

Perth Alexithymia Questionnaire-Short Form: Validity and Reliability Study for Turkish Population

Perth Aleksitimi Anketi-Kısa Form: Türk Popülasyonu için Geçerlilik ve Güvenilirlik Çalışması

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Abstract

The aim of the study was to examine the reliability and validity of The Perth Alexithymia Questionnaire-Short Form (PAQ-S) in Turkish population. The study was conducted with a total of 490 participants, 298 women and 192 men. In the Turkish adaptation process, language validity study was conducted first and then confirmatory factor analysis was conducted to examine construct validity. The fit values were found as the χ^2/df ratio ($\chi^2/df = 4.04 \leq 5$), SRMR ($.040 \leq .08$), RMSEA ($.079 \leq .08$), GFI ($.977 \geq .90$), NFI ($.919 \geq .90$), IFI ($.938 \geq .90$), and CFI ($.937 \geq .90$). Within the scope of criterion validity, the relationships between loneliness and resilience were examined. Reliability analyses revealed that McDonald's ω was .832, Cronbach's α was .830, and Guttman's λ_6 was .824. In conclusion, according to the findings obtained from the validity and reliability studies of the Perth Alexithymia Questionnaire – Short Form, the scale can be used in Turkish culture and is a psychometrically valid and reliable tool for determining the alexithymia levels of individuals.

Keywords: alexithymia, questionnaire, reliability, validity

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Öz

Çalışmanın amacı Perth Aleksitimi Anketi-Kısa Formu'nun (PAQ-S) Türk toplumunda geçerlik ve güvenilirliğini incelemektir. Çalışma 298 kadın ve 192 erkek olmak üzere toplam 490 katılımcı ile yürütülmüştür. Türkçe'ye uyarlama sürecinde öncelikle dil geçerliliği çalışması yapılmış, ardından yapı geçerliliğini incelemek amacıyla doğrulayıcı faktör analizi yapılmıştır. Uyum değerleri χ^2/df oranı ($\chi^2/df = 4.04 \leq 5$), SRMR (.040 \leq .08), RMSEA (.079 \leq .08), GFI (.977 \geq .90), NFI (.919 \geq .90), IFI (.938 \geq .90) ve CFI (.937 \geq .90) olarak bulunmuştur. Ölçüt geçerliliği kapsamında yalnızlık ile dayanıklılık arasındaki ilişkiler incelenmiştir. Güvenirlik analizleri sonucunda McDonald's ω .832, Cronbach's α .830 ve Guttman's λ_6 .824 bulunmuştur. Sonuç olarak Perth Aleksitimi Anketi – Kısa Form'un geçerlik ve güvenilirlik çalışmalarından elde edilen bulgulara göre ölçeğin Türk kültüründe kullanılabileceği ve bireylerin aleksitimi düzeylerini belirlemede psikometrik olarak geçerli ve güvenilir bir araç olduğu görülmüştür.

Anahtar Kelimeler: aleksitimi, anket, geçerlilik, güvenilirlik

Geniş Özet

Giriş

Bu çalışmanın temel amacı, bireylerin duygularını tanıma, anlama ve ifade etmede yaşadıkları güçlükleri tanımlayan bir kişilik özelliği olan aleksitimi düzeylerini ölçmeye yönelik geliştirilen Perth Aleksitimi Anketi-Kısa Formu'nun (PAQ-S) Türk kültürüne uyarlanması ve bu kısa formun Türk örnekleminde geçerlik ve güvenilirlik analizlerinin yapılmasıdır. Aleksitimi, ilk kez 1970'li yıllarda Sifneos tarafından ortaya atılan ve bireylerin duygusal yaşantılarla ilgili içgörü geliştirmede yaşadığı bilişsel ve duygusal sınırlılıkları ifade eden bir kavramdır. Araştırmalar, aleksitiminin çeşitli psikiyatrik rahatsızlıklarla (örneğin depresyon, somatizasyon bozuklukları, yeme bozuklukları, travma sonrası stres bozukluğu) ilişkili olduğunu göstermektedir. Bu nedenle aleksitimi düzeylerini güvenilir ve geçerli şekilde ölçebilecek araçlara duyulan ihtiyaç, hem araştırma hem de klinik uygulamalar açısından önem taşımaktadır.

