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Validity and reliability of the Turkish version of Public Attitudes Toward Epilepsy scale

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ABSTRACT

Objective: This study was conducted to test the validity and reliability of the Turkish version of the Public Attitudes Toward Epilepsy (PATE) scale, which aims to understand public perceptions of seizures and epilepsy.
Methods: The scale was translated following the standard procedures. For psychometric validation, the Turkish version of the PATE scale was administered to 201 native Turkish speakers above the age of 18 who had no history of seizures or epilepsy. It was found that the respondents were able to fill out the scale quickly and without difficulty in understanding the translated items on the scale.
Results: Cronbach's alpha coefficient was found to be 0.843 for the overall scale and above 0.7 for each individual item. Cronbach's alpha was 0.78 for the general domain and 0.792 for the personal domain. Exploratory and confirmatory factor analyses were carried out and showed that the scale had a structure similar to that of the original scale, with the 14 items grouped under two dimensions, similar to the original scale.
Conclusion: The Turkish version of the PATE scale was a valid and reliable tool to measure the attitudes toward epilepsy in Turkish society.

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1. Introduction

Epilepsy is a worldwide neurological disorder with significant effects on social identity. Its prevalence is 4 to 6 times greater in developing countries than in developed countries, and various studies conducted in Turkey report a lifelong prevalence of epilepsy varying between 7 and 12.2 per thousand [1–4].

Epilepsy stigmatization significantly impairs the quality of life and restricts social life of patients with epilepsy (PWE). It has been argued that patients are hindered less by the seizures themselves than by the associated psychosocial problems [5]. Advanced age, being single, unemployment, lower educational level, lower socioeconomic status, more frequent seizures, psychiatric comorbidities accompanying the illness, and lower self-efficacy are among the characteristics found to be associated with the stigma of epilepsy [6–10]. Predictors of stigma include adopting a long-term strategy of hiding the illness [11] and parental overprotectiveness that can extend to an advanced age [12–14]. Other factors associated with stigma include unpredictable seizures, seizure-related accidents, and future anxiety about one's working or personal lives. Public attitudes toward epilepsy affect how PWE perceive, internalize, and accept their condition. The Public Attitudes Toward Epilepsy (PATE) scale provides a quantitative evaluation of public perspectives of seizures and epilepsy [15]. Evaluating public perspectives is important for the development of coping strategies and improving patients' quality of life. The scale has, to date, been translated into various languages, including Chinese, Indonesian, Malay, and Korean, and the validity and reliability of these versions have been examined [16–19]. The validity and reliability of a Turkish version of the scale, however, have yet to be studied, and accordingly, the present study aimed to evaluate the psychometric characteristics of the Turkish version of this scale.

2. Methods

2.1. PATE scale

The PATE scale consists of 14 items grouped into two domains, being general and personal [15]. The general domain consists of nine items, and the personal domain consists of five items. The general domain concerns general attitudes toward epilepsy, whereas the personal domain asks the participant to think about personal life issues, such as marriage and employment. Each item is scored on a 5-point Likert scale, with "strongly agree" assigned a score of 1 and "certainly disagree" assigned a score of 5. Items 2, 5, 10, 11, and 14 are inversely scored. The higher the score on the scale, the more negative the attitude. The PATE scale is considered a valid and reliable test instrument with good content and construct validity.

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2.2. Subjects

The participants in the study were selected from among the residents of the Yozgat province of Turkey, who had no history of seizures or epilepsy. The people of Yozgat consist of a single language and a single faith. Criteria for inclusion in the study were being 18 years old or older, being a native Turkish speaker, and consenting to participate in the study. Criteria for exclusion were having visible intellectual or cognitive defects, having a history of seizures or epilepsy, or being illiterate.

