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Psychometric properties of the Turkish version of the depression anxiety stress scale for youth (DASS-Y) in psychiatric and non-psychiatric samples

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Abstract

Background The Depression, Anxiety, and Stress Scale (DASS)-21 is commonly used among adults to assess negative emotional states; however, the DASS-Y (the youth version) is a new scale specifically designed for children and adolescents, and its Turkish validation has not yet been conducted. This study aimed to evaluate the psychometric properties of the Turkish version of the DASS-Y scale in children and adolescents.

Methods We recruited $N = 312$ participants aged 8–17 years ($n = 166$ from psychiatric samples; $n = 146$ from non-psychiatric samples). We performed a Confirmatory Factor Analysis (CFA) on the proposed initial three-factor model of the DASS-Y. Cronbach's alpha coefficient was used to evaluate internal consistency. Participants completed self-report batteries (Children's Depression Inventory, the Revised Child Anxiety and Depression Scale-Child Version, and the Perceived Stress Scale) to assess convergent validity. The DASS-Y scores between psychiatric and non-psychiatric samples were compared to assess discriminant validity.

Results The results indicated that the CFA demonstrated a good model fit in both psychiatric and non-psychiatric samples. The scale's internal consistency was satisfactory, with all Cronbach's alpha coefficients greater than 0.80. DASS-Y subscale scores were positively correlated with scores from self-report scales, supporting strong convergent validity. The psychiatric sample had significantly higher DASS-Y scores than non-psychiatric samples, demonstrating satisfactory discriminant validity.

Conclusion The Turkish version of the DASS-Y is a brief, reliable tool for assessing various negative emotional states of Turkish children and adolescents in clinical settings. Our findings support the DASS-Y's original conceptual framework, highlighting its utility as a standard tool for research and clinical practice among Turkish youth.

Keywords Child, Adolescent, Depression, Anxiety, Stress, DASS, DASS-Y

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Introduction

Mental disorders are significant health issues affecting young people [1]. Around 10% to 20% of children and adolescents worldwide are affected by mental disorders [2, 3]. A recent meta-analysis highlights that nearly one in five young people in Europe have a mental disorder, with a pooled prevalence rate of 15.5% [4]. Negative emotional disorders, including anxiety and depression, are the most common disorders in youths [3]. Anxiety affects 4%–20% of children and adolescents, while depression affects 2%–8% of youths [5]. Anxiety and depressive disorders are increasing among Turkish children and adolescents, with 13.9% experiencing anxiety disorders and 2.9% suffering from mood disorders [6]. These untreated negative emotional symptoms can impair daily functioning, resulting in an increased risk of self-harm and suicide [3]. They also may persist into adulthood and lead to an increased risk of chronic mental health disorders [7, 8]. Thus, screening negative emotional states provides important opportunities for early identification and intervention for depression and anxiety.

There is a growing need for appropriate screening measures for depression and anxiety among children and young adults [9, 10]. Existing assessment tools frequently evaluate a combination of symptoms associated with both depression and anxiety (e.g., State-Trait Anxiety Inventory for Children, The Children's Depression Inventory, the Beck Depression Inventory, and The Beck Anxiety Inventory) [11–14], which results in a limited ability to distinguish effectively between these affective states [15]. In 1991, Clark and Watson introduced the tripartite model, consisting of general distress, physiological hyperarousal (specific anxiety), and anhedonia (specific depression) [16]. This model highlights that anxiety and depression share some common traits while also having distinct symptoms that differentiate them [16]. Lovibond and Lovibond supported this tripartite model and emphasized that the autonomic arousal symptoms in assessing anxiety and anhedonia in assessing depression were significant and proposed a third factor (the stress factor) [17]. Additionally, they suggested that such as sleep and appetite disturbance fail to discriminate between depression and anxiety [17]. This stress factor reflects a specific emotional syndrome referring to difficulty relaxing, tension, impatience, irritability, and agitation, distinguishable from anxiety or depression. Based on their research findings, they developed a self-report questionnaire for adults known as the Depression Anxiety Stress Scales (DASS) [17]. This instrument assesses depression, anxiety, and stress constructs, ensuring clear differentiation among these conditions by excluding symptoms that do not distinctly separate them [17, 18]. Substantial evidence supports the psychometric properties of the DASS-42 and its shorter 21-item version (DASS-21) in both clinical and non-clinical adult populations [19–23].

