale were examined and results were found to be satisfactory.

Among various definitions of empathy, the ability to understand and share someone else's feelings and thoughts is widely accepted and has recently become the focus of attention of social cognition and neuroscience researchers (19, 20). Additionally, interest in the place of empathy in psychopathology has been increasing considerably (21). Many psychiatric disorders are associated with impaired empathy functions. It has been reported that empathy skills are impaired in frontotemporal dementia (22). A marked deficiency in cognitive empathy has been emphasized in some neuropsychiatric disorders such as autism and Asperger's syndrome (23). Moreover, an association of antisocial personality disorder with a lack of affective empathy has also been suggested (24). Schizophrenia is one of the most important psychiatric disorders that is characterized by an impairment in the ability for empathy (25, 26). It has been reported that in schizophrenia patients, negative symptoms can occur with an integration disorder between cognitive and affective empathy; this may prevent the onset and continuation of social behavior. Thus, empathy can be effective for the treatment and progress of schizophrenia patients (15, 27).

We agree that a better understanding of the definition and structure of empathy is one of the important problems in research on empathy disorders. We think that a discussion on the data from a Turkish sample will contribute to address this problem. The aim of the current study was to examine the psychometric properties of the Turkish form of QCAE, which evaluates cognitive and emotional empathy with its multi-dimensional structure, and to bring it into the Turkish.

METHODS

Participants
A total of 412 Turkish adults [259 females (62.9%) and 153 males (37.1%)], who provided informed consent to participate, filled in a questionnaire with standard questions on demographics and the Turkish version of the QCAE. The mean age of the sample was 24.0±6.71 years (range: 17–60). Participants were recruited from various undergraduate and graduate programs at the. Necmettin Erbakan University Meram Medical Faculty Medical Faculty as well as the medical staff working in the hospital. The education level of most of the participants was at the level of undergraduate studies (n=262; 63.6%). One hundred thirty-four participants refilled the QCEA two weeks later.

Ethics
The principles of the Declaration of Helsinki was followed while conducting the current study. The study design was approved by the Ethical Committee of the. Necmettin Erbakan University Meram Medical Faculty Medical Faculty (IRB Date/number: 08.05.2020/2020–2486). The study participants were provided with a consent statement containing the terms of the study (e.g., voluntary participation, confidentiality/anonymity, right to withdraw) and about the research team. Only those participants who agreed with these terms were included. The participants were required to provide data on demographic variables such as gender, age and level of education. The participants were then administered the Turkish version of the QCAE.

Translation
The original QCAE was independently translated from the English into Turkish by two specialist psychiatrists who have equal competence in both languages. Both experts reached consensus on the Turkish translated text. Next, the Turkish text was back-translated into English by an independent translator. This was followed by a close comparison of the translated text with the original English version. Subsequently, the disparities were resolved and a final translated version was settled upon. The Turkish version of the QCAE is shown in Table 1.

The Questionnaire of Cognitive and Affective Empathy (QCAE) scale: The QCAE is an empathy measure composed of 31 items that is rated on a 4-point Likert scale: 1 (strongly agree), 2 (slightly agree), 3 (slightly disagree), and 4 (strongly disagree). The QCAE has 5 sub-dimensions (*Emotion Contagion, Proximal Responsivity, Peripheral Responsivity, Perspective Taking, Online Simulation*), 2 upper dimensions (Affective Empathy, Cognitive Empathy) and is assigned a total score. The dimension of Affective Empathy can be subdivided into *Emotion Contagion, Proximal Responsivity* and *Peripheral Responsivity* (each consisting of 4 items). The dimension of Cognitive Empathy can be subdivided into *Perspective Taking* (consisting of 10 items), and *Online Simulation* (consisting of 9 items). The sum of the corresponding individual item scores provides the score of each subscale. The score for Affective Empathy dimension is the sum of scores from Emotion Contagion, Proximal Responsivity, and Peripheral Responsivity. The score for Cognitive Empathy dimension is the sum of the scores of Perspective Taking and Online Simulation. Lastly, a sum of the scores generated from Affective Empathy and Cognitive Empathy provides the final score for Empathy.

