https://doi.org/10.22365/jpsych.2021.008 Psychiatriki 2021, 32:43–50

Research article

Validation of the Empathy Quotient (EQ) - Greek version

Artemios Pehlivanidis,[1] Konstantinos Tasios,[2] Katerina Papanikolaou,[3]
Athanassios Douzenis,[2] Ioannis Michopoulos[2]

[1]*First Department of Psychiatry, National and Kapodistrian University of Athens, Eginition Hospital, Athens*
[2]*Second Department of Psychiatry, National and Kapodistrian University of Athens, «Attikon» Hospital, Athens*
[3]*Department of Child Psychiatry, National and Kapodistrian University of Athens, Agia Sophia Children's Hospital, Athens, Greece*

ARTICLE HISTORY: Received 14 June 2020/Revised 11 October 2020/Published Online 17 March 2021

ABSTRACT

The original English language Empathy Quotient (EQ) is a self-reporting questionnaire that measures the construct of empathy in adults of normal intelligence. The EQ is sensitive to gender, and neurodevelopmental disorders. The EQ has been translated to many languages all over the world. The EQ – Greek version may be available through open access from www.autismresearch-centre.com. Aim of the present study was to validate the EQ- Greek version. The study took place in the 1st and 2nd Departments of Psychiatry of the National and Kapodistrian University of Athens (NKUA), "Eginition" and "Attikon" Hospitals respectively, and in the Korydallos Prison Psychiatric Clinic in Athens. Two groups completed the original 60 items version. One group consisted of general population and volunteer students from post graduate training programs (normal control group, N= 127) and the other group of patients recruited from the Adult Neurodevelopmental Disorders Unit of the 1st Department of Psychiatry of NKUA, the outpatients' clinic of the 2nd Department of Psychiatry of NKUA and the Korydallos Prison Psychiatric Clinic (patient group, N=196). Three versions of the EQ were examined: the EQ-40, EQ-28 and EQ-15. All versions showed very good internal validity: Cronbach's α value was 0.902, 0.892 and 0.793 respectively. They all showed good test-retest variability: the Intraclass Correlation Coefficient was 0.928, 0.924 and 0.855 respectively. Concurrent validity examined by the correlation analysis with the Interpersonal Reactivity Index (IRI) showed non-significant correlations between the EQ and the IRI. Exploratory Factor Analysis (EFA) indicated a one-factor structure for the three versions. Confirmatory Factor Analysis (CFA) for the one-factor structure showed a good fit for all the three versions. CFA for the three-factor structures (Cognitive Empathy, Emotional Empathy, Social Skills) showed also a good fit for EQ-28 and the EQ-15. When the EQ-40 was used as a measure of empathy in a single dimension in adults, the EQ discriminated the normal control group from the patients' group. The mean EQ score for the total sample was 35.84 with the lowest scoring being among Autism Spectrum Disorder (ASD) patients. As expected, females scored higher than males ($p<0.001$). To conclude, the Greek version of EQ showed good psychometric properties and could serve as a useful tool for clinicians to assess empathy in clinical populations and especially in subjects with ASD and other neurodevelopmental disorders.

KEYWORDS: Empathy Quotient, EQ, Greek, psychometric properties.

Introduction

Baron-Cohen's work on Theory of Mind[1] and the neurocognitive model of empathy[2] identify key mechanisms through which empathy appears to develop. Principal amongst these are the "Emotion Detector", which allows individuals to recognize and represent affective states in others, and our own affective reactions in response (e.g. "I am sad – that you are distressed"); and the "Empathizing System", which allows individuals to mentally represent epistemic mental states (e.g. "my patient thinks that she is worthless").

The Empathy Quotient (EQ) is a well-validated self-reporting questionnaire[3] that was found to measure the construct of empathy in adults of normal intelligence both as a one-factor[4] and three-factor dimension.[5,6] The EQ is sensitive to gender, and neurodevelopmental disorders. Females on average have

Corresponding author: Artemios Pehlivanidis, First Department of Psychiatry, National and Kapodistrian University of Athens, Eginition Hospital, 72–74 Vas. Sophias Ave., GR-115 26 Athens, Greece • e-mail: apechlib@med.uoa.gr

higher scores than males[3] while individuals with an autism spectrum disorder (ASD) have reduced levels of EQ scores, relative to typical controls.[3,5,7–10] Recently Groen et al.[11] reported that adults with a subclinical Attention Deficit Hyperactivity Disorder (ADHD) diagnosis had reduced levels of the EQ scores compared to the control group.

The original English-language version of EQ has been translated to many other languages namely: Chinese,[12] Dutch,[13] French,[7] Italian,[14] Japanese,[9] Korean,[8] Portuguese,[15] Russian,[16] Serbian,[17] Turkish,[18] and Farsi.[19] It has been found that in the western countries the EQ scores are higher compared to translations from Asian countries.[13]

Across studies concurrent validity has been examined by correlations between EQ and other instruments measuring aspects of empathy. Among them the Interpersonal Reactivity Index[20] has shown moderate correlation with EQ,[8,12,17] and is the only one that has been validated in Greek.[21]

The EQ-Greek version may be freely downloaded from the site of the Autism Research Center founded by Baron-Cohen (www. autismresearchcentre.com).[22] It has been used in Greek patients with schizophrenia[23] and eating disorders,[24] but its validity and reliability have not been examined so far. The present study aims to assess the psychometric properties of the Greek translation of the EQ in adult patients with neurodevelopmental disorders, other psychiatric disorders and normal controls.