Previous research indicates that the adult model DASS-21 is not appropriate for individuals under 18 years old and fails to differentiate between depression and anxiety symptoms in adolescents accurately [24–27]. Therefore, Szabo and Lovibond developed the Depression Anxiety Stress Scale for Youth (DASS-Y) screening tool with simplified wording and appropriate terminology for those under age 18 based on the original DASS for depression and anxiety symptoms, which has explicitly been validated for use with both children and adolescents [28]. Adaptation studies of The DASS-Y have been performed in community settings across diverse languages and cultures, such as Serbian, Chinese, Persian, and Indonesian [29–32]. However, there has not yet been a Turkish adaptation or an assessment of the psychometric properties of the DASS-Y for Turkish youth. Moreover, to our knowledge, no validation studies of the original DASS-Y have been conducted in clinical settings.

This study aimed to examine the validity and reliability of the Turkish version of the DASS-Y scale by assessing its psychometric properties in children and adolescents. First, we hypothesized that the Turkish version of the DASS-Y would support the three-factor structure of the original DASS-Y in both psychiatric and non-psychiatric samples (hypothesis 1). Second, we proposed that the DASS-Y subscales would correlate with the Children's Depression Inventory (CDI), the Revised Child Anxiety and Depression Scale-Child Version (RCADS), and the Perceived Stress Scale (PSS) scores for convergent validity in both samples (hypothesis 2). Third, we proposed that the DASS-Y scores in the psychiatric sample would be higher than those in the non-psychiatric sample for discriminant validity (hypothesis 3). Finally, we hypothesized that the DASS-Y would demonstrate satisfactory internal consistency among Turkish youths (Cronbach's alpha > 0.80) and exhibit stable test-retest reliability over time (hypothesis 4).

Method and materials

Ethical approval was obtained from the ethics committee of Ankara Bilkent City Hospital (Approval number: 564/2024), and the study was conducted in accordance with the Declaration of Helsinki. Parents gave informed consent, and children and adolescents gave assent to the current study.

Participants and procedure

The sample ($N = 312$, 66% girls, mean age = 14.22 ± 2.27 years) consisted of children and adolescents aged 8–17 years from psychiatric ($n = 166$; 66.9% girls; mean age: 14.40 ± 2.34) and general pediatric outpatient clinics ($n = 146$; 65.1% girls; mean age: 14.01 ± 2.17). The

psychiatric sample was selected among youths with internalizing symptoms, including anxiety disorder and depressive disorder. Other psychiatric diagnoses were excluded through a clinical interview based on DSM-5 criteria conducted by a trained child and adolescent psychiatrist. The psychiatric sample comprises patients with major depressive disorder ($n = 33$, 19.9%), anxiety disorders ($n = 81$, 48.8%), and comorbid depression and anxiety disorders ($n = 52$, 31.3%) as defined by the DSM-5 criteria. Among patients with anxiety disorders, generalized anxiety disorder was the most prevalent ($n = 100$, 60.2%), followed by social anxiety disorder ($n = 15$, 9%), panic disorder ($n = 13$, 7.8%), specific phobia ($n = 3$, 1.8%), and separation anxiety disorder ($n = 2$, 1.2%). In the non-psychiatric group, the exclusion of psychiatric diagnoses was ensured through pediatrician-administered checklist screening for psychiatric disorders and verification via hospital records, with additional confirmation provided by the absence of psychiatric International Classification of Diseases (ICD) codes in the health system. The psychiatric sample consisted of 33 children aged 8–12 (19.9%) and 133 adolescents aged 13–17 (80.1%), while the non-psychiatric sample included 32 children (21.9%) and 114 adolescents (78.1%).

Inclusion criteria for all participants in the study were: (1) being aged 8–17, (2) being of Turkish origin and native speakers of Turkish, (3) being able to understand written Turkish, (4) not being on any regular psychiatric medication at the assessment time, (5) being willing to participate in the current study, and (6) having parents who agreed to their child's participation. The study did not include participants with neurological disorders, motor difficulties, hearing, visual, or language impairments. Participants who reported a diagnosis of intellectual disability, which may be a confounding factor in responses to self-reported scales, were also excluded. The sample size calculation used a 5:1 ratio between the number of participants and items for confirmatory factor analysis (CFA) [33, 34]. For the current study, which was conducted in two groups, 210 participants were deemed the minimum sample size.