While creating the scale, Reniers et al. first demonstrated the presence of 5 components through a Principles Component Analysis (PCA). Afterwards, a confirmatory factor analysis (CFA) was performed to verify Model 1, which included 5 sub-dimensions, and the second order structure including affective and cognitive empathy was tested with Model 2. When the goodness-of-fit test results of Model 1 were examined, the model revealed an acceptable fit (χ^2 (80)=193.897, p<. 001, RMSEA=0.067, CFI=0.947, TLI=0.930, AIC=273.897). Similarly, the goodness-of-fit test results of Model 2 showed that the model had an acceptable fit (χ^2 (85)=244.309, *p<0.001*, RMSEA=0.077, CFI=0.925, TLI=0.908, AIC=314.309). In addition, Reniers et al. evaluated convergent validity by examining its relationship with Basic Empathy Scale (BES), which is an independent empathy scale.

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Table 1. Investigation of Turkish version of QCAE

İnsanlar farklı durumlarda gösterdiği düşünce ve davranışları ile birbirlerinden ayrılırlar. Bu test bazı durumlarda nasıl düşündüğünüzü ve davrandığınızı ölçen bir testtir. Lütfen her cümleyi okuyunuz ve bu sayfanın sağındaki size en uygun numarayı işaretleyiniz. Cevaplamak için çok zaman ayırmayınız. Hızlı ve dürüst cevap veriniz.	Kesinlikle katılıyorum	Katılıyorum	Katılmıyorum	Kesinlikle katılmıyorum
1. Bazen olaylara diğerlerinin penceresinden bakmak benim için zordur.				
2. Bir film ya da oyun izlerken sıklıkla kendimi tamamiyle kaptırmam ve çoğunlukla objektifimdir.				
3. Bir karar vermeden önce çevremdeki her olumsuz görüşü değerlendiririm.				
4. Bazen olayların arkadaşlarımın perspektifinden nasıl göründüğünü hayal ederek onları daha iyi anlamaya çalışırım.				
5. Birisi beni üzdüğünde çoğunlukla kendimi bir süre onun yerine koymaya çalışırım.				
6. Bir kişiyi eleştirmeden önce onun yerinde olsam nasıl hissedeceğimi hayal ederim.				
7. Sıklıkla arkadaşlarımın problemlerine duygularımla dâhil olurum.				
8. Çevremdeki kişiler gergin olduğunda gergin olmaya meyilliyimdir.				
9. Birlikte olduğum kişilerin duygularım üzerindeki etkisi büyüktür.				
10. Bir arkadaşımın üzgün görünüyor olması beni çok etkiler.				
11. Sıklıkla bir film, oyun ya da romandaki karakterin yaşadıklarını derinden hissederim.				
12. Bir kişiyi ağlarken gördüğümde çok üzülürüm.				
13. Neşeli bir grubun içindeyken mutlu, kederli bir grubun içindeyken hüzünlüyümdür.				
14. Diğerlerinin endişe ve panik içinde olması beni rahatsız eder.				
15. Herhangi birisinin muhabbet kurma çabasını kolayca söyleyebilirim.				
16. Bir kişinin bir şeyi söyleyerek başka bir şeyi anlatmak istediğini anlamada çabuğumdur.				
17. Bazı şeylerin insanları neden bu kadar üzdüğünü anlamak benim için çok zordur.				
18. Kendimi başkasının yerine koymak benim için kolaydır.				
19. Karşımdaki kişinin hislerini tahmin konusunda iyiyimdir.				
20. Bir kişinin grup içinde hissettiği çekingenliği ve rahatsızlığı hızlıca fark ederim.				
21. Çevremdeki kişiler başkalarının his ve düşüncelerini anlamada iyi olduğumu söylerler.				
22. Bir kişinin söylediklerime karşı ilgili ya da ilgisiz olduğunu kolayca söyleyebilirim.				
23. Arkadaşlarım onları çok iyi anladığımı söyleyerek bana problemlerini anlatırlar.				
24. Karşımdaki söylemese bile hoş karşılanmadığımı hissederim.				
25. Başka bir kimsenin söylemeye çalıştığını kolaylıkla anlayabilirim.				
26. Bir kişinin gerçek hislerini saklayıp saklamadığını anlarım.				
27. Karşımdakinin ne yapmak istediğini tahmin etmede iyiyimdir.				
28. Katılmasam bile çoğunlukla bir başka kişinin görüşüne değer veririm.				
29. Film izlerken çoğunlukla duygusuz kalmaya çalışırım.				
30. Her zaman bir şey yapmadan önce diğer arkadaşımın hislerini de hesaba katmaya çalışırım.				
31. Bir şey yapmadan önce arkadaşımın buna tepkisinin ne olacağını düşünmeye çalışırım.				

