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VALIDITY AND RELIABILITY OF THE TURKISH VERSION OF THE QUESTIONNAIRE FOR PHYSICAL THERAPY STUDENTS' ATTITUDES TOWARD THEIR PROFESSION AND EDUCATION (Q-PTSAPE)

ORIGINAL ARTICLE

ABSTRACT

Purpose: This study aimed to assess the validity and reliability of Turkish version of Questionnaire for Physical Therapy Students' Attitude toward Their Profession and Education (Q-PTSAPE).

Methods: Included in this study were 488 physical therapy students. The content, construct, and known-groups validities were assessed and the cut-off value was calculated. The construct validity of the questionnaire was evaluated by confirmatory factor analysis (CFA). The Cronbach's alpha and intraclass correlation coefficient (ICC) were calculated for the reliability of the questionnaire.

Results: The content validity index was obtained as 0.97. The construct validity was acceptable (Root Mean Square Error of Approximation=0.061, Comparative Fit Index=0.905, Tucker-Lewis Index=0.892, Goodness of Fit Index=0.887, Normed Fit Index=0.860). Individuals with a Q-PTSAPE-Turkish score of ≥83.5 have a positive attitude towards their profession and education (p=0.001). Cronbach's alpha reliability coefficient was excellent (0.90). ICC values of the questionnaire and its subdivisions were from medium to high (0.521-0.782).

Conclusion: Q-PTSAPE-Turkish was valid and reliable in determining the attitudes of physiotherapy students towards the profession and vocational education.

Keywords: Attitude, Physiotherapy, Questionnaire, Reliability and Validity, Vocational Education

FİZYOTERAPİ ÖĞRENCİLERİNİN MESLEĞİNE VE EĞİTİMİNE YÖNELİK TUTUM ANKETİ (FÖMEYTA) TÜRKÇE FORMUNUN GEÇERLİK VE GÜVENİRLİĞİ

ARAŞTIRMA MAKALESİ

ÖZ

Amaç: Bu çalışmada Fizyoterapi Öğrencilerinin Mesleğine ve Eğitimine Yönelik Tutum Anketi'nin (FÖMEYTA) Türkçe formunun geçerlik ve güvenirliğinin değerlendirilmesi amaçlanmıştır.

Yöntem: Bu çalışmaya 488 fizyoterapi öğrencisi dahil edildi. İçerik, yapı ve bilinen grupların geçerliği değerlendirildi ve kesme değeri hesaplandı. Anketin yapı geçerliği doğrulayıcı faktör analizi (DFA) ile değerlendirildi. Anketin güvenirliği için Cronbach's alpha ve sınıf içi korelasyon katsayısı (ICC) hesaplandı.

Sonuçlar: Kapsam geçerlik indeksi 0.97 olarak elde edildi. Yapı geçerliği kabul edilebilir düzeydeydi (tahmin hatalarının ortalamasının karekökü=0,061, karşılaştırmalı uyum indeksi=0,905, Tucker-Lewis indeksi=0,892, iyilik uyum indeksi=0,887, normlanmış uyum indeksi=0,860). FÖMEYTA-Türkçe puanı ≥83,5 olan bireylerin mesleğe ve eğitime karşı olumlu bir tutumu vardı (p=0,001). Cronbach's alpha güvenirlik katsayısı mükemmeldi (0,90). Anketin ve alt bölümlerinin ICC değerleri orta ila yüksek arasındaydı (0,521-0,782).

Tartışma: FÖMEYTA-Türkçe fizyoterapi öğrencilerinin mesleğe ve mesleki eğitime yönelik tutumlarını belirlemede geçerli ve güvenilirdi.

Anahtar kelimeler: Tutum, Fizyoterapi, Anket, Güvenirlik ve Geçerlik, Mesleki Eğitim.

INTRODUCTION

Physiotherapists play a substantial role in health promotion and prevention in the community (1). Since physiotherapists take great responsibility for the evaluation and treatment of the patient immediately after completing their undergraduate education, they need to acquire sufficient theoretical knowledge and practical skills and develop a positive professional attitude while graduating (2). Complementary actions and professionals trained with high awareness are needed to prevent undesirable events during clinical practices, quickly understand them, eliminate their unfavorable effects on the patient, and minimize possible future problems (3).