All the participants were assessed for the inclusion and exclusion criteria. After evaluating the study's inclusion criteria, questionnaires were completed in pen-and-paper written format in psychiatric and pediatric outpatient clinics. Participants were reminded that their participation was entirely voluntary, that their responses would remain confidential, and that there were no correct or incorrect answers. Sociodemographic questions were completed first, followed by the DASS-Y, and then the other questionnaires were administered in random order. Alongside the DASS-Y form, patients also completed the CDI, the RCADS-CV, and the PSS to assess convergent validity. Participants in the non-psychiatric sample were asked to complete the DASS-Y form once more after 2 to 4 weeks to evaluate test-retest reliability. Forty participants (27.3%) filled out the retest forms.

Instruments

The depression anxiety stress scale for youth (DASS-Y) and Turkish translation procedure

The DASS-Y, developed and validated by Szabó and Lovibond in 2022, is the youth version of the DASS [28]. It uses simplified language for better understanding. Participants are requested to report their feelings from the past week. Similar to the original DASS-21 [18], it consists of 21 items that are equally divided into three subscales: depression, anxiety, and stress. The DASS-Y employs the same scoring method as the original, with all items rated on a four-point Likert scale (ranging from 0 to 3). Subscales are each scored on a scale from 0 to 21, with higher scores indicating higher levels of psychopathology (depression, anxiety, stress). DASS-Y total scale indicating general psychological distress was scored 0–63 [28].

Written permission was obtained from Peter Lovibond, a questionnaire developer, to translate and conduct validity and reliability studies of the DASS-Y in Turkish youths. First, the research group translated the DASS-Y into Turkish language. Two researchers with backgrounds in well-spoken English translated the questionnaire. Then, discussions were organized with clinicians working in mental health, academicians in child and adolescent psychiatry, and medical doctors. After this discussion, the expert panel approved the Turkish version of the DASS-Y, which had its original meaning and cultural suitability for Turkish youths. Lastly, a bilingual expert translated the revised version into English, and then it was reviewed by a native English-speaking translator to ensure consistency with the original text. The final Turkish version of DASS-Y was preliminarily tested among a small group of non-psychiatric and psychiatric patients (per group $n = 5$) to check whether they could comprehend the translated items and complete the scale independently. Based on interviews with participants, it was discovered that the scale's language was simple to read and that the content was readily comprehensible.

Children's depression inventory

This scale, developed by Kovacs [12], is used to measure the severity of depression in children. It is a self-assessment scale and can be applied to children and adolescents between the ages of 6–17. The scale consists of a total of 27 items. Each item includes three sentences the child can choose between by evaluating the last two weeks. Each item contains statements regarding the symptoms of childhood depression [12]. The scale can be filled in by reading it to the child or the child himself/herself. The child is asked to evaluate his/her situation in the

last two weeks and select and mark the sentence that best suits him/her from the three options. The answers given are given scores between 0 and 2. The depression score is obtained by adding these scores. The highest score that can be obtained from the scale is 54. The high total score indicates a high level of depression. It was adapted in our country by Öy [35].

Revised child anxiety and depression scale-child version

The long version of the RCADS is a self-report scale to assess symptoms corresponding to anxiety disorders and depression in children and young people aged 8–18 years [36]. It consists of 47 items rated on a four-point scale ranging from 0 to 3. It includes six subscales: social phobia (9 items), panic disorder (9 items), separation anxiety (7 items), generalized anxiety (6 items), obsessive-compulsive disorder (6 items), and major depression (10 items). Also, the scale features three summary scales: the depression subscale, the total anxiety subscale, and the total internalizing subscale (which includes both the depression and total anxiety subscales). Higher scores on these scales indicate greater levels of psychopathology in adolescents. The scale was adapted to Turkish by Görmez et al. in 2017, and validity and reliability studies were conducted [37]. The internal consistency of the Turkish version of RCADS is at a strong/excellent level, with a Cronbach alpha score of 0.95. The sub-dimensions range from 0.75 to 0.86.

Perceived stress scale

It was developed to measure children's perceived stress levels [38]. It is a four-point Likert-type scale consisting of nine items. It does not have a reverse-scored item. The total score is related to perceived stress. Oral and Ersan conducted an adaptation study of Turkish, which can be used in children aged eight and above [39]. The scale's Cronbach Alpha internal consistency reliability coefficient was 0.76, and the test-retest correlation was 0.71.