The participants' sociodemographic characteristics, such as age, gender, marital status, educational attainment, and occupation were recorded, as well as information on any family members with epilepsy. All of the participants provided informed consent in writing. The study was conducted in compliance with the Helsinki declaration, and Yozgat Bozok University Medical School Ethics Committee approval was obtained (2017-KAEK-189_2020.02.12_17).

2.3. Procedures

2.3.1. Translation of the PATE scale

The original PATE scale was translated into Turkish by three separate researchers. A consensus meeting was held to reconciliate the 3 forward translations, and the resulting Turkish text was translated back into English by a professional translator. The authors compared the resulting English text with the original scale in terms of meaning and comprehension and decided that the two were identical. The resulting Turkish version of the PATE scale was thus finalized. The finalized Turkish translation of PATE was reviewed for typos or grammatical errors.

2.3.2. Cognitive debriefing

Pretest was carried out in 20 native Turkish speakers from different social background and education level to ensure consistency in comprehensibility. Difficulties in answering were also explored.

2.4. Statistical analysis

All statistical analyses were performed using SPSS 25.0 software (IBM SPSS Statistics 25 software (Armonk, NY: IBM Corp.)) and AMOS 23.0 software. Continuous variables were expressed as mean ± standard deviation (SD), median (minimum–maximum values), and categorical variables as number and percent. Construct validity was investigated using exploratory and confirmatory factor analysis. We used Varimax Rotation for exploratory factory analysis. The Kaiser–Meyer–Olkin (KMO) test was examined for sampling adequacy. Floor and ceiling effects were calculated as the proportion of patients who have the minimum or maximum possible scores. The scale's reliability was measured by item-total correlations, Cronbach's Alpha if item removed and Cronbach's alpha coefficient. Cronbach's α values of 0.7 to 0.9 were considered acceptable, whereas values of 0.6 to 0.7 were considered satisfactory.

3. Results

As explained above, the finalized Turkish version of the scale was created following a standard translation (Appendix 1). The scale was intended to take around 5 min to fill out.

The ages of the 201 participants in the study varied between 18 and 75 years, and the mean age was 37.52 ± 11.79. Of the participants, 59.7% were female and 40.3% were male. In terms of marital status, 27% were single, 67% were married, and 6% were divorced. In terms of occupation, 9.5% were students, 16.9% were housewives, 69.2% were employed, 2% were unemployed, and 3.5% were retired. In terms of educational attainment, 22.9% had none or primary education, 27.4% had secondary school/high school education, and 49.8% had college or university education. A history of seizures or epilepsy in their family was reported by 12.4% of the participants (Table 1).

Table 1
Demographic characteristic of participants.

		Mean ± SD	Med (min–max)
Age		37.52 ± 11.79	36 (18–75)
		(n = 201)	(%)
Sex	Female	120	59.7
	Male	81	40.3
Marital status	Single	54	27.0
	Married	134	67.0
	Widowed	12	6.0
Employment status	Student	19	9.5
	Housewife	34	16.9
	Employed	139	69.2
	Unemployed	2	1.0
	Retired	7	3.5
Education level	None or primary education	46	22.9
	Secondary school/high school	55	27.4
	College or university	100	49.8
Individual monthly income	0–2500 TL (<380 USD)	111	55.2
	2500–7500 TL (380–1142 USD)	83	41.3
	>7500 TL(>1142 USD)	7	3.5
Family member with epilepsy/seizures	Yes	24	12.4
	No	170	87.6

SD = standard deviation; 1 USD = 6.73 TL.

3.1. Translation equivalence and acceptability

The back-translation of the Turkish version of the PATE scale was comparable with the original version. To achieve consistency, a pilot study was conducted with 20 native Turkish speakers from varying social backgrounds and with different levels of educational attainment. The participants reported that the items were easy to understand and that they had had no trouble responding to the questionnaire. Thus, no revisions were made to the Turkish translation of the PATE scale at this stage.