Material and Method

Subjects

The study took place in the 1st and 2nd Departments of Psychiatry of the National and Kapodistrian University of Athens (NKUA), "Eginition" and "Attikon" Hospitals respectively, and in the Korydallos Prison Psychiatric Clinic in Athens. All subjects consented to participate in the study which was approved by the Ethics Committee of the National and Kapodistrian University of Athens Medical School. A total of 323 subjects participated in the study. Subjects were divided in two groups. The first group consisted of general population participants and volunteers that were students in a post graduate training program (Normal Control group, N=127). The second group consisted of: (a) patients recruited from the Adult Neurodevelopmental Unit of the 1st Department of Psychiatry where EQ was administered among other self-report instruments as screeners before the clinical evaluation for diagnosis of Autism Spectrum Disorder (ASD) and/or Attention Deficit Hyperactivity Disorder (ADHD),[25] (b) patients from the outpatient clinic of the 2nd Department of Psychiatry ("Attikon" Hospital) and (c) patients from the Korydallos Prison Psychiatric Clinic (Athens) (Patient group, N=196). Test-retest variability was assessed by administering the EQ to 35 postgraduate students, randomly selected, on two occasions with a 30 days interval.

Diagnostic procedure

Patients and controls gave informed consent in order to participate. They were both examined by a psychiatrist who used a semi-structured clinical interview for psychiatric diagnosis. The assessment procedure of the patients with neurodevelopmental disorders was built on a standard diagnostic routine and was carried out by a multi-disciplinary team. The DIVA[26] was administered to all patients while the ADOS[27,28] was administered to selected cases considered to be more complicated. The procedure is described in detail by Pehlivanidis et al.[29]

Tools

a) EQ is a self-assessment instrument for measuring empathy in adults of normal intelligence, available from the www. autismresearchcentre.com. It was explicitly designed to be applied in a clinical context and to be sensitive to lack of empathy as a feature of psychopathology.[3] The EQ comprises 60 items , broken down into two types of questions: 40 questions tapping empathy (items 1, 4, 6, 8, 10, 11,12, 14, 15, 18, 19, 21, 22, 25, 26, 27, 28, 29, 32, 34,35, 36, 37, 38, 39, 41, 42, 43, 44, 46, 48, 49, 50, 52,54, 55, 57, 58, 59, and 60), and 20 filler items (items2, 3, 5, 7, 9, 13, 16, 17, 20, 23, 24, 30, 31, 33, 40, 45,47, 51, 53, and 56). The 20 filler items were included to distract the participant from a relentless focus on empathy. Responses are given on a 4-point Likert scale. Each of the items listed above scores 1 point if the respondent records the empathic behavior mildly, or 2 points if the respondent records the behavior strongly. The affective and cognitive components are mixed. Approximately half of the items were worded to produce a "disagree" response and half to produce an "agree" response for the empathic response. This was to avoid a response bias either way. Following this, items were randomized. The EQ has a forced choice format, can be self-administered, and is straightforward to score because it does not depend on any interpretation. It can be measured along a single dimension; therefore, it is acceptable to use a summed total EQ score. Scores can range from 0 to 80 points. In its initial validation EQ showed excellent internal consistency (Cronbach's a= 0.92) and test-retest reliability (r=0.97).[3] The EQ has also been used in two shorter versions, one with 28 items (1, 4, 6, 8, 12, 14, 19, 21, 22, 25, 26, 27, 29, 32, 35, 36, 41, 42, 43, 44, 48, 50, 52, 54, 55, 57, 58, 59) and one with 15 items (4, 6, 8, 12, 14, 25, 26, 27, 32, 35, 44, 50, 52, 54, 59) with good psychometric properties.[5,6,13,17]

b) International Reactivity Index (IRI) has been introduced by Davis.[20] It has been translated and validated in the Greek language by Tsitsas and Malikiosi-Loizou.[21] It consists of 28 questions answered on a 5-point Likert scale ranging from "Does not describe me well" to "Describes me very well», incorporating both cognitive and affective dimensions across four 7-item subscales:

1) Perspective Taking (PT) assesses the tendency to spontaneously adopt the psychological point of view of others, with higher scores suggesting higher cognitive and social functioning.
2) Fantasy (F) taps respondents' tendencies to transpose themselves imaginatively into the feelings and actions of fictitious characters in books, films and plays.
3) Empathic Concern (EC) assesses "other-oriented" feelings of sympathy and concern for unfortunate others.
4) Personal Distress (PD) measures "self-oriented" feelings of personal anxiety and unease in tense interpersonal settings.

