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RESEARCH ARTICLE

# Reliability and validity study of the Turkish form of the Temporal Experience of Pleasure Scale (TEPS-TR)

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**ABSTRACT**

**Objective:** Anhedonia, characterized by a diminished capacity to experience pleasure, is a transdiagnostic concept observed across various neuropsychiatric conditions. It can be categorized into two domains based on the timing of pleasurable events: in-the-moment (consummatory) pleasure and anticipatory pleasure. The Temporal Experience of Pleasure Scale (TEPS) assesses these temporal aspects of pleasure. Having received a global response, it has been translated into many languages. This study aims to adapt and validate the TEPS for Turkish use (TEPS-TR).

**Method:** Data were collected from 222 university students using convenience sampling, following ethical approval. The translated TEPS underwent reliability and validity analyses to assess its applicability and consistency. A set of measures assessing different aspects of anhedonia and apathy was co-administered to evaluate the scale's concurrent validity.

**Results:** The Cronbach's α coefficient for the 15-item TEPS-TR was 0.823 for the full scale, 0.767 for the anticipatory subscale, and 0.746 for the consummatory subscale. Principal component analyses yielded three factors, explaining 48.87% of the variance. Confirmatory factor analysis, performed to evaluate the construct validity of the TEPS-TR, indicated an acceptable fit. The total and subscale scores of the TEPS-TR significantly correlated to varying degrees with all scales included in the analysis, except for the Beck Depression Inventory (BDI).

**Conclusion:** The findings indicate that the TEPS-TR exhibits good reliability and validity in assessing anhedonia. However, further exploration into the distinct elements of anticipatory and consummatory pleasure within clinical populations is needed.

**Keywords:** Anticipatory, consummatory, pleasure, reliability, validity

## INTRODUCTION

Anhedonia is defined as a decrease in or loss of the capacity to experience pleasure (1). While it is observed as one of the negative symptoms of schizophrenia, anhedonia is also a transdiagnostic neuropsychiatric symptom present in neurological disorders such as traumatic brain injury, stroke, and neurodegenerative diseases, as well as psychiatric disorders including depressive disorders and substance use disorders (2–5). Additionally, it appears in non-clinical phenomena such as demoralization (6). Recent studies have shown

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that anhedonia is also a risk factor for neuropsychiatric disorders like Alzheimer's disease, highlighting the importance of detecting and managing anhedonia both clinically and within the community (7). Various scales have been developed to measure anhedonia in both community and clinical settings. Some of these scales, like the Fawcett-Clark Pleasure Capacity Scale (8) and the Snaith-Hamilton Pleasure Scale (9), consider anhedonia as a single-factor structure. However, subsequent research has shown that anhedonia can be addressed with more detailed dimensions. By examining psychopathological processes in depth, researchers have explored anhedonia from different perspectives and parsed it into components such as consummatory and anticipatory, motivational and experiential, or physical and social dimensions (10–14).

Emerging evidence from affective neuroscience research indicates that reward processing comprises three distinct yet interconnected components: wanting (anticipation), liking (consummation), and learning (15). Accordingly, hedonic capacity can also be divided into two categories: "anticipatory pleasure" and "consummatory pleasure." While anticipatory pleasure includes the prediction of future pleasurable experiences and the current experience of pleasure while awaiting a future activity, consummatory pleasure (in-the-moment pleasure) describes the experience of instant pleasure that occurs while engaged in a pleasant activity (16, 17). This distinction has important clinical implications. For example, anticipatory but not consummatory pleasure is typically found to be impaired in individuals with schizophrenia and those experiencing demoralization (6, 18). However, in cases of depression, the situation is typically the reverse (6).