Yöntem

Araştırma, 18 yaş ve üzeri üniversite öğrencilerinden oluşan 490 kişilik (298 kadın, 192 erkek) bir örneklem üzerinde yürütülmüştür. Katılımcılardan veriler gönüllülük esasına dayalı olarak çevrim içi anket yoluyla toplanmıştır. Ölçeğin Türkçe'ye uyarlanma sürecinde Brislin'in (1980) önerdiği paralel kör çeviri yöntemi kullanılmış, her biri ruh sağlığı alanında uzman üç akademisyen tarafından çeviriler gerçekleştirilmiş ve ardından geri çeviri yapılarak iki dil arasında anlam eşdeğerliliği sağlanmıştır. Ölçeğin yapı geçerliğini test etmek amacıyla Doğrulayıcı Faktör Analizi (DFA) yapılmış, bunun yanında ölçekte cinsiyet temelli ölçme değişmezliği analiz edilmiş ve Madde Tepki Kuramı (MTK) çerçevesinde madde geçerliği değerlendirilmiştir. Ayrıca, aleksitimi ile yalnızlık ve psikolojik sağlamlık arasındaki ilişkiler ölçüt geçerliği kapsamında incelenmiştir. Ölçeğin güvenilirliği Cronbach's α , McDonald's ω ve Guttman's λ_6 katsayıları ile analiz edilmiştir.

Bulgular

DFA sonuçlarına göre ölçeğin tek boyutlu yapısı Türk örnekleminde doğrulanmıştır. Model uyum değerleri iyi düzeyde bulunmuştur: $\chi^2/df = 4.04$, SRMR = .040, RMSEA = .079, GFI = .977, NFI = .919, IFI = .938 ve CFI = .937. Bu değerler, ölçeğin yapısal geçerliğinin kabul edilebilir düzeyde olduğunu göstermektedir. Ölçeğin cinsiyet açısından ölçme değişmezliği de test edilmiştir. Konfigürasyonel, metrik ve skaler düzeyde yapılan analizler sonucunda PAQ-S'nin kadın ve erkek örneklemeler için anlam bakımından eşdeğer olduğu tespit edilmiştir ($\Delta CFI < .01$). Bu sonuç, ölçeğin cinsiyet ayrımı yapmaksızın kullanılabileceğini göstermektedir. Madde düzeyinde geçerlik analizleri için Madde Tepki Kuramı kullanılmıştır. 6 maddelik ölçek için uygulanan derecelendirilmiş tepki modeli sonucunda tüm maddelerin ayırt edicilik parametrelerinin 1.00'ın üzerinde olduğu görülmüştür. Bu bulgular, her bir maddenin aleksitimi düzeyini anlamlı şekilde ayırt ettiğini göstermekte ve ölçeğin madde düzeyinde de geçerli olduğunu ortaya koymaktadır. PAQ-S ile UCLA Yalnızlık Ölçeği ve Psikolojik Sağlamlık Ölçeği arasındaki korelasyonlara bakıldığında, PAQ-S ile yalnızlık arasında pozitif yönde ($r = .48$, $p < .01$) ve PAQ-S ile psikolojik sağlamlık arasında negatif yönde ($r = -.50$, $p < .01$) anlamlı ilişkiler bulunmuştur. Bu bulgular, aleksitimi düzeyi yüksek bireylerin daha yalnız hissettiklerini ve psikolojik olarak daha kırılgan olduklarını göstermektedir. Literatürdeki benzer araştırmalar da bu sonuçları desteklemektedir. Örneğin, Sangani ve Jangi (2019), Saleem ve arkadaşları (2015) gibi araştırmalarda aleksitimi ile yalnızlık arasında pozitif yönde; De Berardis ve arkadaşları (2020), Lyvers ve arkadaşları (2020) gibi çalışmalarda ise aleksitimi ile psikolojik sağlamlık arasında negatif yönde ilişkiler bulunmuştur. Dolayısıyla ölçeğin ölçüt geçerliğinin yeterli olduğu söylenebilir. Ölçeğin iç tutarlılık güvenirliği yüksek bulunmuştur. Cronbach's $\alpha = .830$, McDonald's $\omega = .832$ ve Guttman's $\lambda_6 = .824$ olarak hesaplanmıştır. Bu sonuçlar, ölçeğin tek boyutlu yapısının tutarlı bir şekilde çalıştığını ve madde gruplarının bir bütün olarak anlamlı biçimde aynı yapıyı ölçtüğünü göstermektedir.