Statistical analysis

The following tests were used for the statistical analysis of the data: Kolmogorov-Smirnov and Shapiro-Wilk for assessing the Normal distribution of the variables; the Pearson x^2 test for comparison of percentages; t-test for comparison of means of variables; one-way ANOVA with Pairwise comparisons (Bonferroni correction) for the comparison of means for more than two groups and correlations were tested by the Pearson r coefficient. The psychometric properties of the three versions of the EQ (40, 28 and 15 items) were evaluated by the following: construct validity was assessed by inter-item and inter-total correlations; the internal consistency of the scale was calculated with Cronbach's alpha coefficient (minimum acceptable value for alpha was 0.7); factor structure was examined by exploratory factor analysis (principal components with varimax rotation). Furthermore, confirmatory factor analysis (CFA) was performed in order to check the one-factor model (40, 28, 15 items) and the three-factor model (15, 28 items). Since no factor structure has been previously proposed for the 40-item version the three factor models were tested only for the 28-item and 15-item versions. The Intraclass Correlation Coefficient was used to explore the test-retest reliability. Concurrent validity was assessed by calculating correlations between the EQ and the IRI. Statistical analysis was carried out using SPSS (Version 25.0) for Windows. CFA was done by the use of the Jamovi software (Jamovi 1.2.27).

Results

Participant characteristics

The subjects consisted of two subgroups: 196 patients and 127 controls. The demographic data for the participants and the mean scores in EQ are listed in table 1. The two groups did not differ in age. The differences in education and sex between groups were statistically significant. The mean EQ (EQ-40) score for the total sample was 35.84 (sd=12.2). Controls presented significantly greater values of empathy. This difference remained the same even when the controls were compared with the patients divided according to diagnosis for all groups: one-way ANOVA F=29.6, p<0.001, between groups Bonferroni correction (table 2). Females scored higher than males: 40.93 (sd=10.8) vs. 31.44 (sd=11.6), t=7.5 (p<0.001).

Psychometric properties of EQ

The psychometric properties of the EQ were tested on the three versions of the scale, EQ-40, EQ-28 and EQ-15.

Internal consistency. The EQ Cronbach's α value for the EQ-40 was 0.902, the inter-item correlations ranged from 0.158 to 0538 and the inter-total correlations had a range from 0.008 to 0.610. Cronbach's α value if item deleted ranged from 0.897 to 0.905. The EQ Cronbach's α value for the EQ-28 was 0.892, the inter-item correlations ranged from 0.101 to 0.262 and the inter-total correlations had a range from 0.208 to 0.617. Cronbach's α value if item deleted ranged from 0.885 to 0.892. The EQ Cronbach's α value for the EQ-15 was 0.793, the inter-item correlations ranged from 0.036 to 0.538 and the inter-total correlations had a range from 0.196 to 0.529. Cronbach's α value if item deleted ranged from 0.771 to 0.797.

Table 1. Demographic data for the participants and the mean scores in EQ.

	Patients (n=196)	Controls (n=127)	t-test	p
Sex (%female)	31.1	69.8	46.2*	<0.001
Age	34.5 (11.3)	33.04 (5.1)	–1.5	0.11
Education (years)	13.2 (2.6)	16.6 (0.9)	16.2	<0.001
EQ	30.7 (11.6)	43.6 (8.4)	11.5	<0.001

*x^2

Table 2. Differences in EQ between all groups (One-way ANOVA- Pairwise comparisons).

	Mean (SD)	Control n=127	ASD n=31	ADHD n=85	Depression n=20	Psychosis n=30	Other n=30
Control	43.6 (8.4)	–	<0.001	<0.001	0.03	<0.001	<0.001
ASD	21.0 (7.7)		–	<0.001	0.004	<0.001	0.047
ADHD	33.1 (11.7)			–	1.0	1.0	1.0
Depression	34.0 (13.9)				–	1.0	1.0
Psychosis	34.8 (10.4)					–	0.54
Other	29.1 (8.6)						–

ASD: Autistic Spectrum Disorder, ADHD: Attention Deficit Hyperactivity Disorder

Test-retest reliability. The EQ showed high retest stability. The Intraclass Correlation Coefficient was for the EQ-40 0.928 (range 0.881-0.962), for the EQ-28 0.924 (range 0.884-0.955) and for the EQ-15 0.855 (range 0.779–0.915). There were not any statistically significant differences between test and retest. For the EQ-40: test mean=44.7 (sd=9.1), retest mean=43.6 (sd=9.3), t-test: t=1.1, p=0.2, correlation: r=0.81, p<0.001. For the EQ-28: test mean=44.7 (sd=9.1), retest mean=32.1 (sd=7.1), t-test: t=2, p=0.06, correlation: r=0.81, p<0.001. For the EQ-15: test mean=17.2 (sd=3.9), retest mean=16.7 (sd=3.8), t-test: t=1.04, p=0.3, correlation: r=0.72, p<0.001.

Factor analysis. Three separate Exploratory Factor Analyses (EFA) were performed, one for every version of the EQ: (a) The EQ-40 showed a ten-factor structure; 10 factors explained 57.548% of the variance. Thirty of the 40 items (75%) loaded on the first factor, supporting the one-factor structure of the scale. (b) The EQ-28 showed a six-factor structure; six factors explained 54.2% of the variance. Twenty-one of the 28 items (75%) loaded on the first factor, supporting the one-factor structure of the scale. (c) The EQ-15 showed a four-factor structure; four factors explained 53.5% of the variance. Eleven of the 15 items (75%) loaded on the first factor, supporting the one-factor structure of the scale.