3.2. Validation testing

3.2.1. Equal item variance

Table 2 presents the means, standard deviations, and percentage distributions of the responses to each item on the Turkish PATE scale. In the general domain, the means and standard deviations of the items varied from 1.23 to 2.42 and from 0.69 to 1.59, respectively. In the personal domain, the means varied between 1.42 and 2.23, and standard deviations varied between 0.92 and 1.42. Moreover, the overall mean for the personal domain (2.00 ± 0.97) was higher than in the general domain (1.78 ± 0.75), indicating more negative attitudes for the personal domain.

3.2.2. Reliability

Cronbach's alpha coefficient was acceptable with 0.843 for the entire scale and above 0.7 for each individual item. Cronbach's alpha was 0.78 for the general domain and 0.792 for the personal domain. Each item on the scale had high reliability. There was no need to remove any of the items from the scale as each item produced reliable measurements. Moreover, the individual dimensions of the scale also produced reliable results (Table 3).

3.2.3. Floor–ceiling effect

Of the 201 participants in the study, 24 (11.9%) received the lowest possible score on the scale (14 points) (Floor effect). The highest recorded score was 61 points, received by one participant. No participant received the highest possible score of 70 points (Floor effect). Looking at

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Table 2
Percentage distribution of the responses given by the participants and floor/ceiling values.

	Strongly disagree (n/%)	Disagree (n/%)	Neutral (n/%)	Agree (n/%)	Strongly agree (n/%)	Mean ± SD	Med (min–max)	Floor/ceiling (%)
G1	151 (75.1%)	22 (10.9%)	8 (4%)	8 (4%)	12 (6%)	1.55 ± 1.14	1 (1–5)	75.1/6
G2[a]	151 (75.1%)	27 (13.4%)	3 (1.5%)	9 (4.5%)	11 (5.5%)	1.52 ± 1.10	1 (1–5)	75.1/5.5
G3	141 (70.1%)	26 (12.9%)	9 (4.5%)	12 (6%)	13 (6.5%)	1.66 ± 1.21	1 (1–5)	70.1/6.5
G4	135 (67.2%)	38 (18.9%)	7 (3.5%)	5 (2.5%)	16 (8%)	1.65 ± 1.19	1 (1–5)	67.2/8
G5[a]	91 (45.3%)	32 (15.9%)	18 (9%)	22 (10.9%)	38 (18.9%)	2.42 ± 1.59	2 (1–5)	45.3/18.9
G6	136 (67.7%)	28 (13.9%)	17 (8.5%)	6 (3%)	14 (7%)	1.68 ± 1.19	1 (1–5)	67.7/7
G7	173 (86.1%)	17 (8.5%)	6 (3%)	2 (1%)	3 (1.5%)	1.23 ± 0.69	1 (1–5)	86.1/1.5
G8	105 (52.2%)	26 (12.9%)	18 (9%)	23 (11.4%)	29 (14.4%)	2.23 ± 1.53	1 (1–5)	52.2/14.4
G9	104 (51.7%)	36 (17.9%)	26 (12.9%)	17 (8.5%)	18 (9%)	2.05 ± 1.34	1 (1–5)	51.7/9
P10[a]	86 (42.8%)	42 (20.9%)	44 (21.9%)	6 (3%)	23 (11.4%)	2.19 ± 1.33	2 (1–5)	42.8/11.4
P11[a]	88 (43.8%)	40 (19.9%)	40 (19.9%)	6 (3%)	27 (13.4%)	2.22 ± 1.39	2 (1–5)	43.8/13.4
P12	155 (77.1%)	24 (11.9%)	12 (6%)	4 (2%)	6 (3%)	1.42 ± 0.92	1 (1–5)	77.1/3
P13	93 (46.3%)	32 (15.9%)	40 (19.9%)	8 (4%)	28 (13.9%)	2.23 ± 1.42	2 (1–5)	46.3/13.9
P14[a]	119 (59.2%)	33 (16.4%)	12 (6%)	14 (7%)	23 (11.4%)	1.95 ± 1.40	1 (1–5)	59.2/11.4
General						1.78 ± 0.75	1.56 (1–4.33)	21.9/0
Personal						2.00 ± 0.97	1.8 (1–5)	25.9/2.5
Total						1.86 ± 0.73	1.71 (1–4.36)	11.9/0

[a] Item G2, G5, P10, P11 and P14 were scored in reverse.

the items, it can be seen that the respondent generally scored low, as indicated by the floor effect values and the means and percentages of the individual items.