The Temporal Experience of Pleasure Scale (TEPS) was developed to psychometrically measure these two dimensions of anhedonia. The two-factor structure, encompassing anticipatory and consummatory pleasure, was first validated in an undergraduate student sample and subsequently in a clinical sample comprising patients with schizophrenia (13, 18), depression (19), and opioid use disorder (20). The scale consists of a short, 18-item questionnaire rated on a 6-point Likert scale, with ten items related to anticipatory pleasure and eight to consummatory pleasure. Designed for use in both psychopathological research and community studies, this scale has been adapted and validated in several languages, including French, German, Persian, Chinese, Brazilian Portuguese, and Italian, but not yet in Turkish (21–26). Despite the availability of several scales in Turkish that assess anhedonia from different perspectives, comprehensive, multidimensional scales are limited. In this context, it is important to adapt the TEPS to Turkish and analyze the psychometric properties of the Turkish version of the scale through reliability and validity analyses, with the aim of enhancing research on this topic in Türkiye. The current study seeks to adapt the TEPS into Turkish and to examine the psychometric properties of the Turkish version of the scale (TEPS-TR) through reliability and validity analyses.

## METHODS

### Participants

The study participants were university students aged between 18 and 35 years. Those diagnosed with a psychiatric disorder, those with a severe mental disorder in first-degree relatives, and those who did not provide approved informed consent forms were excluded from the study. Overall, 28 participants were excluded from the study. Data collection occurred between August and November 2022. Participants were recruited using convenience sampling. The pilot study for language equivalence was conducted face-to-face using paper questionnaires. However, for the main study, data were collected through online questionnaires. There was no statistically significant difference in the age and gender of participants between the online and face-to-face groups (both p-values were below 0.05). Ethical approval was obtained from the Istanbul Erenkoy Training and Research Hospital for Mental and Nervous Disorders Clinical Research Ethics Committee (IRB approval date: 04/07/2022, no: 32).

### Language Equivalence and Pilot Study

The translation process of the TEPS involved forward translation, back translation, and reconciliation of the back-translated versions. Initially, the scale was translated from its original language (English) into Turkish by three specialists—one psychologist and two psychiatrists—using the parallel-blind method. The translations were compared, and inconsistencies were eliminated. It was then back-translated into English by two experts whose first language is English and who are fluent in Turkish. The developers approved the final version of the scale translation (D.G.). All researchers have approved this version for validity and reliability analyses.

After achieving language equivalence, a pilot study was implemented. In this phase, 50 university students were given the approved language-equivalent form of the scale. Since the participants found the scale items understandable, no further edits were required.

**Data Collecting Tools**

*Sociodemographic Data Form*

This form was prepared and designed by the study's authors to collect sociodemographic information (such as age, gender, and marital status) from the participants.

*Temporal Experience of Pleasure Scale (TEPS)*

TEPS is a self-report scale consisting of 18 items that measure the temporal characteristics of an individual's pleasure capacity. It includes 10 items evaluating anticipatory pleasure (TEPS-ANT) and eight measuring consummatory pleasure (TEPS-CON). Each item uses a 6-point fixed-choice rating format, ranging from 1 (very wrong for me) to 6 (very true for me). Items aimed at assessing anticipatory pleasure seek to capture the pleasure anticipated from a pleasant stimulus, e.g., "When I think of eating my favorite food, I can almost taste how good it is." Consummatory pleasure is assessed through items related to the enjoyment of an immediate stimulus, e.g., "The smell of freshly cut grass is enjoyable to me." Higher scores on both subscales indicate greater anticipatory and consummatory pleasure, respectively. The original scale was developed by Gard et al. (13).

*Beck Depression Inventory (BDI)*

The BDI is used to evaluate the depressive symptoms of participants. This inventory was developed by Beck et al. (27). It consists of 21 4-point Likert-type items that measure the cognitive, affective, and vegetative symptoms of depression. Scores range from 0 to 63, with higher scores indicating more severe depressive symptoms. The Turkish validity and reliability studies were conducted by Hisli (28), and Cronbach's alpha value of 0.80 was obtained from item analysis. The split-half reliability was found to be 0.74.