Confirmatory Factor analyses (CFA) were performed for every version of the EQ. For the EQ-40 only for the one-factor structure, but for the EQ-28 and EQ-15 both for the one-factor and the three-factor structures (Cognitive Empathy, Emotional Empathy, Social Skills), following the model that has been proposed in earlier studies.[13] As it can be seen in table 3, all the five hypotheses produced a well-fit model. All models were acceptable. The three-factor models (EQ-28 and EQ-15) presented a good fit, with a Root Mean Squared Error of Approximation (RMSEA) of 0.057 and 0.052 respectively, while the RMSEA of the one-factor models was greater, indicating less fit. The Comparative Fit Index (CFI) produced similar results.

Concurrent validity. No significant association between the EQ and the IRI subscales was found. This was the case for the three versions of the EQ. The correlations between the EQ-40 and the IRI subscales were as follows: PT (r=0.14, p=0.5), F (r=0.01, p=0.9), EC (r=0.15, p=0.3), PD (r=–0.1, p=0.9). The correlations between the EQ-28 and the IRI subscales were: PT (r=0.24, p=0.1, F (r=0.07, p=0.6), EC (r=0.29, p=0.07), PD (r=v0.09, p=0.5). The correlations between the EQ-15 and the IRI subscales were: PT (r=0.23, p=0.1, F (r=0.12, p=0.4), EC (r=0.39, p=0.013), PD (r=-0.20, p=0.2). The only significant association was between the EQ-15 and the EC subscale of the IRI.

Discussion

Our study provides psychometric properties for all three versions of the Greek translation of EQ namely EQ-40, EQ-28 and EQ-15. The study involved typical controls (students and normal population) as well as adults of normal intelligence diagnosed with a neurodevelopmental disorder (ASD and/or ADHD) or other psychiatric disorders.

When used as a measure of empathy in a single dimension in adults, EQ discriminated adults of the normal control group from all patients' groups, As expected the lowest scoring was noted among patients with ASD and the difference with all the other clinical groups was statistically significant. The scores of 21.0 (sd=7.7) in the ASD group and 43.6 (sd=8.4) in the healthy controls group are comparable with the scores found in the original study by Baron-Cohen: 20.6 (sd=11.6) and 42.1 (sd=10.6) respectively.[3] The finding that ADHD patients scored lower than healthy control is in line with Groen et al.[13] finding that adults with a subclinical ADHD diagnosis had reduced levels of the EQ scores compared to the control group. Moreover, empathy impairments have been reported in schizophrenia and other psychiatric disorders.[23,24,30] In line with the findings in other countries in Europe,[3–6,13,17] females scored higher than males (p<0.001). This is a consistent finding in Western countries but is reported to be less stable in eastern countries.[8,31,32]

The EQ showed very good internal validity for all versions with a Cronbach's α value of 0.902, 0.892 and 0.793

Table 3. Confirmatory factor analysis (CFA) of the EQ. Item loadings and goodness-of-fit.

Item number	Three-factor (28-item)	Three-factor (15-item)	One-factor (40-item)	One-factor (28-item)	One-factor (15-item)
1	0.61 (CE)		0.62	0.63	
19	0.56 (CE)		0.42	0.49	
25	0.67 (CE)	0.69 (CE)	0.55	0.61	0.59
26	0.69 (CE)	0.70 (CE)	0.60	0.65	0.63
36	0.69 (CE)		0.63	0.67	
41	0.61 (CE)		0.55	0.59	
44	0.45 (CE)	0.43 (CE)	0.37	0.41	0.39
52	0.70 (CE)	0.69 (CE)	0.61	0.66	0.63
54	0.63 (CE)	0.63 (CE)	0.54	0.59	0.59
55	0.51 (CE)		0.36	0.43	
58	0.60 (CE)		0.49	0.54	
6	0.37 (EE)	0.38 (EE)	0.34	0.35	0.37
21	0.57 (EE)		0.56	0.52	
22	0.38 (EE)		0.34	0.35	
27	0.36 (EE)	0.33 (EE)	0.30	0.22	0.22
29	0.49 (EE)		0.48	0.43	
32	0.50 (EE)	0.56 (EE)	0.38	0.35	0.35
42	0.37 (EE)		0.31	0.29	
43	0.59 (EE)		0.57	0.57	
48	0.62 (EE)		0.56	0.47	
50	0.35 (EE)	0.47 (EE)	0.31	0.29	0.33
59	0.25 (EE)	0.33 (EE)	0.17	0.19	0.21
4	0.56 (SS)	0.57 (SS)	0.48	0.45	0.46
8	0.56 (SS)	0.60 (SS)	0.45	0.42	0.46
12	0.59 (SS)	0.62 (SS)	0.53	0.48	0.21
14	0.68 (SS)	0.63 (SS)	0.64	0.60	0.56
35	0.51 (SS)	0.45 (SS)	0.39	0.36	0.35
57	0.73 (SS)		0.59	0.54	
10			0.34		
11			0.24		
15			0.56		
18			0.24		
28			0.22		
34			0.51		
37			0.01		
38			0.29		
39			0.16		
46			0.32		
49			0.55		
60			0.43		
Fit statistics					
x^2(df)	721 (347)	163 (87)	1941 (740)	1055 (350)	318 (90)
p	<0.001	<0.001	<0.001	<0.001	<0.001
x^2/df	2.07	1.87	2.62	3.01	3.53
RMSEA	0.057	0.052	0.071	0.079	0.087
CI-RMSEA	0.051–0.063	0.039–0.064	0.067–0.074	0.073–0.084	0.078v0.099
CFI	0.852	0.916	0.656	0.721	0.749