Attitude is a learned way of thinking, feeling, or behaving towards people, objects, and events (4). Individuals make some cognitive and sensory orientations towards their profession over time. These orientations are reflected in their behaviors over time and contribute to their development of professional attitudes. A professional attitude is a collective behavior that individuals with the same profession develop about their jobs (5). Contributions to a positive professional attitude of physiotherapist students during their undergraduate education can enable them to be satisfied with their profession in the future and improve their relations with patients and professional success (6). Therefore, lecturers should assess the attitude of physiotherapy students toward their education and profession and whether they are satisfied with their education and career choices. This assessment is vital to shaping undergraduate education to the needs and training a student with positive attitudes towards their profession (4). Tedla has developed a questionnaire that determines the attitude of physiotherapy students towards their profession and education. This study aimed to assess the validity and reliability of Turkish version of Questionnaire for Physical Therapy Students' Attitude toward Their Profession and Education (Q-PTSAPE).

METHODS

Study Design:

This research is a methodologically designed study. Afyonkarahisar Health Science University Clinical Research Ethics Committee approved the study (2021/116). The questionnaire was formed on Google Forms and sent to the participants via social media and the snowball method. The participants were informed about the purpose and scope of the research and informed consent was obtained before answering the questions. The study was carried out in accordance with the principles of the Declaration of Helsinki. The study was conducted between February and December 2021.

Participants

Students included in the physiotherapy and rehabilitation undergraduate program were included in the study. The inclusion criteria for the study were as follow: Being a student in the Physiotherapy and Rehabilitation Department undergraduate program in Turkey and being able to read and understand the questionnaire items. The exclusion criteria were being graduated from the Department of Physiotherapy and Rehabilitation or being in the language preparatory class of the relevant program.

Sample Size Calculation

For confirmatory factor analysis, it is necessary to reach at least 200 participants or more (17). Some authors suggested that 20 times the number of items should be sampled (18). In the study, confirmatory factor analysis was applied with 488 samples. Calculations were performed on a total of 117 samples in order to obtain the ICC coefficient. According to the t-test power analysis (G-Power 3.1.9.7) independent groups, at least 90 participants were required for test-retest analysis to obtain 80% power (d=0.3) with a 5% error rate.

Procedures

In the study, the demographic information of the participants (age, university name, class, type of education, etc.) was recorded. The Turkish version of the Questionnaire for Physical Therapy Students' Attitude toward Their Profession and Education (Q-PTSAPE) was applied. The original questionnaire was translated according to Guide to the Process of Cross-Cultural Adaptation of Self-Report Scales by Beaton et al. (7). The content, construct, and known-groups validities of the questionnaire were assessed, and the cut-off value

was calculated. Cronbach's alpha reliability coefficient and the test-retest method were employed to ensure the reliability of the questionnaire. The completion time of the questionnaire was evaluated for practicality of the questionnaire. Their attitudes (positive/negative) toward their profession and education, in general, were asked to describe by participants.

The Questionnaire for Physical Therapy Students' Attitude toward Their Profession and Education (Q-PTSAPE): This questionnaire, which consists of 25 questions designed to evaluate the attitudes of physiotherapy students towards their profession and education, has a rating system consisting of a 5-point Likert scale. The highest score is 125. High scores indicate a positive attitude towards the profession and education. The questionnaire consists of 4 different subdivisions (SD): A= Are the students happy with the choice of their profession/course, B= Do the students anticipate a good future, C= Are the students have good patient exposure and, D= Are the students satisfied with their learning? The content validity index was 0.71 and Cronbach's alpha coefficient 0.86. (4). There is no other language version of the questionnaire.

Translation Steps of the Questionnaire: The translation process consisted of three steps. First, forward translation included that the original questionnaire was translated into the target language by three independent experts in physiotherapy and rehabilitation. The native language of the three experts was Turkish, and they were also proficient in English. All three translated pre-texts were turned into a single text by the authors' mutual decision. Second, the back-translation consisted of translation of the text back into the source language. Bilingual in the target language, another translator who was unaware of the original version of the questionnaire translated the text back to the source language. The back-translation was reviewed for semantic, idiomatic, and conceptual equivalence by the authors of this study and sent to the author of the original questionnaire for comparison. The author reported that the translation did not require any corrections and the translation of the questionnaire was appropriate. Finally, the final draft of the questionnaire was undertaken for pretesting.