*Snaith Hamilton Pleasure Scale (SHAPS)*

This scale assesses hedonic capacity over the past few days. The 14-item questionnaire is rated on a 4-point Likert-type scale with options ranging from "strongly disagree," "disagree," "agree," to "strongly agree." "Strongly disagree" and "disagree" are scored as 1, while "agree" and "strongly agree" are scored as 0. The total score ranges from 0 to 14 (9). Participants with scores of three or higher can be categorized into the anhedonia group. The Turkish validity and reliability study was performed by Yapici Eser et al. in 2020 (29). The Cronbach's alpha coefficient for the Turkish version of the SHAPS was 0.87.

*Social and Physical Anhedonia Scales*

The Social Anhedonia Scale (SAS) and Physical Anhedonia Scales (PAS) were developed by Chapman et al. in 1976 (14). These authors conceptualized anhedonia under two categories: physical and social. Physical anhedonia is defined as a decreased capacity to enjoy physical experiences such as eating, touching, sexuality, temperature, movement, smell, and sound. Social anhedonia refers to a reduced capacity to enjoy interpersonal interactions. While making such a grouping, Chapman et al. (14) observed a wide variance in premorbid functionality in participation in social and physical activities among individuals with schizophrenia. They suggested that this variance may be due to social and physical anhedonia. Turkish validity and reliability studies of these scales were conducted (30, 31). The Cronbach Alpha internal consistency value of the Social Anhedonia Scale was 0.84; The Cronbach's α value of the Physical Anhedonia Scale was also 0.84 in the whole sample.

*Apathy Evaluation Scale (AES)*

The Apathy Evaluation Scale was developed by Marin, Biedrzycki, and Firinciogullari in 1991 (32) and translated into Turkish by Gulseren et al. (33). It consists of 18 items that assess various aspects of apathy, including emotional, behavioral, and cognitive components. Each item is rated on a four-point scale, allowing for a comprehensive evaluation of apathy across different domains. The scale has been widely used in both clinical and research settings to quantify and understand the presence and severity of apathy in individuals.

**Statistical Analysis**

Statistical analyses were performed using the IBM Statistical Package for the Social Sciences (SPSS) version 29 (IBM Corporation, Chicago, IL, USA) and the AMOS software package. Descriptive statistics provided a summary of the data. In all analyses, statistical significance was set at $p<0.05$. Reliability analyses included computing Cronbach's alpha coefficients for the total scale score and subscale scores. Pearson correlations were calculated between subscale scores and the total score. An exploratory factor analysis with Varimax rotation was conducted to determine the

**Table 1: Sociodemographic and clinical characteristics of the study group (n=222)**

| | Mean (SD) |
|---|---|
| Age (years) | 23.17 (4.98) |
| Education (years) | 15.45 (1.60) |
| Gender (n, % female) | 164 (73.9) |
| Marital Status (n, % single) | 202 (91.0) |
| TEPS-TR anticipatory | 31.75 (5.86) |
| TEPS-TR consummatory | 37.69 (6.52) |
| TEPS-TR total | 69.47 (10.62) |
| SHAPS total | 1.03 (1.66) |
| SAS total | 28.17 (7.07) |
| PAS total | 12.07 (7.07) |
| AES total | 60.50 (7.34) |
| BDI total | 12.80 (10.39) |

SD: Standard Deviation; AES: Apathy Evaluation Scale; BDI: Beck Depression Inventory; PAS: Physical Anhedonia Scale; SAS: Social Anhedonia Scale; SHAPS: Snaith-Hamilton Pleasure Scale; TEPS-TR: Temporal Experience of Pleasure Scale - Turkish Version.

scale's factor validity. Confirmatory Factor Analysis (CFA) was also conducted as part of the validity analysis, employing various fit indices to assess the goodness-of-fit of the CFA and stability models. These indices included the standard chi-square index for statistical fit, commonly used in maximum likelihood parameter estimation. Additionally, the Root Mean Square Error of Approximation (RMSEA), and the Comparative Fit Index (CFI) were calculated. The relationships between the full-scale and subscale scores of the TEPS and corresponding scores on the SHAPS, AES, SAS, PAS, and BDI were evaluated using the Pearson correlation test to establish concurrent validity.