CE: Cognitive Empathy subscale; EE: Emootional Empathy subscale; SS: Social Skills subscale; RMSEA: Root Mean Squared Error of Approximation; CI-RMSEA: 90% confidence interval of RMSEA; CFI: Comparative Fit Index

for versions EQ-40, EQ-28 and EQ-15, respectively. The scale showed stability for all the items, if any of the items deleted. The value of the 40-item version (Cronbach's a=0.902) is among the highest established in studies so far. It is comparable to the results of the original validation study of EQ[3] on a group of 197 healthy control volunteers where EQ-40 showed excellent reliability (Cronbach's a=0.92). Most 40-item EQ translations also show high to acceptable Cronbach's α values: the Japanese[9] 0.86, the French[7] 0.81, the Korean[8] 0.78, the Serbian[17] 0.782, the Italian[14] 0.79, the Swiss[33] 0.86 the Russian[16] 0.85, the Dutch[13] 0.89. The EQ-28 showed a Cronbach's a of 0.892 which is higher than the one found in a British (Cronbach's a=0.85),[6] a Serbian (Cronbach's a= 0.805)[17] and a Croatian sample (Cronbach's a=0.871).[34] The Cronbach's a value of 0.793 obtained for the 15-item version is comparable to the 0.55–0.78 values reported in Muncer and Link study[6] who were the first to introduce this version and lower to the values reported in an Iranian (Cronbach's a=0.84)[19] and a Chinese version (Cronbach's a=0.86).[32]

The test-retest (1 month) reliability index (Pearson r) for the 40-item version was 0.928 indicating excellent test-retest reliability. In the original study,[3] Pearson r had a value of 0.97 while in the French version (1.5–6 months)[7] it was 0.93, in the Korean (1 month)[8] 0.84, in the Italian (1 month)[14] 0.85, and in the Dutch (15 months)[13] 0.78. Test-retest reliability remained high in the short forms in line with findings from previous studies.[5,13,19,32]

In confirmatory factor analysis (CFA) we examined the one factor model for all three versions and the three-factor model for the two short forms, namely the 28-item version suggested by Lawrence et al[5] and the 15-item version introduced by Muncer and Ling.[6] In our study all the five hypotheses produced a well-fit model with the multidimensional model showing an even better fit in the two short forms. The number of factors derived from EQ has been a controversial issue in the literature. A number of studies supported the unidimensional model[3,4] not only for the 40-item but also for the 28-item and the 15-item version. Specifically, Allison et al.[4] pointed out that factor analysis which is sensitive to direction of responses would not lead to reliable results since half of the questions of EQ are designed to produce agreement and the other half disagreement. Other studies supported the three-factors structure proposed by Lawrence[5,7,8,11,17] consisting of emotional empathy, cognitive empathy and social skills or the tripartite 15-item model suggested by Muncer and Ling.[6,8,13,15,19,32]

Across international studies, criterion validity of the EQ is indicated by correlation between the EQ and a range of other measures of empathy including IRI.[20] In our study, the correlations between the EQ and the IRI subscales were not of statistical significance in all three versions apart from a significant association between the EQ-15 and the EC subscale of the IRI. Although IRI has been used in many previous studies, its utility as a criterion validity of the EQ has been questioned. Weak, moderate and negative correlations between EQ and IRI were found in the Serbian,[17] the Korean[8] and a Chinese[31] translation. It might be that sympathy as measured in IRI does not coincide with empathy and personal distress is not necessarily related to empathetic concerns.[5] Also, our findings support the notion that the place of "social skills" in the concept and operationalization of empathy may need reexamination. Although it seems reasonable that social skills form a part of the concept of empathy, it might be more correct to consider empathy and social skills as interrelated but independent, than to subsume social skills under empathy.

Our study has some limitations. First, participants did not consist of a randomized representative sample. Second, the test retest validity was examined only in a students' population. Including clinical populations is probably important when testing for test-retest reliability since as already mentioned by other researchers[13] EQ may measure some state factors which might be less stable in subjects having some kind of psychopathology. Finally, EQ did not show an acceptable concurrent validity in relation to IRI. Since IRI is the only instrument supposed to tap empathy that has been validated in Greek,[21] we did not have the possibility to examine concurrent validity by using another instrument.

Apart from the above limitations when using EQ as assessment tool it is important to consider self-reflection or meta-cognitive skills in order to interpret self-reporting empathy. We should have in mind that the reliance on self-report of clinical and research characteristics of patients with ASD should be considered carefully, particularly with regard of autistic traits, as poor awareness of autism related traits may lead to an under-reporting of autism symptoms and over-reporting of social competency.[13,35] It may be due to the same mechanisms that underlie commonly reported difficulty of patients with ASD with understanding minds of others.

To conclude, the EQ-Greek version showed good psychometric properties and among adults of normal intelligence may discriminate normal controls from ASD patients. Therefore, although EQ is not considered to be a diagnostic tool it can be of help during the evaluation of empathy in clinical populations and especially in subjects with neurodevelopmental disorders.