The Content Validity: Eleven academicians who are experts in the field of physiotherapy and rehabilitation evaluated the final Turkish version of the questionnaire for content validity. Davis technique (1992) was used. Each expert evaluates the items in the questionnaire as "A-Highly Relevant" (4 points), "B-Quite relevant" (3 points), "C-Somewhat relevant" (2 points), 'D-Not relevant' (1 point). The content validity index (CVI) for each item was calculated by dividing the number of experts rated as A and B by the total number of experts. The items rated as C and D were rearranged with appropriate expressions in line with the suggestions of the experts (8).

Pre-test: In order to evaluate the intelligibility of the questionnaire items, a pre-test was applied to 41 physiotherapy students.

The Construct Validity: The construct validity of the questionnaire was evaluated by confirmatory factor analysis (CFA). CFA is a way of testing how well the measured variables represent a proposed theory or model. AMOS 24 program was used to verify whether the data fit the 4-factor model of Q-PTSAPE determined by Tedla (2017).

Known-group Validity: The known-group validity was tested to assess the degree to which participants' attitudes towards their profession and education were distinguishable (positive/negative). The receiver operating characteristic curve (ROC) was used to determine cut off points by the Youden Index, and the t-test was applied to assess known group validity. Area under ROC (AUC), sensitivity and specificity values were calculated (9).

Floor and Ceiling effects: Ceiling and floor effects were determined. Ceiling and floor effects are the lowest or highest total score of the questionnaire with more than 15% of the participants (10).

Reliability: The reliability of the questionnaire was evaluated with internal consistency and consistent over time (test-retest) analyses. Internal consistency was measured with Cronbach's alpha coefficient (11). The intraclass correlation coefficient (ICC) (2, 1) was calculated for the test-retest.

The interval between the two assessments in the test-retest was 15 days. The agreement between the baseline and retest scores was determined by

using a 95% confidence interval (12).

Statistical Analyses

Data analyzes were performed with IBM SPSS Statistics for Windows, Version 26.0 (Armonk, NY: IBM Corp). Continuous data were reported as mean±standard deviation and categorical data as percentage. The conformity of the variables to the normal distribution was determined by the Shapiro-Wilk test. CVI was considered as 0.80 value for agreement or higher among judges for new instruments. In construct validity, the goodness-of-fit indices and their cut-off values for appropriate fit were considered as: Chi-square/degree of freedom ($x2/df \leq 3$), Root Mean Square Error of Approximation (RMSEA≤0.08), Standardized Root Mean Square Residuals (SRMR≤0.08), Comparative Fit Index (CFI≥0.90), Tucker-Lewis Index (TLI≥0.90), Goodness of Fit Index (GFI≥0.90), Normed Fit Index (NFI≥0.90) (13). The Cronbach's alpha value indicated as of >0.90 excellent, >0.80 good, >0.70 acceptable, >0.60 questionable, >0.50 poor (14). ICC (2.1) coefficient values; were classified as poor (< 0.5), moderate (0.5 to 0.75), good (0.75 to 0.9), or excellent (>0.90) (15). The Area under the curve (AUC) has a range of 0 to 1. AUC values were interpreted as 0.50: no discrimination, 0.51-0.70 poor, 0.71-0.80: acceptable, 0.81-0.90: excellent, >0.91: outstanding discrimination (16). This statistical analysis did not include the participants who had missing data.

RESULTS

Demographic information

A total of 496 individuals received questionnaires. Two individuals who filled out the questionnaire incompletely and 2 who did not meet the inclusion criteria were excluded from the study. Four individuals refused to participate in the study. The study included 488 students with an average age of 21.00 years (Table 1). Female students consisted of 75.7% of the participants, 88% attended the department with a university entrance exam. The number of first-year students was 102 (20.2%), second-year 124 (24.5%), third-year 136 (26.9%), and fourth-year 126 (24.9%). Table 2 contains further demographic information about the participants.

Table 1. Flow Table of the Study

Flow	n
Assessed for eligibility	496
Excluded • Not meeting inclusion criteria (n= 2) • Declined to participate (n= 4) • Missing data (n= 2)	8
Enrollment	488
Analysed	488

Table 2. Demographic Characteristics of the Participants.