Tartışma

Araştırmanın genel bulguları, Perth Aleksitimi Anketi-Kısa Formu'nun Türkçeye uyarlanmış halinin geçerli ve güvenilir bir ölçme aracı olduğunu göstermektedir. Ölçeğin 6 maddeden oluşan kısa bir form olması, hem bireysel danışmanlık ve klinik uygulamalarda hem de araştırmalarda pratiklik sağlamaktadır. Bu kısa formun doğrulanmış yapı geçerliği ve yüksek iç tutarlılığı, uygulayıcılara zaman tasarrufu sağlarken aynı zamanda ölçüm kalitesinden ödün verilmemesine imkân tanımaktadır. Özellikle aleksitimi ile psikolojik sağlamlık ve yalnızlık gibi önemli psikolojik değişkenler arasındaki anlamlı ilişkiler, ölçeğin teorik temellere dayandığını ve geçerlik açısından güçlü olduğunu ortaya koymaktadır.

Sınırlılıklar

Araştırmanın en temel sınırlılığı örneklemin sadece üniversite öğrencilerinden oluşmasıdır. Bu durum, elde edilen bulguların genellenebilirliğini sınırlandırmaktadır. İlerleyen çalışmalarda farklı yaş gruplarından, mesleklerden ve kültürel yapılardan örneklemeler üzerinde geçerlik ve güvenirlik

analizleri gerçekleştirilmelidir. Ayrıca, bu çalışmada test-tekrar test (test-retest) güvenirlik analizine yer verilmemiştir. Ölçeğin zaman içindeki tutarlılığını değerlendirmek amacıyla bu tür analizlerin de ileride yapılması önerilmektedir. Bir diğer öneri, aleksitimi ile ilişkili diğer psikolojik değişkenlerin (örneğin empati, öz-anlayış, bağlanma stilleri) ilişkisel düzeyde incelenmesi yönündedir.

Sonuç

Sonuç olarak, Perth Aleksitimi Anketi-Kısa Formu'nun Türkçeye uyarlanmış versiyonunun psikometrik açıdan geçerli ve güvenilir bir ölçme aracı olduğu ortaya konmuştur. Ölçeğin kısa olması, uygulama kolaylığı sağlaması ve farklı psikolojik değişkenlerle anlamlı ilişkiler kurması, onu ruh sağlığı alanında kullanılabilecek etkili bir araç haline getirmektedir. Klinik çalışmalarda aleksitimi düzeyinin belirlenmesi ve buna uygun müdahale planlarının oluşturulmasında bu ölçekten yararlanılabilir. Aynı şekilde, bilimsel araştırmalarda da aleksitimie dair yapılacak çalışmalarda kısa ama güçlü bir ölçüm aracı olarak PAQ-S'nin önemli katkılar sağlayacağı düşünülmektedir.

Introduction

Alexithymia was first proposed as a term by Sifneos in the early 1970s. In his conceptualization, alexithymia is a disorder characterized by cognitive and emotional difficulties in recognizing, understanding, and expressing one's emotions in emotional functioning (Sifneos, 1973; Taylor, 1984).

The alexithymia includes four main component: The first is the difficulty in recognizing and defining the subjective emotions of alexithymic individuals (Nemiah, 1977; Taylor et al., 1991). These individuals experience confusion when describing their feelings and have difficulty regulating and expressing their negative emotions (Connelly & Denney, 2007; Krystal, 1979).

Another feature of alexithymia is the individual's difficulty recognizing and expressing emotions. Alexithymic individuals lack facial expressions compatible with their feelings and exhibit a rigid body posture. Another feature of alexithymia is the need for more fantasy and limited imagination. Finally, the way of thinking in alexithymic individuals is extroverted. This is expressed as a reduced ability to think about and understand their inner feelings and fantasies in the lives of people with alexithymia (Nemiah et al., 1976; Taylor et al., 1991).

Since the conceptualization of alexithymia, one of the focal points of research has been the assessment of alexithymia (Timorney & Holder, 2013). The Beth-Israel Psychosomatic Questionnaire (Sifneos, 1973), the first assessment method developed to measure alexithymia, consists of three sections and 17 items and includes subjective assessment. Another measurement method, the 20-item Schalling-Sifneos Personality Scale (Apfel & Sifneos, 1979), was criticized for its poor internal consistency and inadequate item validity (Bagby, 1986). Similarly, the Minnesota Multiphasic Personality Inventory Alexithymia Scale (MMPI-A) (Kleiger & Kinsman, 1980), which was developed to measure alexithymia and selected from the items of the Minnesota Multiphasic Personality Inventory (MMPI), was criticized for its low internal consistency and inadequate reliability and validity results (Taylor et al., 1997).