## RESULTS

Female participants constituted 75.9% (n=164) of the total sample. The mean age of the participants was 23.17 (±4.98) years, and the mean education level was 15.45 (±1.60) years. Table 1 shows the sociodemographic and clinical features of the study group.

### Reliability Analyses

The 18-item Turkish version of the scale yielded a Cronbach's alpha (α) coefficient of 0.796. The item-total correlations for items 1, 11, and 13 were low at 0.203, 0.176, and 0.130, respectively, with item 13 being reverse-coded. Concerns regarding the cultural equivalence of item 11 and ambiguities in the wording of item 1 led to the decision to exclude these three items from the Turkish version. Subsequently, the Cronbach's α coefficients for the 15-item TEPS-TR version were 0.823 for the full scale, 0.767 for the anticipatory subscale, and 0.746 for the consummatory subscale. The corrected item-total score correlation coefficients for the 15-item version ranged between 0.260 and 0.564, demonstrating moderate to good reliability for each item (Table 2). The correlations between the two subscales were moderate (r=0.479, p<0.001), and the scale-subscale correlations were strong (r=0.877 for TEPS-TR-CON and r=0.842 for TEPS-TR-ANT, p<0.001).

### Factor Structure

Kaiser-Meyer-Olkin's measure of sampling adequacy was 0.809, and Bartlett's test of sphericity was significant ($\chi^2$=810.614; p<0.001), indicating that the sample size was adequate for the exploratory factor analysis. Principal component analysis yielded three factors that together accounted for 48.87% of the total variance. A forced two-factor solution only explained 39.72% of the variance, which was deemed inadequate. Thus, the three-factor solution was adopted for TEPS-TR. The first factor consisted solely of consummatory items (items 2, 3, 5, 7, 9, 12, 14, and 17), aligning with the TEPS-TR-CON. The second factor comprised four anticipatory items (items 8, 10, 15, and 16) related to contextual anticipation and was labeled TEPS-TR-ANT-1. The third factor included the remaining anticipatory items (items 4, 6, and 18), which involve abstract anticipation, and was named TEPS-TR-ANT-2. The Cronbach's α values were 0.698 and 0.668 for TEPS-TR-ANT-1 and TEPS-TR-ANT-2, respectively. Factor loadings ranged from 0.487 to 0.779, as reported in Table 2.

### Construct Validity

Confirmatory factor analysis was performed to evaluate the construct validity of the TEPS-TR. The factor validity of the 15-item version resulted in a CFI of 0.84, which was considered permissible. The degrees of freedom (Df) and the Minimum Discrepancy per Degree of Freedom (CMIN/Df) values were 87 and 2.379, respectively. The RMSEA was calculated at 0.079, indicating an acceptable fit (Fig. 1).

### Concurrent Validity

The total and subscale scores of the TEPS-TR were significantly correlated, to varying degrees, with all the scales included in the analyses, except for the BDI (Table 3). For the BDI, the only significant correlation occurred with the TEPS-TR-ANT-2 factor. The highest correlations were observed between the PAS and the