References

1. Baron-Cohen S, Jolliffe T, Mortimore C, Robertson M. Another advanced test of theory of mind: Evidence from very high functioning adults with autism or Asperger Syndrome. *J Child Psychol Psychiatry* 1997, 38:813–822, doi:10.1111/j.1469-7610.1997.tb01599.x
2. Baron-Cohen S, Wheelwright S, Robinson J, Woodbury-Smith M. The Adult Asperger Assessment (AAA): a diagnostic method. *J Autism Dev Disord* 2005, 35:807–819, doi: 10.1007/s10803-005-0026-5
3. Baron-Cohen S and Wheelwrigh S. The empathy quotient: An investigation of adults with Asperger syndrome or high functioning autism, and normal sex differences. *J Autism Dev Disord* 2004, 34:163–175, doi:10.1023/b:jadd.0000022607.19833.00
4. Allison AS, Baron-Cohen S, Wheelwright SJ, Stone MH, Muncer SJ. Psychometric analysis of the Empathy wQuotient (EQ). *Pers Individ Differ* 2011, 51:829–835, doi: 10.1016/j.paid.2011.07.005
5. Lawrence EJ, Shaw P, Baker D, Baron-Cohen S, David AS. Measuring empathy: Reliability and validity of the empathy quotient. *Psychol Med* 2004, 34: 911–919, doi: 10.1017/s0033291703001624
6. Muncer SJ and Ling J. Psychometric analysis of the Empathy Quotient (EQ) scale. *Pers Individ Differ* 2006, 40:1111–1119, doi:10.1016/j.paid.2005.09.020
7. Berthoz S, Wessa M, Kedia G, Wicker B, Grèzes J. Cross-cultural validation of the empathy quotient in a French speaking sample. *Can J Psychiatry* 2008, 53:469–477, doi: 10.1177/070674370805300712
8. Kim J, Lee SJ. Reliability and validity of the Korean version of the empathy quotient scale. *Psychiatry Investig* 2010, 7:24–30, doi: 10.4306/pi. 2010.7.1.24
9. Wakabayashi A, Baron-Cohen S, Uchiyama T, Yoshida Y, Kuroda M, Wheelwright S. Empathizing and systemizing in adults with and without autism spectrum conditions: Cross-cultural stability. *J Autism Dev Disord* 2007, 37:1823–1832, doi: 10.1007/s10803-006-0316-6
10. Wheelwright S. Empathizing and systemizing in adults with and without autism spectrum conditions: Cross-cultural stability. *J Autism Dev Disord* 2007, 37:1823–1832, doi: 10.1007/s10803-006-0316-6
11. Groen Y, den Heijer A, Fuermaier A, Althaus M, Tucha A. Reduced emotional empathy in adults with subclinical ADHD: evidence from the empathy and systemizing quotient. *Atten Defic Hyperact Disord* 2018, 10:141–150, doi: 10.1007/s12402-017-0236-7
12. Guan R, Jin L, Qian M. Validation of the empathy quotient–short form among Chinese healthcare professionals. *J Soc Behav Pers* 2012, 40:75–84, doi: 10.2224/sbp.2012.40.1.75
13. Groen Y, Fuermaie ABM, Den Heijer AE, Tucha O, Althaus M. The empathy and systemizing quotient: The psychometric properties of the Dutch version and a review of the cross-cultural stability. *J Autism Dev Disord* 2015, 45:2848–2864, doi: 10.1007/s10803-015-2448-z
14. Preti A, Vellante M, Baron-Cohen S, Zucca G, Petretto DR, Masala C. The empathy quotient: A cross-cultural comparison of the Italian version. *Cogn Neuropsychiatry* 2011, 16:50–70, doi: 10.1080/13546801003790982
15. Gouveia VV, Milfont TL, Gouveia RS, Neto JR, Galvão L. Brazilian-Portuguese empathy quotient: Evidences of its construct validity and reliability. *Span J Psychol* 2012, 15: 777–782, doi: 10.5209/rev_sjop.2012.v15.n2.38889
16. Kosonogov V. The psychometric properties of the Russian version of the empathy quotient. *Psychology in Russia: State of the Art* 2014, 7:96–104, doi: 10.11621/pir.2014.0110
17. Dimitrijević A, Hanak N, Vukosavljević-Gvozden T, Opačić G. Psychometric properties of the Serbian version of the empathy quotient (S-EQ). *Psihologija* 2012, 45:257–276, doi: 10.2298/PSI1203257D
18. Bora E and Baysan L. Psychometric features of Turkish version of empathy quotient in university students. *Bulletin of Clinical Psychopharmacology* (Klinik Psikofarmakol Bülteni) 2001, 19:39–47
19. Wind S, Yaghoubi P, Mansouri B. Exploring the psychometric properties of the empathy quotient for farsi speakers. *Curr Psychol* 2018, doi.org/10.1007/s12144-018-9938-z
20. Davis M. A *multidimensional approach to individual differences in empathy.* Catalog of Selected Documents in Psychology 1980, 10, 85
21 Tsitsas G, Theodosopoulou M, Malikiossi-Loizou M. Interpersonal Reactivity Scale. In A. Stalikas, S. Triliva, & P. Roussou (eds) *The psychometric tools in Greece*. Pedio, Athens, 2012 (In Greek)
22. Empathy Quotient (Adults), Greek version. Available from: http://www.autismresearchcentre.com
23. Konstantakopoulos G, Oulis P, Ploumpidis D, Patrikelis P, Nikitopoulou S, Papadimitriou GN, David AS. Self-rated and performance-based empathy in schizophrenia: the impact of cognitive deficits. *Soc Neurosci* 2014, 9:590–600, doi: 10.1080/17470919.2014.934395
24. Konstantakopoulos G, Ioannidi N, Patrikelis P, Gonidakis F. Empathy, mentalizing, and cognitive functioning in anorexia nervosa and bulimia nervosa. *Soc Neurosci* 2020, 15:477–488, doi: 10.1080/17470919.2020.1760131
25. Pehlivanidis A, Spyropoulou A, Galanopoulos A, Papachristou CA., Papadimitriou GN. Attention deficit hyperactivity disorder (ADHD) in adults: Clinical recognition, diagnosis and therapeutic interventions. *Arch Hell Med* 2012, 29:562–576
26. Kooij SJ, Francken MH, Bron TI. *Diagnostisch Interview Voor ADHD in Adults* (DIVA). Greek Version (A. Pehlivanidis, K. Papanikolaou). DIVA Foundation, The Hague, the Netherlands, 2010
27. Lord C, Rutter M, DiLavore PC, Risi S, Gotham K, Bishop SL. *Autism diagnostic observation schedule*. Second Edition, Torrance, CA: Western Psychological Services, 2012
28. Papanikolaou K, Paliokosta E, Houliaras G, Vgenopoulou S, Giouroukou E, Pehlivanidis A et al. Using the Autism Diagnostic Interview-Revised and the Autism Diagnostic Observation Schedule-Generic for the diagnosis of autism spectrum disorders in a Greek sample with a wide range of intellectual abilities. *J Autism Dev Disord* 2009, 39:414–20, doi: 10.1007/s10803-008-0639-6
29. Pehlivanidis A, Papanikolaou K, Mantas V, Kalantzi E, Korobili K, Xenaki LA et al. Lifetime co-occurring psychiatric disorders in newly diagnosed adults with attention deficit hyperactivity disorder (ADHD) or/and autism spectrum disorder (ASD). *BMC Psychiatry* 2020, 20:42, doi: 10.1186/s12888-020-02828-1
30. Pepper KL, Demetriou EA, Park SH, Boulton KA, Hickie IB, Thomas EE et al. Self-reported empathy in adults with autism, early psychosis, and social anxiety disorder. *Psychiatry Res* 2019, 281:112604, doi: 10.1016/j.psychres.2019.112604
31. Zhou N, Wang D, Chasson G, Xu X, Wang J, Lockwood MI. Psychometric properties of the Chinese Empathy and Systemizing Quotients in a non-clinical sample. *Curr Psychol* 2020, doi.org/10.1007/s12144-020-00653-z
32. Zhao Q, Ren Q, Sun Y, Wan L, Hu L. Impact Factors of Empathy in Mainland Chinese Youth. *Front Psychol* 2020, 11:688, doi: 10.3389/fpsyg.2020.00688
33. Zeyer A, Boelsterli K, Brovelli D, Odermatt F. Brain Type or Sex Differences? A structural equation model of the relation between brain type, sex, and motivation to learn science. *Int J Sci Educ* 2012, 34:779–802, doi: 10.1080/09500693.2011.635165
34. Wertag A and Hanzec I. Factor structure and psychometric properties of the Croatian short version of The Empathy Quotient. *Suvremena psihologija* 2016, 19:101–110, doi:10.21465/2016-SP-191-09
35. Johnson SA, Filliter JH, Murphy RR. Discrepancies between self- and parent-perceptions of autistic traits and empathy in high functioning children and adolescents on the autism spectrum. *J Autism Dev Disord* 2009, 39:1706–1714, doi: 10.1007/s10803-009-0809-1