Two groups of researchers who conduct research on alexithymia and try to explain it stand out (Preece et al., 2017). The first is the Toronto group, which developed the Toronto Alexithymia Scale, validated to assess alexithymia and still the most preferred measurement tool. The first form of the scale consists of 4 sub-dimensions and 26 items. These dimensions were expressed as 1) difficulty in identifying feelings, 2) difficulty in describing feelings, 3) difficulty in daydreaming, and 4) externally oriented thinking (Taylor et al., 1985). Later, the scale was revised, the difficulty in the daydreaming dimension was removed, and the scale was finalized with 20 items (Bagby et al., 1994). In the literature, the absence of daydream difficulty, which is an essential dimension of alexithymia, in the 20-item form and the poor internal consistency of externally oriented thinking have been criticized (Kooiman et al., 2022; Müller et al., 2003).

Another research group, the Amsterdam group, developed the Bermond-Vorst Alexithymia Scale to measure alexithymia. The scale was developed in five dimensions. These dimensions are (1) Verbalizing emotions, (2) Identifying emotions, (3) Fantasizing, (4) Analyzing emotions, and (5) Emotionalizing (Bermond et al., 2007; Vorst & Bermond, 2001). This measurement instrument is criticized because the emotionalization sub-dimension is not included in the original theory (Preece et al., 2017).

As an alternative to these measurement methods, the recently developed Perth Alexithymia Scale was structured by Preece et al. (2018) within the Gross's Process model (2015). The original version of the scale consists of five sub-dimensions and 24 items (Preece et al., 2018).

As the prevalence of alexithymia has increased and the relationship between high levels of alexithymia and psychopathology (depression, anorexia nervosa, somatization) has been revealed, it has increased interest in this field and created the need for research (Duddu et al., 2003; Honkalampi et al., 2000; Jimerson et al., 1994; Speranza et al., 2005). In addition, in longitudinal studies, alexithymia has also been investigated with the concepts of psychological distress (Porcelli et al., 1996) and posttraumatic stress disorder (Söndergaard & Theorell, 2004). A recent study examining the mediation effect of structural equation modelling found relationships between loneliness, psychological resilience and alexithymia (Zhang et al., 2023). There is also research on coping, attachment style and psychological resilience (Craparo et al., 2020). Although there are different self-report scales used to determine alexithymia in the literature, one of them is the Perth Alexithymia Scale. The short and long forms of the scale were published by Preece et al. (2018). The Turkish validity and reliability of the scale were conducted by Bilge & Bilge (2020), and it was concluded that it was valid and applicable to Turkish society.

Our study aimed to conduct a validity and reliability study of the "Perth Alexithymia Questionnaire short form" for the Turkish population and to introduce this instrument to the literature in the mental health field.

Method

Participants

The sample of the study consists of university students over the age of 18 using the convenience sampling method. A total of 490 participants were reached via online platforms and scales were applied. Of the participants participating in the study, 298 (61%) were female and 192 (39%) were male. Their ages ranged from 18 to 25 and their mean was calculated as 22.4.

Measurements

Perth Alexithymia Questionnaire-Short Form (PAQ-S)

PAQ-S is a 6-item, one-dimensional 4-point Likert scale developed by Preece et. al (2023) to measure general alexithymia levels. As a result of confirmatory factor analysis, the fit index values of the 6-item one-dimensional model were ($\chi^2 = 10.65$ [df = 6, $p = .100$], CFI = 0.995, TLI = 0.989, RMSEA = 0.045 [90 % CI = 0.000–0.078], SRMR = 0.017, AIC = 7808.913), and the item factor loadings were found to range between .59 and .71. Cronbach's alpha reliability coefficient was calculated as $\alpha = .81$.

UCLA Loneliness Scale Short Form

The scale developed by Neto (2014) to determine the loneliness levels of adults is a single-dimensional 4-point Likert scale consisting of a total of 6 items. It was adapted to Turkish by Sarıçam (2023). Cronbach alpha internal consistency reliability coefficient was calculated as $\alpha = .77$. For this study, the reliability coefficient was examined again and within the scope of our research, the Cronbach alpha reliability coefficient was found to be $\alpha = .77$.