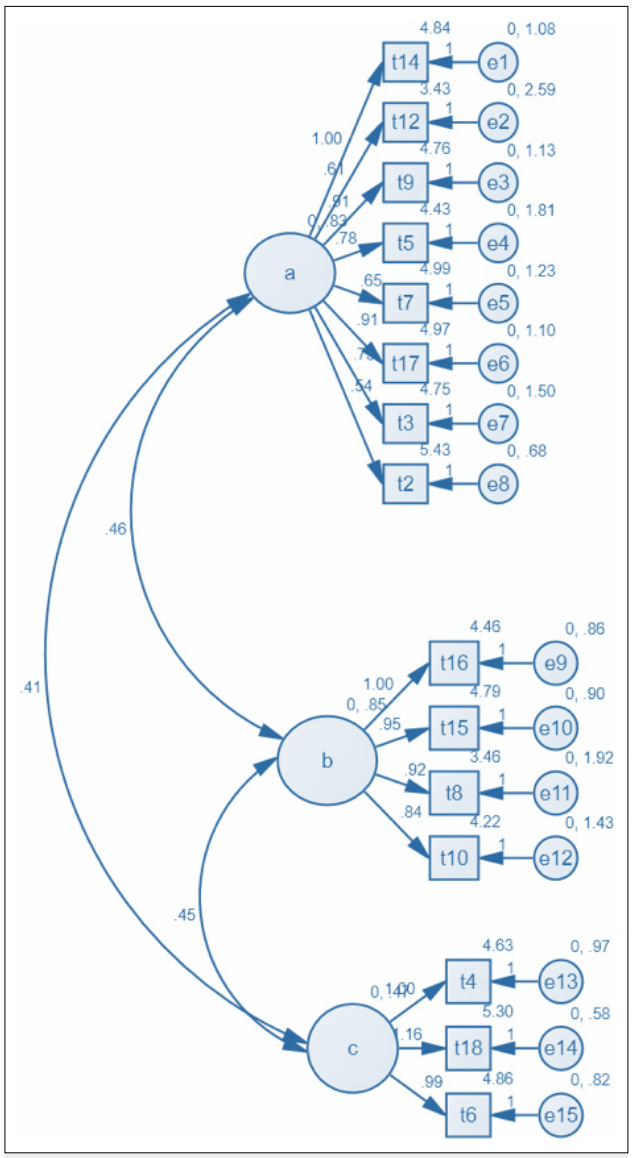


**Figure 1.** Factor structure of TEPS-TR as assessed by Confirmatory Factor Analysis. The first factor (a) represents the consummatory factor (TEPS-TR-CON). The second factor (b) represents the contextual anticipatory factor (TEPS-TR-ANT-1), and the third factor (c) represents the abstract anticipatory factor (TEPS-TR-ANT-2).

TEPS-TR scales, particularly the TEPS-TR-CON subscale. According to the SHAPS, 32 patients (14.4%) were categorized in the anhedonia group. Scores for the TEPS-TR and its subscales were significantly lower in the anhedonia group compared to those without anhedonia, with all three p-values being below 0.001.

## DISCUSSION

This study presents psychometric analyses for adapting the TEPS to Turkish, denoted as TEPS-TR. The TEPS-TR and its subscales demonstrated good internal consistency, adequate construct validity, and robust concurrent validity with other anhedonia or pleasure scales. The characteristics of the 15-item TEPS-TR are similar to the original version and various other international adaptations.

Our findings reveal strong internal consistency, with a Cronbach's α of 0.823 for the total scale, demonstrating comparability to, or even surpassing, other versions such as the original English (α=0.79) (13), Australian (α=0.82) (19), Canadian (α=0.79) (34), French (α=0.84) (21), German (α=0.75) (22), Chinese (α=0.83, α=0.84, and α=0.79) (23, 35), Italian (α=0.73) (25), Brazilian Portuguese (α=0.74) (26), and Persian (α=0.6) (24) versions. When examining the subscales individually, both subscales showed satisfactory Cronbach's alpha values (0.75 for consummatory pleasure, TEPS-CON, and 0.77 for anticipatory pleasure, TEPS-ANT). These values were notably close to those of the original English version (0.74 for TEPS-CON and 0.71 for TEPS-ANT) as well as the French version (0.74 for TEPS-ANT and 0.79 for TEPS-CON) of the scale, but they outperformed many other translations, including the German version (0.67 for TEPS-ANT and 0.64 for TEPS-CON) for healthy controls and the four-factor Chinese version (with Cronbach α values ranging between 0.60 and 0.72). Interestingly, higher Cronbach alpha scores were noted in samples comprising patients with schizophrenia, major depression, and opioid use disorders (12, 19, 20, 22). This observation suggests that the scale is more reliable in the context of disorders that impact pleasure processes. Further investigation with a patient group is necessary to assess this pattern in the Turkish language.