Variables Age (year)	Mean±SD 21.00±2.06 n (%)
Sex	
Female	383 (75.7)
Male	105 (24.3)
University	
Afyonkarahisar Health Science University	301 (59.5)
Ankara Yıldırım Beyazıt University	20 (4.0)
Başkent University	8 (1.6)
Gazi University	14 (2.8)
Kahramanmaraş Sütçü İmam University	21 (4.2)
Karabük University	1 (0.2)
Izmir Kâtip Çelebi University	1 (0.2)
İstanbul Medipol University	1 (0.2)
Mustafa Kemal University	8 (1.6)
Necmettin Erbakan University	31 (6.1)
Pamukkale University	22 (4.3)
Sanko University	32 (6.3)
Süleyman Demirel University	13 (2.6)
University of Bakırçay	9 (1.8)
Yalova University	6 (1.2)
Type of university admission	
University entrance exam	446 (88.1)
Others (inter-university undergraduate transfer, vertical transfer exam, etc.)	42 (11.9)

The Content Validity

The content validity index (CVI) was calculated in line with the suggestions of 11 experts with an average of 12.2±4.84 years of academic experience in physiotherapy and rehabilitation. The CVI was found to be 0.97 (Table 3).

Pre-test

Two of the first-year students in the pre-test group stated they had no idea what the term "supervising" meant. For this reason, the dictionary definition "supervising" was added to the questionnaire. Apart from this, no negative feedback was received regarding the intelligibility of the items, and it was

decided to apply the questionnaire to a sufficient number of samples in order to examine its psychometric properties.

Table 3. The Content Validity Index of Questionnaire

Subdivision	Content Validity Index
A	0.95
B	0.98
C	0.97
D	0.98
Total	0.97

Table 4. Cronbach's Alpha Values of the Questionnaire for Physical Therapy Students' Attitude toward Their Profession and Education-Turkish and Subdivisions

Questionnaire	Sample (n)	Items (n)	Cronbach's Alpha
Q-PTSAPE-Turkish	488	25	0.90
Subdivision A	488	6	0.71
Subdivision B	488	5	0.62
Subdivision C	488	7	0.88
Subdivision D	488	7	0.74

Q-PTSAPE-Turkish: Questionnaire for Physical Therapy Students' Attitude toward Their Profession and Education-Turkish

The Construct Validity

The results of the Confirmatory Factor Analysis are shown in Figure 1. The factor loads of items A6 and D1 were low. The relationship between items A3 and A5, items C1 and C4, items C6 and C7, and items D4 and D6 of the questionnaire were determined in CFA. After these relationships were defined, the fit indices of the questionnaire were Chi-square/degree of freedom ($x2/df$ =2.789), Root Mean Square Error of Approximation (RMSEA=0.061), Comparative Fit Index (CFI=0.905), Tucker-Lewis Index (TLI=0.892), Goodness of Fit Index (GFI=0.887), Normed Fit Index (NFI=0.860) was obtained. While chi-square/degree of freedom, RMSEA, and CFI indexes were acceptable; TLI, GFI, and NFI indices showed poor fit.

Known-groups validity

The high scores of the individuals in the questionnaire indicate that they have a positive attitude towards their profession and education. A statistically significant difference was found between the Q-PTSAPE-Turkish scores of individuals with

(90.88±14.11) and without (76.17±14.99) positive attitudes towards the profession (p=0.001). The AUC for positive attitude towards profession and education was 0.780 (95%CI: 0.716-0.844) (p=0.001). Individuals with a Q-PTSAPE-Turkish score of ≥83.5 have a positive attitude towards their profession and education (Figure 2). The sensitivity and specificity were 0.71 and 0.76, respectively.

Table 5. Test-retest Reliability Results

Questionnaire	Sample	ICC (95%CI)
Q-PTSAPE-Turkish	117	0.782 (0.685 – 0.849)
Subdivision A	117	0.777 (0.678 – 0.845)
Subdivision B	117	0.718 (0.593 – 0.804)
Subdivision C	117	0.738 (0.622 – 0.818)
Subdivision D	117	0.668 (0.521 – 0.770)

Q-PTSAPE-Turkish: Questionnaire for Physical Therapy Students' Attitude toward Their Profession and Education-Turkish, ICC(2,1): Intraclass correlation coefficient (two-way mixed model, single measurement, absolute agreement), CI: Confidence Interval

The Floor and ceiling effect

The ceiling and floor effect of the questionnaire was 0% (<15%).

Reliability

Cronbach's alpha reliability coefficient for Q-PTSAPE-Turkish was 0.90 (excellent). The Cronbach's alpha coefficients of the subsections of the questionnaire are presented in (Table 4). Test-retest analyzes were completed with 117 participants. ICC values ranged from 0.521 to 0.782 (Table 5). According to the data obtained, the ICC values of the questionnaire and its subdivisions were from medium to high.