Brief Psychological Resilience Scale

The scale was developed by Smith et al. (2008) to measure the psychological resilience of individuals. The scale is a single-dimensional 5-point Likert-type scale consisting of a total of 6 items. It was adapted to Turkish by Doğan (2015). A total of 30 points are obtained from the scale. Higher scores indicate higher psychological resilience. In the Turkish adaptation, Cronbach's alpha reliability was calculated as .81. The reliability coefficient was examined again for this study and within the scope of our research, the Cronbach's alpha reliability coefficient was found to be $\alpha = .84$.

Procedure

The study was initiated with the approval of Yıldız Technical University Ethics Committee (2024.02). Then, permission was received from the developer of the original scale via e-mail. Firstly, The Perth Alexithymia Questionnaire-Short Form (PAQ-S) was translated into Turkish by three academicians who are experts in the field of mental health using a parallel blind technique. It was then back-translated into English according to Brislin's (1980) suggestion. Afterwards, the Turkish version (PAQ-S) was obtained by discussing it with three different experts.

After obtaining the necessary authorizations for the measurement instruments included in the investigation, we administered the scales to individuals who willingly volunteered for the study and provided their informed consent using the Google Form platform. We conducted the study in compliance with the principles outlined in the Declaration of Helsinki.

Statistical Analysis

Demographic data of the study sample was evaluated using descriptive statistics. When examining whether the normality assumption is met, descriptive values (kurtosis coefficient, skewness coefficient), graphs and statistical tests (Kolmogorov-Smirnov, Shapiro Wilk) are frequently used methods (Pallant, 2016). In this study, the assumption of normality was checked by the Kolmogorov-Smirnov test and kurtosis-skewness values. In this study, we calculated the kurtosis value for Resilience – .171, and the skewness value – .118. We calculated the kurtosis value for Loneliness .175, and the skewness value .834.

The construct validity of the Turkish PAQ-S was analyzed by CFA and measurement invariance. In addition, Item Response Theory analyses were conducted to check item validity. After construct validity and IRT, Cronbach's α reliability values were analyzed.

In order to confirm the factor structure of the Turkish PAQ-S, a confirmatory factor analysis (CFA) was conducted using the AMOS software. Indicators of appropriate fit for a model include goodness of fit index (GFI), normed fit index (NFI), and confirmatory fit index (CFI) that are equal to or greater than .90. Additionally, the root mean squared error of approximation (RMSEA) and standardized root-mean-square residual (SRMR) should be less than or equal to .08 (Hu & Bentler, 1999; Marsh et al., 2004). We evaluated the factor structure to determine if there was measurement invariance between genders in order to establish equivalence. We conducted this analysis to determine any disparities among male and female participants. We examined configurational, metric, and scalar analyses in this particular scenario. According to the literature, a Δ CFI value of less than .010 and a Δ RMSEA value of less than .015 can be used as markers of measurement invariance between various groups (Chen, 2007; Cheung & Rensvold, 2002).

Chalmers (2012) used Item Response Theory (IRT) to assess the discrimination, complexity, and informativeness of the scale. Furthermore, item response theory (IRT) offers more comprehensive and dependable data at both the individual and item levels compared to classical test theory. IRT analyses use the item characteristic curve function and graded response model to account for the polytomous structure of the scale, which includes more than two response categories. We conducted IRT analyses using Stata 15.0. SPSS 26.0 package program was used for reliability coefficients and correlation calculations, and AMOS 26 program was used for CFA.

Results

A Confirmatory Factor Analysis (CFA) was performed to assess the validity of the Turkish PAQ-S model. The chi-square statistic was found to be significant in relation to the fit statistics, likely due to the sample size (Hair, Black, Babin, Anderson, & Tatham, 2014). However, the χ^2/df ratio (χ^2/df

= 4.04 ≤ 5), SRMR (.040 ≤ .08), RMSEA (.079 ≤ .08), GFI (.977 ≥ .90), NFI (.919 ≥ .90), IFI (.938 ≥ .90), and CFI (.937 ≥ .90) all fell within the acceptable range for the model. The factor loadings for all items were statistically significant ($p < .001$) and had the following values: .54 (item 1), .52 (item 2), .39 (item 3), .57 (item 4), .63 (item 5), .55 (item 6). Figure 1 displays the factor loadings of the Turkish PAQ-S obtained by path analysis.