Statistical analysis

Statistical evaluations were conducted using SPSS version 22.0, and confirmatory factor analysis was performed with JAMOVI version 2.4.11. A p-value of less than 0.05 is considered statistically significant. Skewness and kurtosis values were assessed to check the assumption of normal distribution. Values within the range of ±2 for skewness and kurtosis indicate a normal distribution. Continuous variables were presented using the mean and standard deviation, while categorical variables were reported in terms of frequency and percentage. For normally distributed data, differences in continuous variables between groups were analyzed using the independent samples t-test. The Chi-square (χ^2) test examined inter-group differences in categorical data. Pearson's r value was utilized for correlation analyses. To examine the associations between equivalent scales (CDI, RCADS-CV-MDD, RCADS-CV-Anxiety, PSC), which were anticipated to have a specific relation with DASS-Y subscales (depression, anxiety, and stress), we conducted multiple linear regression analyses. Using the enter method, we entered the three DASS-Y subscales concurrently as predictors to account for their intercorrelations in these analyses.

The adequacy of the sample was evaluated through Bartlett's sphericity test and the Kaiser-Meyer-Olkin (KMO) test. The confirmatory factor analysis used the diagonally weighted least squares (DWLS) method to achieve more precise evaluations, considering the ordinal structure of the scale and a smaller sample size ($n < 200$). Model fit was assessed using the Comparative Fit Index (CFI; > 0.90 acceptable, > 0.95 excellent), the Standardized Root Mean Square Residual (SRMR, < 0.09 acceptable), and the Root Mean Square Error of Approximation (RMSEA; < 0.08 good, < 0.05 excellent), and Tucker–Lewis index (TLI; > 0.90 acceptable, > 0.95 excellent). The Cronbach alpha coefficient was used to assess internal consistency. A Cronbach's alpha value between 0.7 and 0.9 indicates adequate internal consistency. The test-retest reliability was evaluated using the intraclass correlation coefficient (ICC).

Results

The socioeconomic characteristics of the sample are presented in Table 1. There were no significant differences in age, gender, educational years, parental education levels, and household income between these two samples (See Table 1).

Confirmatory factor analysis

We performed the CFA based on the proposed original DASS-Y three-factor model in two distinct samples: psychiatric and non-psychiatric.

Psychiatric sample

Model fit indicators for the DASS-Y three-factor model indicated an acceptable fit (CFI: 0.994, RMSEA: 0.051 (95%CI: 0.037–0.065), SRMR: 0.074, TLI: 0.993) by CFA. Factor loadings of DASS-Y in psychiatric samples are shown in Table 2. Bartlett's test of sphericity showed statistical significance ($\chi^2(210) = 1888.437$, $p < 0.001$), supporting the use of factor analysis on the dataset. The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.891, indicating strong relationships between the variables. The anti-image correlation values of items vary between 0.770 and 0.943. All items had anti-image correlation values greater than 0.5, indicating their appropriateness for factor analysis. An examination of modification indices resulted in applying two indices

Table 1 The socioeconomic characteristics of the sample

	Total Sample (N= 312)	Psychiatric Sample (n= 166)	Non-psychiatric Sample (n= 146)	*Test Statistic*	*p*
Age (Mean±SD)	14.22±2.27	14.40±2.34	14.01±2.17	$t(310) = 1.540$	0.125
Gender (*n*,%)				$\chi2 = 0.112$	0.738
Girls	206 (66.0%)	111 (66.9%)	95 (65.1%)		
Boys	106 (34.0%)	55 (33.1%)	51 (34.9%)		
Education Year (Mean±SD)	9.07±2.38	9.25±2.47	8.86±2.27	$t(310) = 1.441$	0.151
Mother's education (n,%)				$\chi2 = 3.272$	0.195
Below High School	150 (48.1%)	76 (45.8%)	74 (50.7%)		
High School	101 (32.3%)	61 (36.7%)	40 (27.4%)		
University	61 (19.6%)	29 (17.5%)	32 (21.9%)		
Father's education (n,%)				$\chi2 = 0.577$	0.749
Below High School	92 (29.5%)	52 (31.3%)	40 (27.4%)		
High School	133 (42.6%)	69 (41.6%)	64 (43.8%)		
University	87 (27.9%)	45 (27.1%)	42 (28.8%)		
Household income (n,%)				$\chi2 = 0.841$	0.933
Below 10.000 TL	12 (3.8%)	7 (4.2%)	5 (3.5%)		
10.000–25.000.000.000 TL	75 (24.0%)	37 (22.3%)	38 (26.6%)		
25.000–50.000.000.000 TL	141 (45.2%)	77 (46.4%)	64 (44.8%)		
50.000–75.000.000.000 TL	52 (16.7%)	29 (17.5%)	23 (16.1%)		
Above 75.000 TL	29 (9.3%)	16 (9.6%)	13 (9.1%)		

SD Standart Deviation, *TL* Turkish Lira

(item 11–18 modification index: 72.1; item 14–18 modification index: 25.4) exceeding a value of 20. These two indices were added as covariance.