Ερευνητική εργασία

Ψυχομετρικές ιδιότητες του Πηλίκου Ενσυναίσθησης - Ελληνική Έκδοση

Αρτέμιος Πεχλιβανίδης,[1] Κωνσταντίνος Τάσιος,[2] Κατερίνα Παπανικολάου,[3] Αθανάσιος Δουζένης,[2] Ιωάννης Μιχόπουλος[2]

[1]Α΄ Ψυχιατρική Κλινική, Εθνικό και Καποδιστριακό Πανεπιστήμιο Αθηνών, Αιγινήτειο Νοσοκομείο, Αθήνα

[2]Β΄ Ψυχιατρική Κλινική, Εθνικό και Καποδιστρικό Πανεπιστήμιο Αθηνών, ΠΓΝ «Αττικόν», Αθήνα

[3]Παιδοψυχιατρική Κλινική, Εθνικό και Καποδιστριακό Πανεπιστήμιο Αθηνών, ΓΝΠ «Η Αγία Σοφία», Αθήνα

ΙΣΤΟΡΙΚΟ ΑΡΘΡΟΥ: Παραλήφθηκε 14 Ιουνίου 2020/Αναθεωρήθηκε 11 Οκτωβρίου 2020/Δημοσιεύτηκε Διαδικτυακά 17 Μαρτίου 2021