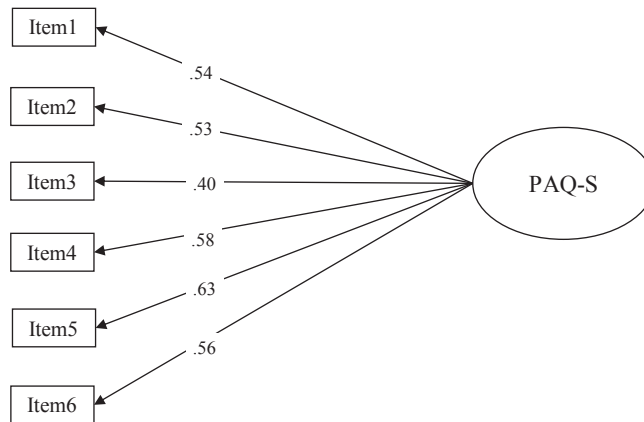


Figure 1. The Perth Alexithymia Questionnaire-Short form (PAQ-S): A 6-item Path Diagram and Factor Loadings

Measurement invariance

After confirming the CFA results for the Turkish PAQ-S, we subsequently examined the scale based on gender. We conducted subsequent tests to assess configurational, metric, and scalar invariance. Table 1 displays the results.

Table 1. Fit indices of gender invariance

Invariance	χ^2	df	χ^2/df	$\Delta\chi^2$	Δdf	p	NFI	RFI	SRMR	RMSEA	CFI	ΔCFI	ΔMc NCI	$\Delta gamma$ hat
Configural invariance	86.871	18	4.826	-	-	-	.901	.905	.051	.081	.942	-	-	-
Metric invariance	98.086	23	4.265	11215.00	5	0.00	.916	.921	.060	.080	.939	.003	0.000	0.001
Scalar invariance	111.129	29	3.832	13043.00	6	0.00	.907	.913	.060	.076	.937	.002	0.000	0.001

The examination of measurement invariance, as shown in Table 1, indicates that the Turkish PAQ-S demonstrates both configurational and metric invariance across genders ($\Delta CFI = .003$). Additionally, the scalar model also exhibits invariance ($\Delta CFI = .002$), as seen by the satisfactory goodness of fit and ΔCFI values. These findings suggest that the Turkish PAQ-S items are gender-neutral, as they hold identical significance for both men and women.

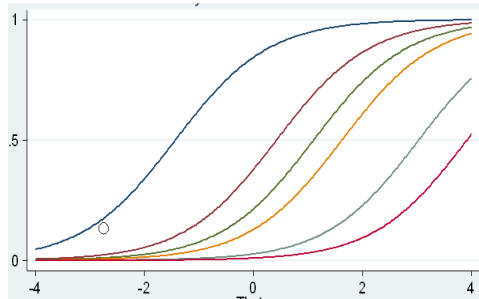
Item Response Theory

Item Response Theory (IRT), a widely utilized approach for assessing educational tools, is currently experiencing a growing trend in its application to personality assessments (Colledani et al., 2019). An S-shaped curve known as the item characteristic curve (ICC) graphically depicts the fundamental components of IRT parameters. The researchers conducted the ICC analysis using the Graded Response Model (GRM) due to the utilization of a seven-point Likert-type scale in the Turkish PAQ-S. Figure 2 and Table 2 display the results of the Item Response Theory (IRT) analysis.

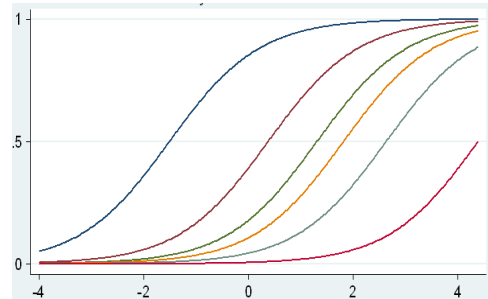
Table 2. Item Response Theory parameter estimates for the Turkish PAQ-S

Item	Item parameter estimates				
	a	b_1	b_2	b_3	b_4
1	1.17	-1.43	0.42	1.10	1.62
2	1.16	-1.51	0.37	1.30	1.81
3	1.01	-0.80	1.04	1.37	1.96
4	1.42	-1.07	0.46	1.00	1.41
5	1.64	-0.85	0.57	1.06	1.52
6	1.28	-2.46	-0.33	1.06	1.51