Practicality

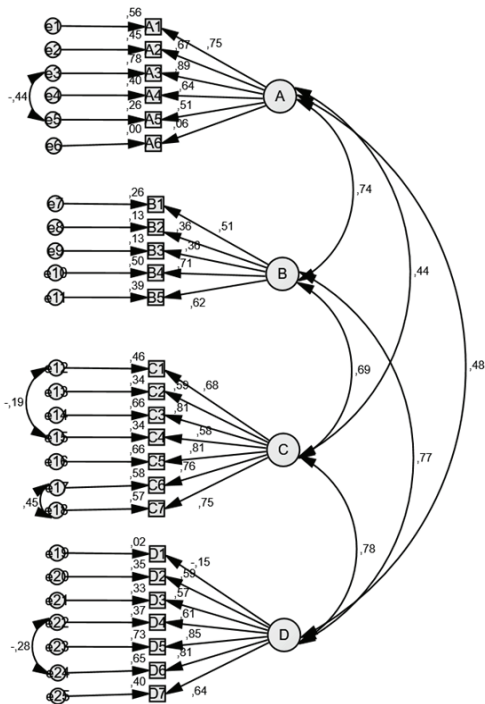The mean completion time of the questionnaire is 8.91 minutes.

Figure 1. Confirmatory Factor Analysis Results

Figure 2. Receiver Operating Characteristic Curve for the Questionnaire for Physical Therapy Students' Attitude toward Their Profession and Education-Turkish

DISCUSSION

This study aimed to investigate the Turkish cross-cultural adaptation, validity and reliability of the Questionnaire for Physical Therapy Students' Attitude Toward Their Profession and Education (Q-PTSAPE). Nowadays, the importance of vocational education and skills increases with changing living conditions and times. High-quality vocational education systems facilitate young people's transition to work and can contribute to reducing unemployment and supporting economic development. Self-report questionnaires also play an important role in improving vocational education systems like overall education systems.

This study demonstrates that the Q-PTSAPE-Turkish is a reliable, valid, and easy-to-use questionnaire for assessing the attitudes of physiotherapy students toward their profession and education. Also, this questionnaire may contribute to the development of physiotherapy vocational education by evaluating the perspective of their profession and vocational education. Improvement in vocational education and skills means better life and job satisfaction, which means a more developed country.
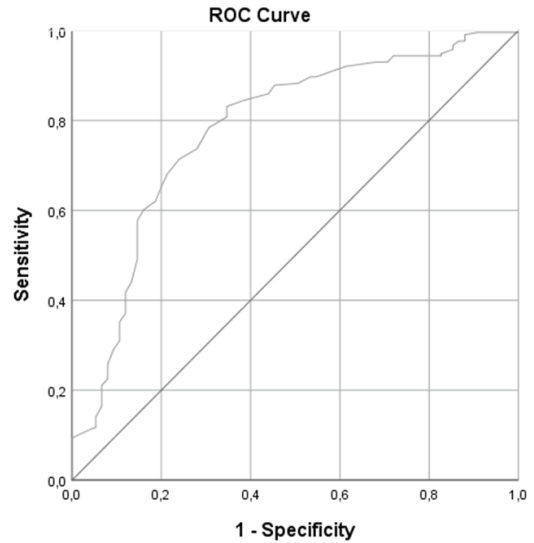
The overall Content Validity Index of the questionnaire was calculated as 0.97. A Questionnaire CVI of 0.80 and above is known as an acceptable value (19). Accordingly, CVI's of the cultural adaptation of the questionnaire and the 4 subdivisions (A, B, C, D) are at an acceptable level. Also, CVI's of Turkish version of the questionnaire and subdivisions is higher than the CVI's original version of questionnaire and subdivisions (4).