ΠΕΡΙΛΗΨΗ

Η πρωτότυπη έκδοση του Πηλίκου Ενσυναίσθησης (ΠΕ) στην Αγγλική γλώσσα αποτελεί ένα αυτοσυμπληρούμενο ερωτηματολόγιο που μετρά την έννοια της ενσυναίσθησης σε ενηλίκους φυσιολογικής νοημοσύνης. Είναι ήδη γνωστό ότι το ΠΕ είναι ευαίσθητο ως προς το φύλο και τις νευροαναπτυξιακές διαταραχές, ιδιαίτερα τη Διαταραχή Αυτιστικού Φάσματος (ΔΑΦ). Έχει μεταφραστεί σε πολλές γλώσσες ανά τον κόσμο. Στόχος της παρούσας μελέτης ήταν η μελέτη των ψυχομετρικών ιδιοτήτων της ελληνικής έκδοσης του ΠΕ η οποία είναι ελεύθερα διαθέσιμη στο www.autismresearch.com. Η μελέτη πραγματοποιήθηκε στην Α΄ και Β΄ Ψυχιατρική Κλινική του Εθνικού και Καποδιστριακού Πανεπιστημίου Αθηνών, στα νοσοκομεία «Αιγινήτειο» και «Αττικόν» αντίστοιχα και στην Ψυχιατρική Κλινική του Ψυχιατρικού Νοσοκομείου Φυλακών Κορυδαλλού. Δύο ομάδες συμπλήρωσαν την πρωτότυπη έκδοση των 60 προτάσεων. Η μία ομάδα αποτελείτο από άτομα του γενικού πληθυσμού και εθελοντές μεταπτυχιακούς φοιτητές (ομάδα ελέγχου, N=127) και η δεύτερη από ασθενείς που παρακολουθούνται στη Μονάδα Νευροαναπτυξιακών Διαταραχών Ενηλίκων της Α΄ Ψυχιατρικής Κλινικής ΕΚΠΑ, τα Εξωτερικά Ιατρεία της Β΄ Ψυχιατρικής Κλινικής ΕΚΠΑ, και τη Ψυχιατρική Κλινική του των Φυλακών Κορυδαλλού (ομάδα ασθενών, N=196). Εξετάστηκαν και οι τρεις εκδοχές του ΠΕ, 40, 28 και 15 λημμάτων. Το ΠΕ επέδειξε πολύ καλή εσωτερική εγκυρότητα: η τιμή του Cronbach α ήταν 0,902, 0,892 και 0,793 αντίστοιχα. Το ΠΕ έδειξε πολύ καλή μεταβλητότητα εξέτασης-επανεξέτασης: ο Συντελεστής Ενδοταξικής Συσχέτισης ήταν 0.928, 0,924 και 0,855 αντίστοιχα. Η συγχρονική εγκυρότητα που εξετάστηκε μέσω ανάλυσης συσχέτισης με τον Δείκτη Διαπροσωπικής Αντιδραστικότητας (ΔΔΑ) δεν ανέδειξε σημαντικές συσχετίσεις ανάμεσα στο ΠΕ και τον ΔΔΑ. Το ΠΕ ανέδειξε μονοπαραγοντική δομή και στις 3 εκδόσεις του. Εξετάσθηκαν και οι τα μοντέλα τριών παραγόντων (Γνωσιακή Ενσυναίσθηση, Συναισθηματική Ενσυναίσθηση, Κοινωνικές Δεξιότητες) για τις εκδόσεις των 28 και 15 λημμάτων, τα οποία έδειξαν, επίσης, πολύ καλή εγκυρότητα. Όταν χρησιμοποιήθηκε ως μέτρο ενσυναίσθησης σε μία διάσταση στους ενηλίκους, διέκρινε την ομάδα ελέγχου από την ομάδα ασθενών. Η Μέση τιμή του για το συνολικό δείγμα ήταν 35,84 με τη χαμηλότερη βαθμολογία να παρατηρείται στους ασθενείς με ΔΑΦ. Όπως αναμενόταν οι γυναίκες είχαν υψηλότερη μέση τιμή από τους άνδρες ($p<0,001$). Συμπερασματικά, η ελληνική έκδοση του ΠΕ επέδειξε καλά ψυχομετρικά χαρακτηριστικά και θα μπορούσε να αξιοποιηθεί ως χρήσιμο κλινικό εργαλείο για την αξιολόγηση της ενσυναίσθησης σε κλινικούς πληθυσμούς και ιδιαίτερα σε πληθυσμούς με ΔΑΦ και άλλες νευροαναπτυξιακές διαταραχές.

ΛΕΞΕΙΣ ΕΥΡΕΤΗΡΙΟΥ: Πηλίκο Ενσυναίσθησης, EQ, ελληνική γλώσσα, ψυχομετρικές ιδιότητες.

Συγγραφέας επικοινωνίας: Αρτέμιος Πεχλιβανίδης, Α΄ Ψυχιατρική Κλινική, Εθνικό και Καποδιστριακό Πανεπιστήμιο Αθηνών, Αιγινήτειο Νοσοκομείο, Λεωφ. Βασιλίσσης Σοφίας 72–74, 115 26 Αθήνα • e-mail: apechlib@med.uoa.gr