Non-psychiatric sample

Bartlett's test of sphericity showed statistical significance ($\chi^2(210) = 1581.745$, $p < 0.001$), and the Kaiser-Meyer-Olkin measure of sampling adequacy was 0.886. The anti-image correlation values of items vary between 0.814 and 0.948, which shows that the load values of these items highly contribute to the scale's factor structure. An examination of modification indices resulted in applying one index (item 11–18 modification index: 21.7) added as covariance. Model fit indicators for the DASS-Y three-factor model indicated an acceptable fit (CFI:0.997, RMSEA:0.035 (95%CI: 0.00–0.052.00.052), SRMR: 0.087, TLI: 0.996) by CFA. Factor loadings of DASS-Y in non-psychiatric samples are shown in Table S1.

Convergent and discriminant validity

Pearson correlations between The DASS-Y and equivalent scale scores (CDI, RCADS-CV, and PSC) are presented in Table 3. The DASS-Y total scores exhibited significant correlations with equivalent scale scores from the CDI ($r = 0.777$, $r = 0.639$), RCADS-CV total ($r = 0.770$, $r = 0.741$), and PSC ($r = 0.723$, $r = 0.747$) in the psychiatric and non-psychiatric sample, respectively ($p < 0.001$). Convergent validity analysis revealed significantly strong associations between the DASS-Y depression subscale and the total CDI score and the major depression subscale of RCADS-CV in both samples. The anxiety subscale of the DASS-Y was highly correlated to the anxiety subscale of RCADS-CV. Also, the stress subscale was highly correlated with the total score of the PSC in both samples (see Table 4). In multiple linear regression analyses, DASS-Y depression exhibited the strongest association with CDI and RCAD-CV-MDD scores, DASS-Y anxiety demonstrated a strong association with RCADS-CV-Anxiety, and DASS-Y stress was significantly associated with PSC. The results of the multiple linear regression analysis for both psychiatric and non-psychiatric samples are shown in Table 4. The associations of the RCADS-CV anxiety sub-dimensions scores with the DASS-Y anxiety and DASS-Y stress subscales are shown in Table 5. The anxiety and stress subscales of the DASS-Y demonstrated significant positive correlations (all p-values < 0.001) with each component of the RCADS-CV anxiety score within the psychiatric sample (the correlation coefficients ranged from 0.317 to 0.803 for anxiety and from 0.268 to 0.556 for stress) and non-psychiatric sample (the correlation coefficients ranged from 0.290 to 0.750 for anxiety and from 0.346 to 0.678 for stress). A significant difference was observed in the DASS-Y total scores between the psychiatric and non-psychiatric samples ($t(302.482) = 13.414$; $p < 0.001$). The DASS-Y, CDI, RCADS-CV, and PSC scores were higher in the psychiatric sample compared to the non-psychiatric sample (Table 6).

Table 2 Confirmatory factor analysis for the DASS-Y in the psychiatric sample ($N = 166$)

Factor	Indicator	*Estimate*	*SE*	*95% CI*	*z*	*p*
Depression	Item 3	0.683	0.0241	0.635–0.730.635.730	28.3	<0.001
	Item 5	0.848	0.0203	0.808–0.888.808.888	41.8	<0.001
	Item 10	0.702	0.0244	0.655–0.750.655.750	28.8	<0.001
	Item 13	0.736	0.0245	0.687–0.784.687.784	30.0	<0.001
	Item 16	0.853	0.0216	0.811–0.895.811.895	39.5	<0.001
	Item 17	0.935	0.0206	0.894–0.975.894.975	45.3	<0.001
	Item 21	0.888	0.0198	0.849–0.927.849.927	44.8	<0.001
Anxiety	Item 2	0.697	0.0274	0.643–0.751.643.751	25.5	<0.001
	Item 4	0.749	0.0262	0.698–0.801.698.801	28.6	<0.001
	Item 7	0.767	0.0273	0.713–0.820.713.820	28.1	<0.001
	Item 9	0.844	0.0268	0.791–0.896.791.896	31.5	<0.001
	Item 15	0.828	0.0253	0.778–0.877.778.877	32.7	<0.001
	Item 19	0.706	0.0273	0.652–0.759.652.759	25.9	<0.001
	Item 20	0.636	0.0283	0.581–0.692.581.692	22.4	<0.001
Stress	Item 1	0.651	0.0261	0.600–0.703.600.703	25.0	<0.001
	Item 6	0.758	0.0249	0.709–0.806.709.806	30.4	<0.001
	Item 8	0.789	0.0272	0.736–0.842.736.842	29.0	<0.001
	Item 11	0.711	0.0264	0.659–0.763.659.763	26.9	<0.001
	Item 12	0.796	0.0249	0.747–0.844.747.844	32.0	<0.001
	Item 14	0.366	0.0305	0.306–0.426.306.426	12.0	<0.001
	Item 18	0.637	0.0284	0.581–0.692.581.692	22.4	<0.001