Confirmatory Factor Analysis (CFA) with the one-factor model was performed to test the construct validity of the Q-PTSAPE-Turkish. Fit indices of the model were analyzed, and x^2/df, RMSEA and GFI values were between acceptable range values while TLI, GFI and NFI values were not between acceptable range values (20). However, when factor loads were examined, it was observed that the coefficient obtained for items A6 and D1 was quite low. It was thought that the coefficient of the A6 item is so low because of the socioeconomic conditions and cultural reflections. On the other hand, The D1 item contains both positive and negative judgments in its original form. It is not recommended that questionnaire items contain two op-

posing judgments (21). Therefore, we interpret the low factor coefficient of the D1 item as the reason why the students could not focus on two separate judgments of the item. Although the factor coefficients of these items are low, we think that these items should be used in the Turkish version of questionnaire and that the original of the questionnaire should be preserved. In the original version of the questionnaire, CFA was not used for validity analyzes, so it is not possible to make a comparison in terms of results.

In addition to the factor analysis, in order to support the construct validity, known group validity analysis was performed between the groups reporting positive and negative attitudes. There was a significant difference between the groups reporting positive and negative attitudes. Accordingly, individuals with a Q-PTSAPE-Turkish score of ≥83.5 reported a positive attitude towards their profession and education, while individuals with a score of ≤83.5 reported a negative attitude towards the profession and education.

The measure does not distinguish between individuals at either end of the scale when too many participants receive the maximum or minimum score, resulting in floor and ceiling effects. A floor and ceiling effect should be <15% (10). Q-PTSAPE-Turkish had no floor and ceiling effect. Consequently, the Q-PTSAPE-Turkish may have the potential to measure both a positive and negative attitude toward physical therapist students' profession and education.

Internal consistency and test-retest reliability analyzes were performed to test the reliability of the questionnaire Cronbach's alpha coefficient is used for internal consistency reliability and is considered the basis while describing the internal consistency reliability of any Likert-type item of questionnaire (22). We found the Cronbach's alpha coefficient of overall the Q-PTSAPE-Turkish to be 0.90. We only found a value of just under 0.70 for subdivision B when analyzed by subdivisions (The Cronbach's alpha value for B: 0.62). Except for subdivision B, all subdivisions were acceptable, and the Cronbach's alpha coefficient of overall the Q-PTSAPE-Turkish had excellent internal consistency (23). Cronbach's Alpha value of original version of questionnaire had

lower values than Q-PTSAPE-Turkish (4).

Another method used to determine the level of reliability in Likert-type attitude questionnaire is test-retest reliability. The power of a measurement tool to give consistent results from one application to another is calculated with this method. Test-retest analyzes were performed on 117 students with an interval of 2 weeks. Intraclass correlation coefficient (ICC) values of the Q-PTSAPE-Turkish and subdivisions are at medium to high level. The first testing of the test-retest reliability was conducted in the first weeks of face-to-face education after COVID-19 pandemic, and the second was made in the following weeks. Therefore, we think that students' test answers may have been negatively affected in terms of reliability when considering the adaptation process of education and their adaptation to the university. If there was no COVID-19 pandemic process and the education process had continued normally, ICC values could have been higher.

Increased questionnaire completion time may result in a decrease in motivation to respond and an increase in the likelihood of responding without thinking owing to fatigue. This situation prevents the collection of valid and correct answers and increases the probability that the questionnaire, which requires a long completion time, will not be responded to at all (24). The completion time to the questionnaire is related to its practicality (25). The ideal completion time for a face-to-face questionnaire is 30 minutes, and 15 minutes for online questionnaires (26). The completion time of Q-PTSAPE-Turkish is approximately 9 minutes. Therefore, Q-PTSAPE-Turkish is a questionnaire that can be used with optimum practicality in theory and clinical practice.

There are some limitations of our study. Firstly, this study was initiated at a time of the COVID-19 pandemic and restrictions. Because of the pandemic and restrictions, we think that students' attitudes towards the profession and vocational education and the answers given to the questionnaire may have been negatively affected by the negative mental and psychological conditions created by the pandemic on people.

Secondly, test-retest reliability could be carried out

exactly during the adaptation period to face-to-face education after the restrictions of COVID-19 pandemic. And so, we think that the test-retest reliability may have been affected negatively.

Finally, we applied most of the questionnaire online, so students may have answered the questions carelessly or without perceiving them completely.

The Q-PTSAPE-Turkish is the first cultural adaptation questionnaire for physiotherapy vocational education. In terms of Q-PTSAPE-Turkish results, it was found to be valid and reliable in determining the attitudes of physiotherapy students towards the profession and vocational education. In addition, our study is the first to make the first confirmatory factor analysis of this questionnaire with a large sample size. Therefore, we think that this study makes an important contribution to physiotherapy vocational education in Turkey and to the world literature.

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