In the original scale validation study, Gard et al. (13) demonstrated that the two-factor solution was well-suited for a sample of university students in the USA. However, findings from other studies in the literature on non-clinical samples have yielded inconsistent results. In our sample, a two-factor model of the 15-item TEPS-TR did not emerge as an adequate fit to the data, as it only explained 39.72% of the variance in exploratory factor analysis (EFA). Instead, we observed that a three-factor solution provided a better fit. Consequently, factor one encompassed consummatory items and was thus labeled as the consummatory factor. CFA for the three-factor solution provided a satisfactory fit. Factors 2 and 3 consisted of anticipatory items and were named anticipatory-1 (TEPS-TR-ANT-1)

**Table 2: Item-total item correlations and factor components of the TEPS-TR**

| Nr | | Item | Corrected item-total correlation | Cronbach's Alpha if item deleted | Factor components | | |
|---|---|---|---|---|---|---|---|
| | | | | | 1 | 2 | 3 |
| 14 | C | Sıcak yatağımda uzanırken pencereye vuran yağmur damlalarının sesine bayılırım. (I love the sound of rain on the windows when I'm lying in my warm bed.) | 0.478 | 0.800 | 0.695 | | |
| 12 | C | Uzun uzun esnemenin verdiği hissi gerçekten severim. (I really enjoy the feeling of a good yawn.) | 0.260 | 0.819 | 0.593 | | |
| 9 | C | Yeni yağmış karın güzelliğinin farkına varıp değerini anlarım. (I appreciate the beauty of a fresh snowfall.) | 0.564 | 0.794 | 0.577 | | |
| 5 | C | Saçımın okşanmasına bayılırım. (I love it when people play with my hair.) | 0.405 | 0.809 | 0.566 | | |
| 7 | C | Soğuk bir sabahta içtiğim sıcak bir bardak kahve veya çay benim için çok tatmin edicidir. (A hot cup of coffee or tea on a cold morning is very satisfying to me.) | 0.404 | 0.805 | 0.557 | | |
| 17 | C | Şöminede/sobada yanan odunların çıkardığı çıtırtı sesi çok rahatlatıcı gelir. (The sound of crackling wood in the fireplace is very relaxing.) | 0.500 | 0.799 | 0.546 | | |
| 3 | C | Yeni biçilmiş çimen kokusu bana hoş gelir. (The smell of freshly cut grass is enjoyable to me.) | 0.383 | 0.807 | 0.505 | | |
| 2 | C | Dışarıda yürürken temiz havayı içime çekmekten hoşlanırım. (I enjoy taking a deep breath of fresh air when I walk outside.) | 0.425 | 0.805 | 0.487 | | |
| 16 | A | Menüden bir şey sipariş ederken tadının ne kadar iyi olduğunu hayal ederim. (When ordering something off the menu, I imagine how good it will taste.) | 0.513 | 0.798 | | 0.777 | |
| 15 | A | En sevdiğim yemeği yediğimi düşündüğümde, tadının ne kadar iyi olduğunu neredeyse hissedebilirim. (When I think about eating my favorite food, I can almost taste how good it is.) | 0.445 | 0.802 | | 0.715 | |
| 8 | A | Çikolata parçacıklı kurabiye gibi lezzetli bir şey düşündüğümde, mutlaka bir tane yemem gerekir. (When I think of something tasty, like a chocolate chip cookie, I have to have one.) | 0.383 | 0.808 | | 0.670 | |
| 10 | A | Büyük bir tatilden önceki gece öyle heyecan duyarım ki zar zor uyurum. (I get so excited the night before a major holiday I can hardly sleep.) | 0.419 | 0.804 | | 0.517 | |
| 4 | A | Hayatımda bir çok şeyi dört gözle bekliyorum. (I look forward to a lot of things in my life.) | 0.348 | 0.809 | | | 0.779 |
| 18 | A | Hayatımda yaklaşan heyecan verici bir şey olduğunda, onu gerçekten dört gözle beklerim. (When something exciting is coming up in my life, I really look forward to it.) | 0.521 | 0.799 | | | 0.618 |
| 6 | A | Keyifli bir deneyimi dört gözle beklemek de başlı başına keyiflidi (Looking forward to a pleasurable experience is in itself pleasurable.) | 0.505 | 0.799 | | | 0.600 |