DASS-Y Depression Anxiety Stress Scales for Youth

Table 3 Associations between DASS-Y subscales and their equivalent scales in both samples

	DASS-Y		
	Depression	**Anxiety**	**Stress**
	Psychiatric/ Non-psychiatric sample	Psychiatric/ Non-psychiatric sample	Psychiatric/ Non-psychiatric sample
CDI	**0.810*/0.622***	0.560*/0.555*	0.595*/0.527*
RCADS-CV-MDD	**0.793*/0.649***	0.588*/0.656*	0.591*/0.630*
RCADS-CV-Anx	0.517*/0.516*	**0.717*/0.666***	0.525*/0.661*
PSC	0.614*/0.647*	0.567*/0.601*	**0.657*/0.711***

Bold values highlight correlations expected to be significantly strong based on theoretical grounds

CDI Children's Depression Inventory, *RCADS-CV-MDD* Revised Child Anxiety and Depression Scales – Child Version- Major Depressive Disorder, *RCADS-CV-Anx* Revised Child Anxiety and Depression Scales – Child Version-Total Anxiety Score, *PSC* Perceived Stress Scale, *DASS-Y* Depression Anxiety Stress Scales for Youth, Pearson r values

*$p < 0.001$

Internal Consistency, subscales-total correlation, and test-retest reliability of the DASS-Y

Internal consistency (Cronbach alpha coefficient) analysis was used to determine the reliability of the DASS-Y. The Cronbach alpha coefficients for the subscales of depression, anxiety, and stress in the psychiatric sample were 0.895, 0.856, and 0.826, respectively. In the non-psychiatric sample, the Cronbach alpha coefficients for the subscales were 0.835, 0.810, and 0.853, respectively. The Cronbach's alpha value for the DASS-Y total was 0.924 for the psychiatric sample and 0.922 for the non-psychiatric sample. In the DASS-Y, the item-total correlation was adequate for all items (> 0.40). Removing any item from the scale did not cause an important change in Cronbach's alpha coefficient of the relevant sub-dimension. The results of the reliability analysis of the Turkish DASS-Y is presented in Table 7.

The total DASS-Y score showed strong correlations with its subscale scores ($p < 0.001$): depression ($r = 0.878$, $r = 0.862$), anxiety ($r = 0.834$, $r = 0.894$), and stress ($r = 0.844$, $r = 0.904$) in psychiatric and non-psychiatric samples, respectively. In the psychiatric sample, the depression factor showed significant correlations with the anxiety and stress factors ($p < 0.001$), yielding correlation coefficients of 0.563 and 0.647, respectively. The anxiety factor also demonstrated a significant correlation with the stress factor, with a correlation coefficient of 0.562 ($p < 0.001$) in the psychiatric sample. The correlations among the DASS-Y subscales in the non-psychiatric sample ranged from 0.626 to 0.712, as presented in Table S2. Moreover, the DASS-Y demonstrated moderate test-retest reliability (ICC > 0.50) across the two assessments in the non-psychiatric sample ($n = 40$), showing an ICC of 0.555 (95% CI: 0.159–0.765) for total scores, 0.576 (95% CI: 0.197–0.775) for depression scores, 0.582 (95% CI: 0.211–0.779) for anxiety scores, and 0.541 (95% CI: 0.132–0.757) for stress scores.