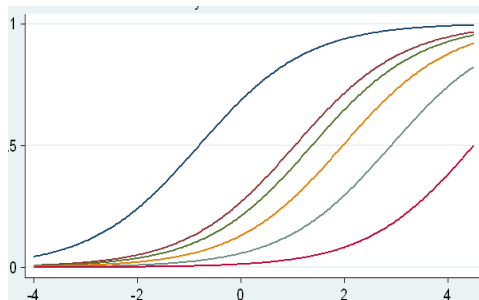
Item 1



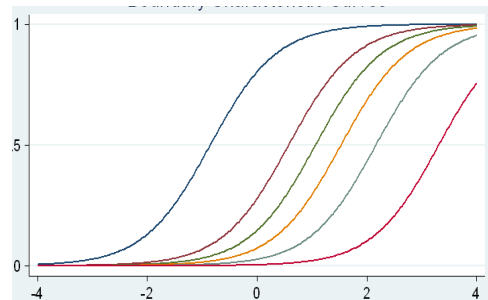
Item 2



Item 3



Item 4



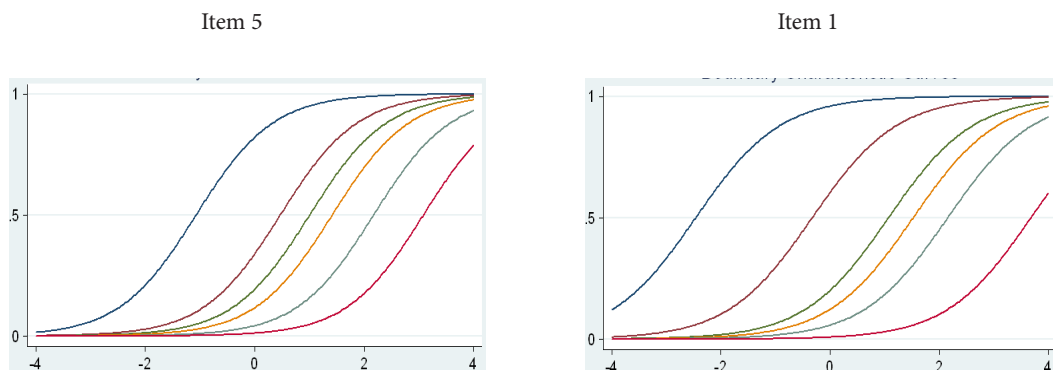


Figure 2. Item characteristics curve for the Turkish PAQ-S.

Table 2 demonstrates that all values of an are equal to 1.0. Baker (2001) argues that values exceeding 1.0 are highly discriminative. Thus, the IRT results indicated that the Turkish PAQ-S goods have the aforementioned attributes. Item Response Theory (IRT), a widely utilized approach for assessing educational tools, is currently experiencing a growing trend in its application to personality assessments (Colledani et al., 2019). An S-shaped curve, referred to as the item characteristic curve (ICC), graphically depicts the fundamental elements of IRT parameters. We conducted the ICC analysis using the Graded Response Model (GRM) because the Turkish PAQ-S utilizes a seven-point Likert-type scale. Figure 2 and Table 2 display the results of the Item Response Theory (IRT) analysis.

Criterion Validity

As seen in Table 3, there are statistically significant positive relationships between the PAQ-S and the UCLA Loneliness Scale ($r = .48, p < .01$), and statistically significant negative relationships between the Resilience Scale ($r = -.50, p < .01$).

Table 3. Correlation Values Related to Criterion Validity of PAQ-S

Variables	1	2	3
1. PAQ-S	1	.48**	-.50**
2. UCLA		1	-.57**
3. Resilience			1
Mean	12.86	13.81	18.95
Standard Deviation	7.15	4.77	5.01

$p < .01^{**}$

Reliability

The JASP software was utilized to assess the scale's reliability. The reliability values of Cronbach's α , McDonald's ω , and Guttman's λ_6 were examined. The findings indicated that the internal consistency and reliability were deemed satisfactory to a significant degree. The coefficients are displayed in Table 4.