Excluded Items: Item 1. En sevdiğim oyuncunun rol aldığı yeni bir filmin çıktığını öğrendiğimde, izlemek için sabırsızlanırım *(When I hear about a new movie starring my favorite actor, I can't wait to see it.).* Item 11. Lunaparka giderken hız trenlerine binmek için sabırsızlanırım *(When I'm on my way to an amusement park, I can hardly wait to ride the roller coasters.).* Item 13. Restoranlarda yemek yemek gibi şeyleri dört gözle beklemiyorum *(I don't look forward to things like eating out at restaurants.).*
*A: Anticipatory items; C: Consummatory items.*

**Table 3: Correlations between TEPS and other scale scores**

| | | TEPS-TR | | | | |
|---|---|---|---|---|---|---|
| | | **TEPS-TR-CON** | **TEPS-TR-ANT** | **TEPS-TR-ANT1** | **TEPS-TR-ANT2** | **TEPS-TR-total** |
| SHAPS | r | -0.215 | -0.319 | -0.258 | -0.318 | -0.291 |
| | p | **0.001** | **<0.001** | **<0.001** | **<0.001** | **<0.001** |
| SAS | r | -0.291 | -0.335 | -0.259 | -0.342 | -0.353 |
| | p | **<0.001** | **<0.001** | **<0.001** | **<0.001** | **<0.001** |
| PAS | r | -0.532 | -0.373 | -0.303 | -0.363 | -0.541 |
| | p | **<0.001** | **<0.001** | **<0.001** | **<0.001** | **<0.001** |
| AES | r | 0.214 | 0.408 | 0.284 | 0.416 | 0.357 |
| | p | **0.002** | **<0.001** | **<0.001** | **<0.001** | **<0.001** |
| BDI | r | -0.129 | -0.167 | -0.60 | -0.277 | -0.163 |
| | p | 0.063 | 0.015 | 0.382 | **<0.001** | 0.019 |

Bold indicates significance after Bonferroni correction (p<0.003). AES: Apathy Evaluation Scale; BDI: Beck Depression Inventory; PAS: Physical Anhedonia Scale; SAS: Social Anhedonia Scale; SHAPS: Snaith-Hamilton Pleasure Scale; TEPS-TR: Temporal Experience of Pleasure Scale - Turkish Version.

and anticipatory-2 (TEPS-TR-ANT-2) factors. Upon examining individual items within the anticipatory factors, we observed that items in TEPS-TR-ANT-1 all pertained to an object toward which the pleasure was directed, indicating contextual anticipation. Conversely, items in TEPS-TR-ANT-2 lacked specific objects and focused more on abstract future events, hence labeled as abstract anticipation. In line with our findings, studies conducted in China consistently identified a perfect fit for four-factor solutions for TEPS, categorizing each component into "abstract" and "contextual" (23, 35, 36). However, we only observed such categorization in the anticipatory components. A recent study examining the validity of the original English version in community samples from Australia determined that the two-factor solution best represented the data, outperforming one-factor and four-factor solutions (19). Conversely, the same TEPS version revealed inadequate fit for two-factor and four-factor models in healthy samples from the United Kingdom and Australia (37). The only study to identify a three-factor solution as the best model was the validation study of the Italian version (25). On the other hand, factor structures within clinical samples consistently reported better results supporting a two-factor solution. The two-factor model was found to be a very good to acceptable fit in the French and German translations conducted on the schizophrenia patient group (21, 22). Hallford and Austin (19) similarly concluded that the two-factor model provided the best explanation in depressed samples (19). These findings suggest that parsing hedonic capacity into two with TEPS may become more prominent in pathological conditions.