Discussion

This study evaluated the psychometric properties of the Turkish version of the DASS-Y in children and adolescents. Our findings supported our initial hypothesis,

Table 4 Prediction scores of DASS-Y subscales on equivalent measures in psychiatric and non-psychiatric samples

Psychiatric sample (*n* = 166)						
Predictors	R^2	*F*		*Beta*	*t*	*p*
Dependent variable: CDI						
	0.67	111.27	< 0.001			
DASS-Y depression				**0.68**	11.05	< 0.001
DASS-Y anxiety				0.13	2.31	0.022
DASS-Y stress				0.07	1.24	0.215
Dependent variable: RCADS-CV-MDD						
	0.66	105.74	< 0.001			
DASS-Y depression				**0.63**	10.08	< 0.001
DASS-Y anxiety				0.19	3.29	0.001
DASS-Y stress				0.07	1.15	0.248
Dependent variable: RCADS-CV-Anx						
	0.54	63.19	< 0.001			
DASS-Y depression				0.10	1.43	0.155
DASS-Y anxiety				**0.58**	8.61	< 0.001
DASS-Y stress				0.12	1.71	0.088
Dependent variable: PSC	0.53	61.93	< 0.001			
DASS-Y depression				0.23	3.18	0.002
DASS-Y anxiety				0.21	3.08	0.002
DASS-Y stress				**0.40**	5.50	< 0.001
Non-psychiatric sample (*n* = 146)						
Predictors	*R2*	*F*		*Beta*	*t*	*p*
Dependent variable: CDI						
	0.42	35.07	< 0.001			
DASS-Y depression				**0.41**	4.52	< 0.001
DASS-Y anxiety				0.13	1.35	0.178
DASS-Y stress				0.17	1.88	0.062
Dependent variable: RCADS-CV-MDD						
	0.53	53.19	< 0.001			
DASS-Y depression				**0.30**	3.58	< 0.001
DASS-Y anxiety				0.26	2.85	0.005
DASS-Y stress				0.24	2.94	0.004
Dependent variable: RCADS-CV-Anx						
	0.51	50.03	< 0.001			
DASS-Y depression				0.10	−0.10	0.916
DASS-Y anxiety				**0.58**	4.23	< 0.001
DASS-Y stress				0.12	4.41	< 0.001
Dependent variable: PSC	0.57	63.46	< 0.001			
DASS-Y depression				0.32	4.13	< 0.001
DASS-Y anxiety				0.02	0.26	0.79
DASS-Y stress				**0.49**	6.14	< 0.001

Multiple regression analysis

Bold values highlight significantly strong associations

CDI Children's Depression Inventory, *RCADS-CV-MDD* Revised Child Anxiety and Depression Scales – Child Version- Major Depressive Disorder, *RCADS-CV-Anx* Revised Child Anxiety and Depression Scales – Child Version-Total Anxiety Score, *PSC* Perceived Stress Scale, *DASS-Y* Depression Anxiety Stress Scales for Youth

confirming the original three-factor structure of the DASS-Y in both psychiatric and non-psychiatric youth samples. Our confirmatory factor analysis revealed that the depression, anxiety, and stress subscales are distinct yet related constructs. These findings align with the original study that utilized the English version of the DASS-Y [28] and studies that explored the structural aspects of the DASS-Y in different language versions [29–32]. All adaptation studies of the DASS-Y have demonstrated construct validity only in community samples [29–32]; however, our results indicate that the DASS-Y also maintains its original structure among youths in clinical settings. Previous studies have examined the factor structure of the adult DASS-21 in young adolescent samples and found no supporting three-factor structure [24, 26, 40]; thus, the DASS-Y is more specific and easily

Table 5 Relationship between DASS-Anxiety, DASS-Stress, and RCADS-CV anxiety subscales

DASS-Anxiety			DASS-Stress	
	Psychiatric sample (*n* = 166)	Non-psychiatric sample (*n* = 146)	Psychiatric sample (*n* = 166)	Non-psychiatric sample (*n* = 146)
RCADS-CV-GAD	0.605*	0.614*	**0.526***	**0.678***
RCADS-CV-SAD	0.317*	0.290*	0.268*	0.346*
RCADS-CV-PD	**0.803***	**0.750***	0.377*	0.592*
RCADS-CV-SP	0.438*	0.518*	0.386*	0.571*

Pearson correlation r values

RCADS-CV Revised Child Anxiety and Depression Scales – Child Version, GAD: Generalized Anxiety Disorder, *SAD* Separation Anxiety Disorder, *PD* Panic Disorder, *SP* Social Phobia, *DASS* Depression Anxiety Stress Scales

*$p < 0.001$

Table 6 Comparison of DASS-Y and other scales' scores between psychiatric and non-psychiatric samples