When the correlation between BES and cognitive and affective empathy scores was examined, a strong correlation was found (r=0.62, p=0.001 and r=0.76, p=0.001, respectively). Additionally, these authors also examined its construct validity by evaluating its relationship with empathic anger, impulsivity, aggression, psychopathy and Machiavellianism. Significant differences in the relationship between cognitive and affective empathy and these measures were identified. Finally, Reniers et al. investigated gender differences in the QCAE, as males were reported to have lower empathy scores. Both cognitive empathy scores (t (495)=−5.63, p<0.001, d=0.41) and affective empathy scores (t (923)=−11.81, p<0.001, d=0.83.) were found to be lower in men. The scores obtained from the five subscales of the QCAE reached internal consistency indicators of "acceptable" to "very good" in the original version [Cronbach's alpha values ranged between 0.65 to 0.85] (13).

Statistical Analysis
Internal consistency of the scale was tested using Cronbach's alpha and item-total correlation coefficients for both test and retest samples. We used correlation and intraclass correlation coefficients to investigate the reliability of test-retest samples of the translated QCAE.

We tested whether the original factor analytic structure of the scale identified by Reiners et al. (13) would fit our test sample by performing confirmatory factor analyses. Commonly used fit indices like TFI, CFI, RMSEA and SRMR of these confirmatory models were reported. R version 3.6.3 (R core team) with Lavaan package was used for all analyses. Jamovi (version 1.2.17) was used for the comparison of male and female empathy scores.

Confirmatory Factor Analyses
Reiners et al. (15) proposed two different factor structures: Model 1 including 5 non-orthogonal factors of QCAE, and Model 2 which includes 2 higher order non-orthogonal factors in addition to these 5 factors. Namely, Model 1 has Perspective Taking, Online Simulation, Emotion Contagion, Peripheral Responsivity and Proximal Responsivity as 5

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correlating factors. Model 2 has Cognitive Empathy and Affective Empathy as second order factors where Cognitive Empathy has Perspective Taking, Online Simulation and Emotion Contagion as components while Affective Empathy has Peripheral and Proximal Responsivity as components. We modified Model 2 by making only one second order factor which has all 5 factors as its components, to test a one higher order structure called Model 3.

Reiners et al. used item parceling to address issues of non-normality in their sample. We kept the same methodology with the same parceling in the current study.

RESULTS

Confirmatory Factor Analyses

Three Models were tested using the Confirmatory Factor Analyses. Model 1 and Model 2 were created similar to the original study. In Model 3, there is only one second-order factor and all sub-dimensions are loaded on this single second order factor. The data appeared to have a better fit with Model 1 and Model 2. However, since Model 2 has a Heywood case, Model 1 was preferred. Figure 1 displays the correlations and the factor structure of Model 1. Table 2 displays different goodness-of-fit statistics
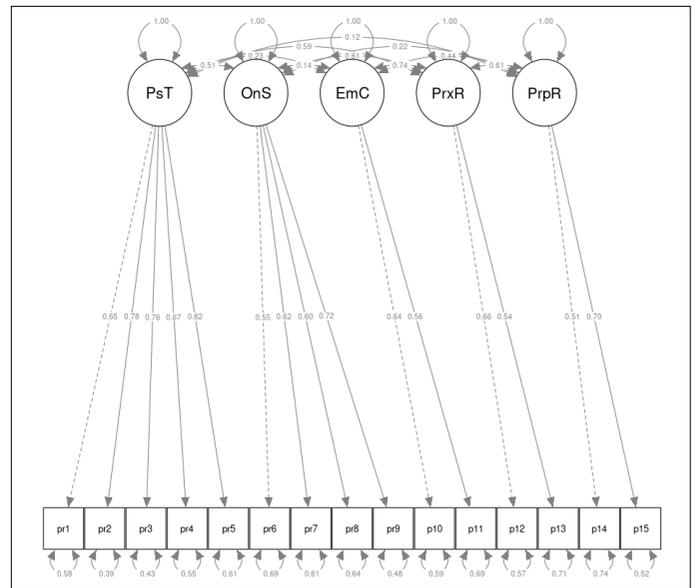

Figure 1. Investigation of correlations and the factor structure of Model 1 (PsT, perspective taking; OnS, online simulation; EmC, emotion contagion; PrxR, proximal responsivity; PrpR, peripheral responsivity).