We excluded three items due to poor factor loadings and item-total scale correlations (Table 2). Among these, one was a reverse-coded item, which often yields less favorable results (38). Another excluded item pertained to roller coaster riding, which might be perceived as frightening rather than enjoyable by some participants. Additionally, visiting amusement parks might not be as common among Turkish youth at the time of the conduct of this study compared to the time and culture of the original scale development study. The third excluded item was Item 1, which may have conveyed an ambiguous impression to participants due to combining "liking" and "wanting" in one sentence. The literature shows that this item has been excluded in other studies (19). In fact, several other translation or validation studies have excluded one or two items, potentially due to the culturally sensitive nature of pleasure and pleasurable events, or because of language differences.

The concurrent validity of the 15-item TEPS-TR was evidenced by positive correlations with another pleasure scale, SHAPS, and negative correlations with anhedonia scales, PAS, and SAS. According to the literature, stronger correlations were found between the TEPS-TR total score and PAS, as well as the TEPS-TR-CON subscale and PAS, compared to other scales (13, 22). This suggests that, like its original version, TEPS-TR, especially the TEPS-TR-CON subscale, comprises more items focusing on physical pleasure than on other types such as social pleasure. Additionally, the correlation between TEPS-TR-ANT and the apathy evaluation scale was stronger than that between TEPS-TR-CON and AES, which was expected since deficits in anticipatory

pleasure are more closely related to avolition and apathy. "Looking forward to" a pleasurable activity can be seen as a precursor to motivated behavior. Consistent with this, Ho et al. (37) not only found a stronger correlation between TEPS-ANT and AES but also between TEPS-ANT and approach motivation. TEPS-TR and its subscales showed weak to no correlations with the BDI, except for the "abstract" aspect of TEPS-TR-ANT. Given that this was a non-pathological group, BDI scores were relatively low. These relationships can differ in patient populations with higher BDI scores.

As far as we know, this is the first study to translate the TEPS into Turkish and to conduct validation analyses for this language. Additionally, we utilized an extensive list of scales to assess the concurrent validity of TEPS-TR. However, our study has several limitations. Firstly, although the sample size was adequate for statistical purposes, it was smaller than those used in some other studies (23). A larger sample size could provide better insights into the factor structure. Secondly, our sample consisted solely of highly educated individuals, predominantly included female and single participants. These demographic characteristics may limit the generalizability of the findings to the broader population. Thirdly, previous studies suggest that the scale may produce different (and generally better) results in clinical groups (12, 19, 20, 22). Lastly, adding culturally relevant items might improve the scale's reliability and validity.

## CONCLUSION

In conclusion, the Turkish version of TEPS proved to be a reliable tool for assessing anticipatory and consummatory pleasure in community samples. Given its international recognition and ease of application, we anticipate that TEPS-TR will be widely used in psychiatric and affective neuroscience research within the Turkish context. Further studies assessing its factor structure with culturally relevant items and validating it in patient populations, such as those with schizophrenia or depression, are warranted.

| Contribution Categories | | Author Initials |
|---|---|---|
| Category 1 | Concept/Design | E.I.G., N.A. |
| | Data acquisition | I.S., M.K. |
| | Data analysis/Interpretation | O.A. |
| Category 2 | Drafting manuscript | E.I.G., N.A., I.S. |
| | Critical revision of manuscript | O.A., M.K. |
| Category 3 | Final approval and accountability | E.I.G., N.A., M.K., I.S., O.A. |
| Other | Supervision | O.A. |

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