Table 4. *Turkish PAQ-S reliability analysis results*

	McDonald's ω	Cronbach's α	Guttman's λ_6
Point estimate	0.832	0.830	0.824
95% CI lower bound	0.792	0.787	0.763
95% CI upper bound	0.872	0.873	0.885

Discussion

Alexithymia, a personality trait characterized by difficulties in identifying emotions, has important implications in clinical psychology. Studies have shown that it is associated with various psychiatric disorders. Alexithymia is reported to be strongly associated with physical health problems (Kano et al., 2018), as well as with psychiatric disorders such as substance use (Cruise & Becerra, 2018; Honkalampi et al., 2022), depressive symptoms and suicide risk (De Berardis et al., 2017), and psychosomatic disorders (Morais et al., 2022). It can be said that alexithymia is a multifaceted construct that significantly affects various medical and psychiatric conditions. Therefore, alexithymia is an important risk factor for various disorders mediated by psychological factors. Therefore, understanding and addressing alexithymia can improve clinical outcomes and quality of life. In this context, it was aimed to adapt the Perth Alexithymia Questionnaire-Short Form (PAQ-S), which was developed by Preece et al. (2023) to determine the alexithymia levels of individuals and to evaluate their psychometric properties, into Turkish.

In the language validity study of the scale, the measurement tool was translated into Turkish and the Turkish translations of the scale were made by three experts in the field of English linguistics using the parallel blind technique. Then, the Turkish translation form was translated back into English. In this context, high-level positive correlations were found between the Turkish and English forms. In addition, high positive correlations were found between the original form and the form that was translated back into English after the Turkish form. Confirmatory factor analysis was conducted to test the construct validity of the scale, and it was found that the 6-item single-factor structure was confirmed in the target sample. As a result of the CFA, it was determined that all of the fit indices of the model created met the good fit criteria (Kline, 2016). Within the framework of construct validity, measurement invariance was also examined. Accordingly, it was found that it was supported by cross-gender configurational, metric invariance, scalar model, goodness of fit, and CFI value, and in this context, it was determined that the items of the Turkish PAQ-S showed the same meaning for men and women. In addition, item validity was tested with Item Response Theory analyses, and it was found that the items had a high degree of discrimination. According to Harwell et al. (1997), Item Response Theory is a statistical method used to analyze the responses of participants to scale items. In this method, the items are evaluated one by one (Baker & Kim, 2017) and the discriminatory power of the items is investigated (Smalldon & Moffat, 1973). Whether the item has high discriminatory power is evaluated within the framework of the standards determined by Baker (2001). Accordingly, the coefficient obtained for each item should be greater than 1. In this context, it is seen that all six items in the Perth Alexithymia Questionnaire-Short Form have high discriminatory power. The reliability analysis of the scale was tested according to Cronbach's alpha,

Mc Donald's, and Guttman's reliability values and the results were found to be highly acceptable. The findings of the current study showed results similar to those of the construct validity and reliability analyses conducted by Preece et al. (2023) on the original form. Accordingly, it was determined to have high validity and reliability in the Turkish sample.

As a result of the analyses conducted within the scope of criterion-related validity studies, it was determined that there were positive relationships between alexithymia and loneliness and negative significant relationships with resilience. When the literature (Sangani & Jangi, 2019; Saleem et al., 2015; Zhao et al., 2022; Zhang et al., 2023) is examined, it is seen that there are studies supporting the positive significant relationships between alexithymia and loneliness obtained in the current study. A similar situation exists in the relationship between alexithymia and resilience. Accordingly, there are studies in the literature (De Berardis et al., 2020; Çıkırıkçı & Yalçın, 2023; Lyvers et al., 2020; Kirchner et al., 2022) that support the negative significant relationships between alexithymia and resilience.

Limitations and Future Research

The Perth Alexithymia Questionnaire-Short Form, which was adapted within the framework of the literature and the current research findings, will provide essential contributions to the relevant field workers. However, it is also possible to mention some limitations. The research was conducted in a sample of university students. In this context, it may be recommended to evaluate the psychometric properties of the scale in different age groups and in a larger sample in future studies. In addition, test-retest reliability analysis was not conducted in the current study. Therefore, the test-retest reliability of the scale can be examined in future studies.

Conclusion

In conclusion, according to the findings obtained from the validity and reliability studies of the Perth Alexithymia Questionnaire-Short Form, the scale can be used in Turkish culture and is a psychometrically valid and reliable tool for determining the alexithymia levels of individuals. The fact that the measurement tool has a small number of items due to its short form can provide an advantage in alexithymia studies.

Ethical Approval: All procedures in the study are in accordance with the ethical standards of the responsible human experiments committee and the 1975 Declaration of Helsinki, which was revised in 2000. Ethics committee approval to conduct the study was obtained from the Yıldız Technical University University Social and Human Sciences (approval number: 2024/02).

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