Table 2. Goodness of fit statistics

	χ^2	df	χ^2/df	CFI	TLI	AIC	RMSEA(95%CI)	SRMR
Model 1	171.86	80	2.15	0.94	0.92	8059.46	0.053 (0.042-0.064)	0.06
Model 2	181.96	84	2.16	0.94	0.92	8061.55	0.053 (0.043-0.064)	0.06
Model 3	211.53	85	2.49	0.92	0.9	8089.12	0.06 (0.05-0.07)	0.07

CFI, comparative fit index; TLI, Tucker-Lewis index; AIC, Akaike information criteria; RMSEA, root mean square error of approximation; SRMR, standardized root mean square residual.

Table 3. Comparison of QCAE total and subscale scores by gender (mean±SD)

	Female (n=259)	Male (n=153)	p	Cohen's d
Perspective Taking	29.93 ± 3.96	30.52 ± 3.61	0.135	-0.1529
Online Simulation	26.29 ± 3.1	26.15 ± 3.35	0.678	0.0424
Emotion Contagion	12.19 ± 1.86	11.17 ± 1.84	<0.001*	0.5504
Proximal Responsivity	12.3 ± 1.73	11.56 ± 1.81	<0.001*	0.4184
Peripheral Responsivity	11.31 ± 1.87	10.29 ± 1.72	<0.001*	0.5598
Cognitive Empathy	56.25 ± 5.91	56.67 ± 5.8	0.452	-0.0768
Affective Empathy	35.8 ± 4.05	33.01 ± 3.73	<0.001*	0.7073
Total Empathy Scores	92.01 ± 8.12	89.70 ± 7.88	0.005*	0.2874

*p<0.05; Student t test was performed.

Table 4. Internal consistency of both samples

		Test Sample		Retest Sample	
	Number of Items	Cronbach's alpha (95%CI)	Range of Item-total correlations	Cronbach's alpha (95% CI)	Range of Item-total correlations
Perspective Taking	10	0.81 (0.78-0.84)	0.28-0.69	0.88 (0.86-0.9)	0.47-0.80
Online Simulation	9	0.72 (0.68-0.76)	0.27-0.60	0.76 (0.72-0.79)	0.24-0.64
Emotion Contagion	4	0.6 (0.54-0.66)	0.4-0.63	0.78 (0.75-0.82)	0.64-0.70
Peripheral Responsibility	4	0.5(0.42-0.58)	0.24-0.61	0.46 (0.37-0.54)	0.19-0.56
Proximal Responsibility	4	0.61(0.55-0.67)	0.36-0.58	0.68 (0.63-0.73)	0.19-0.79
Cognitive Empathy	19	0.82 (0.8-0.85)	0.25-0.64	0.86 (0.84-0.88)	0.26-0.74
Affective Empathy	12	0.71(0.67-0.75)	0.24-0.61	0.79 (0.77-0.82)	0.25-0.68
Total Score	31	0.82(0.79-0.84)	0.04-0.60	0.84 (0.82-0.85)	0.09-0.67

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for these models. With the exception of Model 1, negative variance estimates were confronted.

When the empathy total and subscale scores were examined in terms of gender, it was found that the scores of many subscales and total empathy scores were higher in women. A comparison of empathy scores by gender is shown in Table 3.

Internal Consistency: Cronbach's alpha values of all sub-dimensions were satisfactory in both the first test and retest. Item-total correlations were smaller for items 17, 15, 2 and 3 for the corresponding scales and subscales in both test and retest samples. Table 4 displays the Cronbach's alpha and item-total correlation coefficients.

Test-retest Reliability: Pearson correlation coefficients were adequate and found to be 0.71 for Perspective Taking, 0.76 for Online Simulation, 0.72 for Emotion Contagion, 0.69 for Peripheral Responsivity, 0.72 for Proximal Responsivity, 0.73 for Cognitive Empathy, 0.79 for Affective Empathy and 0.77 for the total Empathy score.

Intraclass correlation coefficients were satisfactory and found to be 0.69 (0.58–0.775) for Perspective Taking, 0.76 (0.68–0.82) for Online Simulation, 0.72 (0.63–0.79) for Emotion Contagion, 0.68 (0.58–0.77) for Peripheral Responsivity, 0.69 (0.54–0.79) for Proximal Responsivity, 0.72 (0.62–0.79) for Cognitive empathy, 0.78 (0.70–0.84) for Affective Empathy and 0.75 (0.65–0.82) for total Empathy score.