3.2.4. Exploratory factor analysis results

The KMO value was 0.833, and Bartlett's test value was 1012.648 ($p = 0.0001$). The results of the KMO and Bartlett's tests suggest that the data are suitable for a factor analysis. Using an exploratory factor analysis with 2 factors extracted, the total variance explained was 46.24%. Looking at the factor loadings, the first factor corresponds to the "general" domain, similar to the original scale, and the second factor corresponds to the "personal" domain (Table 4).

3.2.5. Confirmatory factor analysis results

A confirmatory factor analysis was also conducted to see if the original construct of PATE was valid when applied to Turkish culture (Table 4). The confirmatory factor analysis produced the following fit indices: $\chi^2 = 203.46$, SD = 76, $\chi^2/SD = 2.7$, comparative fit index (CFI) = 0.866, goodness of fit index (GFI) = 0.874, and Root Mean Square Error of Approximation (RMSEA) = 0.092. These findings indicate that the results are at acceptable levels for the 2-factor construct of the scale. Overall, the results confirm the model and indicate that the original construct of PATE applies also to the Turkish version.

Considered together, the findings related to reliability; the exploratory factor analysis and the confirmatory factor analysis suggest that this scale can be used in Turkish society.

Table 3
Reliability results.

	Corrected item-total correlation	Cronbach's α If item deleted
General domain		
1. People with epilepsy should not study in college or university.	0.572	0.828
2. People with epilepsy have the same rights as all people.	0.220	0.847
3. People with epilepsy should be isolated from others.	0.522	0.830
4. People with epilepsy should not participate in social activities.	0.494	0.832
5. I will not mind being seen in the company with someone known to have epilepsy.	0.505	0.832
6. People with epilepsy should not marry.	0.620	0.825
7. I would stay away from a friend if I knew she/he had epilepsy.	0.485	0.836
8. People with epilepsy should study in a special school.	0.377	0.841
9. Schools should not place children with epilepsy in regular classrooms.	0.434	0.836
Personal domain		
10. I would date someone even though he/she has epilepsy.	0.590	0.826
11. I would marry someone with epilepsy, even though he/she has epilepsy	0.588	0.825
12. I feel uncomfortable working with someone who has epilepsy.	0.595	0.829
I will advise my family members against marrying someone with epilepsy.	0.546	0.828
14. If I am an employer, I would give equal employment opportunities to someone with epilepsy.	0.350	0.842
	Item number	Cronbach's alpha
General	9	0.780
Personal	5	0.792
Total	14	0.843

4. Discussion

The Turkish version of the PATE scale was found to have good psychometric characteristics. The scale, translated following standard procedures [20], is proven to be a valid and reliable version. The Cronbach's α value of 0.843, well above the recommended threshold

Table 4
Exploratory and confirmatory factor analysis results.

Exploratory factor loadings			Confirmatory factor loadings		
G4	Factor 1	0.696	G9	Factor 1	0.481
G3	Factor 1	0.670	G8	Factor 1	0.425
G1	Factor 1	0.663	G7	Factor 1	0.550
G6	Factor 1	0.597	G6	Factor 1	0.686
G9	Factor 1	0.567	G5	Factor 1	0.514
G8	Factor 1	0.553	G4	Factor 1	0.616
G7	Factor 1	0.537	G3	Factor 1	0.666
G5	Factor 1	0.457	G2	Factor 1	0.258
G2	Factor 1	0.405	G1	Factor 1	0.682
P11	Factor 2	0.897	P14	Factor 2	0.379
P10	Factor 2	0.894	P13	Factor 2	0.530
P13	Factor 2	0.619	P12	Factor 2	0.451
P14	Factor 2	0.573	P11	Factor 2	0.943
P12	Factor 2	0.504	P10	Factor 2	0.310