DISCUSSION

The reliability and construct validity of the Turkish version of QCAE were investigated in healthy individuals in the current study. Thus, it was aimed to add a new and multi-dimensional self-reported empathy scale to the limited number of Turkish empathy assessment tools currently available. In addition, the current study will allow the evaluation of empathy in a cross-cultural manner and enable the concept of empathy to be more understandable and measurable. In the current study, the structure of the five-factor models proposed by Reniers et al. was evaluated using CFA (13). When the internal consistency, reliability and factor structure of the 5 interrelated empathy aspects of QCAE Turkish version were evaluated, we determined that the model was in accordance with the original article and that the model was working. However, we found that the correlation pattern between these 5 dimensions did not support the presence of a second rank factor and the same negative variance problem for the second rank factor model was seen.

As a measure of internal consistency, Cronbach's alpha values at the levels of subscale and total scale were found to be between 0.50 to 0.82. The same for the cognitive and affective dimensions were 0.82 and 0.71, respectively. However, the Cronbach's alpha values of retest scores were found to be generally higher. In the present study, internal consistency as indicated by Cronbach's alpha, was satisfactory. In the developmental study of the scale conducted by Reiner et al., Cronbach alpha values were in the range of 0.65–0.80, and in the Portuguese adaptation study that was conducted by Queiros et al., the values were in the range of 0.62–0.87 (13, 28).

All items of the Turkish version of QCAE showed good factor loadings, the only exception being item 17 from the subscale Peripheral Responsivity (ªIt is hard for me to see why some things upset people so much°). The same problem appears to be detected in the validity of the French and Portuguese versions of the QCAE scale (28, 29). Michaels et al. reported the Cronbach's alpha value of the peripheral responsiveness subscale as 0.42 in healthy individuals and 0.19 in schizophrenia patients (15). Similarly, in another study conducted with schizophrenia patients, the

Cronbach's alpha value of the peripheral responsivity sub-dimension was found as 0.28 (30). In this context, the peripheral responsivity subscale can be considered as one of the vulnerabilities of QCAE. Nevertheless, Item 17 pertains to a detached and nonspecific social context, unlike other items in the peripheral responsivity subscale, which are evaluated in the narrative social context (movies, plays). When item 17 was removed from the scale, there was no significant increase in the Cronbach's alpha values of the sub-dimensions; therefore, the current research team decided not to remove the relevant item from the Turkish version of the scale.

When the models that were suitable for the original study of the scale were developed and analyzed with CFA, it was seen that the five sub-dimensional model provided the best modeling. When the second-rank order of the five sub-dimensions was taken, it was seen that the power of the model was decreased and issues of negative variance between the sub-dimensions emerged. In fact, when looking at the development study of the original version of QCAE, it is seen that problems regarding the validity of the second rank factoring also existed in that study (13). The same problem is apparent in the French version of QCAE as well (29).

Based on previous studies suggesting that sub-dimensions differ according to gender (31–33), empathy was also evaluated as a function of gender. Female participants were found to score significantly higher than male participants on empathy subscales. In this context, our results are consistent with previous self-report studies that have compared differences in empathy between genders.

One of the limitations of our study is that equal representation was not ensured for male and female participants, which may have resulted in a bias. The data obtained from the QCAE was not evaluated with a convergent validity test with other measures of empathy, which can be considered as a second limitation of the current study. This is because instruments similar to QCAE that can evaluate the multidimensional conceptualization of empathy are currently unavailable in a validated Turkish translated form.

In conclusion, our psychometric findings support the use of the Turkish version of QCAE in its entirety, but attention should be paid to its limited use in the sub-dimensions of Cognitive Empathy and Affective Empathy. In addition, the use of each sub-dimension was seen as the strongest model in this scale. The Turkish version of the scale will enrich studies on empathy, provide a tool to evaluate the multidimensional structure of empathy and will open up doors for assessments across cultural divides in the future. In this context, we believe that QCAE can be useful in understanding the mechanisms underlying psychiatric disorders, in treatment monitoring, and in determining the areas that need to be intervened during treatment. In addition, a non-clinical population was used to evaluate the structure of the Turkish QCAE in the current study. This study should be replicated in a clinical sample to further validate the instrument in a psychiatric setting.

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