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(0.7), indicates that the scale has sufficient internal consistency, and this value is close to the values reported for other versions of the scale [16–19]. The reliability of the Turkish PATE scale was confirmed from the Cronbach's α values, which were above the recommended threshold for both the general and personal domains. Having met the criteria for internal consistency in both the general and personal domains, exploratory and confirmatory factor analyses were conducted.

Item 2 of the general domain had a weak factor loading (<0.3), which can be attributed to participants responding to this item in line with general expectations, and then giving different responses to the following real-life examples from different fields. Known also as response bias, this phenomenon may explain why the participants, after stating that people with epilepsy should enjoy the same rights as everyone else, responded differently when it came to the right of PWE to participate in education, social activities, and relationships with the opposite sex, contradicting their previous response. Item 2 was not removed because the item-total correlation was above 0.20, the Cronbach's α value did not change when the item was removed, and we considered the item to be important.

The scores for the items in the general and personal domains were found to be lower than those reported for other societies [16–18]. This may be due to the fact that 12% of the participants had people with a history of seizures or epilepsy in their families and that college and university graduates made up a large proportion of the participants (49.8%).

One limitation of the study is that it was conducted in an urban setting and in a single city. Although previous studies report that gender has no effect on stigma [21,22], the overrepresentation of women and highly educated people among the participants may have created overly positive results.

Increasing awareness of the psychosocial and economic burden of epilepsy, along with health policies that take this burden into account, would help overcome prejudices, would address the lack of information and the false beliefs in society, and give hope to PWE and their families.

5. Conclusion

This study has shown that the Turkish version of the PATE scale is a valid and reliable measurement instrument.

Declaration of competing interest

The authors do not have any conflicts of interest to disclose.

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Appendix 1. Epilepsiye Yönelik Toplumun Tutum Ölçeği

Aşağıdaki cümlelere katılıp katılmadığınızı içinizden geldiği gibi cevaplayınız. Doğru ya da yanlış cevap yoktur. Her soru, aşağıdaki gibi 5 olası cevaptan birine sahiptir. Aşağıdaki seçeneklerinden görüşünüze en yakın olanı işaretleyiniz. Lütfen hiçbir cümleyi atlamamaya özen gösteriniz.

	Kesinliklle Katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle Katılıyorum
Genel Alan					
1. Epilepsili (Sara hastalığı olan) bireyler yüksekokul veya üniversite okumamalıdır.					
2. Epilepsili bireyler tüm insanlarla aynı haklara sahiptir.					
3. Epilepsili bireyler diğer insanlardan ayrı tutulmalıdır.					
4. Epilepsili bireyler sosyal etkinliklere katılmamalıdır.					
5. Epilepsisi olan biriyle ortak olmak benim için sorun değildir.					
6. Epilepsili insanlar evlenmemelidir.					
7. Epilepsisi olduğunu bildiğim arkadaşımdan uzak dururum.					
8. Epilepsili insanlar özel okullarda okumalıdır.					
9. Okullar epilepsili çocukları normal sınıflara yerleştirmemelidir.					
Kişisel Alan					
10. Epilepsisi olsa bile biriyle sevgili olurdum.					
11. Epilepsisi olsa bile o kişiyle evlenirim.					
12. Epilepsisi olan biriyle çalışmaktan rahatsızlık duyarım.					
13. Aile fertlerime epilepsili biriyle evlenmelerini tavsiye etmem.					
14. İşveren olsam, epilepsisi olan birine diğerleri ile eşit iş imkanı verirdim.					

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