	Psychiatric Sample (n = 166) Mean (SD)	**Non-Psychiatric Sample (n = 146) Mean (SD)**	***Test Statistic***
DASS-Y			
Depression	10.73 (6.56)	3.24 (3.99)	$t(275.607) = 12.307$
Anxiety	9.45 (6.05)	2.93 (3.74)	$t(279.440) = 11.582$
Stress	13.25 (5.12)	6.77 (5.30)	$t(309) = 10.943$
DASS-Y total score	33.41 (15.15)	12.97 (11.60)	$t(302.482) = 13.414$
CDI	21.73 (9.69)	9.69 (6.11)	$t(280.674) = 13.836$
RCADS-CV	69.95 (26.93)	32.10 (22.38)	$t(309.028) = 13.550$
RCADS-CV-MDD	16.47 (7.89)	6.83 (5.88)	$t(302.181) = 12.318$
RCADS-CV-Anx	53.48 (21.18)	25.27 (17.70)	$t(309.206) = 12.808$
PSC	13.40 (5.95)	6.07 (4.81)	$t(305.269) = 11.963$

CDI Children's Depression Inventory, *RCADS-CV* Revised Child Anxiety and Depression Scale – Child Version, *PSC* Perceived Stress Scale, *DASS-Y* Depression Anxiety Stress Scales for Youth, *SD* Standart Deviation

all *p*-values <0.001

understandable for children and adolescents and seems more appropriate for young samples.

Regarding the convergent validity of the DASS-Y, the depression, anxiety, and stress subscales of the DASS-Y correlated significantly with the CDI, RCADS, and PSS in the expected directions, thus supporting our second hypothesis. After correlation analysis, we performed multiple regression analyses separately for psychiatric and non-psychiatric samples by simultaneously entering all three DASS-Y scales as predictors to control the intercorrelations of the subscales. In these analyses, we identified distinct associations for the DASS-Y depression subscale with CDI, RCADS-CV-MDD, anxiety subscale with RCADS-CV-Anxiety, and stress subscale with PSS scores. The DASS-Y depression factor includes items that reflect feelings of hopelessness, anhedonia, dysphoria, and devaluation of life [28], and it demonstrates a strong association with the RCADS-CV-MDD and CDI, which pertain to low mood. Other studies evaluating the DASS-Y's convergent validity in youth have shown that the depression subscale of the DASS-Y is correlated with negative affect (PANAS) [28, 31], life satisfaction (The Satisfaction with Life Scale) [30], and general negative emotional states (General Health Questionnaire, Pittsburgh Sleep Quality Index) [41]. However, none of these measures are aimed explicitly at depression. Our findings support the strong convergent validity of the depression subscale of DASS-Y with other specific depression measures for children and adolescents.

As expected, the DASS-Y anxiety factor showed a strong correlation with the RCADS-CV Anxiety in this study. The adult version of the DASS-21 and the original DASS-Y study indicate that the anxiety subscales are intended to measure autonomic nervous system activation, fear responses, and physiological arousal symptoms related to anxiety [17, 18, 28]. Validation studies of the DASS-Y among young adolescents have revealed a significant association between its Anxiety subscale and Physiological Hyperarousal [28, 31]. According to the original DASS-Y development study, the Anxiety factor is defined by items that indicate autonomic arousal, impact on skeletal muscles, and personal awareness of anxious feelings. The most significant sign of this construct is a feeling of impending panic [28]. Our results showed that the DASS-Y Anxiety subscale had low-to-moderate correlations with the RCADS-CV Anxiety subscales GAD, SAD, and SP, whereas it demonstrated a high correlation with PD. Given DSM-based anxiety disorders of the RCADS-CV Anxiety subscale, panic disorder exhibited the strongest association with the DASS-Y Anxiety subscale compared to other DSM-based anxiety disorders in both of our samples. Our findings are consistent with evidence indicating that physiological hyperarousal and physical fear responses are closely linked to panic disorder [42, 43] and support the original DASS-Y anxiety factor.

In our study, the DASS-Y stress factor was strongly associated with perceived stress. Some research indicated that the PSC is linked to the DASS-21 stress subscale, which supports our findings [44, 45]. The original DASS-Y stress factor is characterized by easily becoming upset, difficulty relaxing, impatience and irritability, and a tendency to overreact [28]. Our findings reveal that among the RCADS anxiety disorders, GAD scores show the strongest correlation with DASS-Y stress in both samples. Our results align with previous studies, which indicated that excessive worry is more strongly correlated with DASS-Y stress scores [28, 31]. Furthermore, a recent study of Serbian adolescents found that the DASS-Y stress factor is associated with global externalizing symptoms, such as impatience, irritability, and overreaction

Table 7 Analysis of the reliability of the DASS-Y in both samples

		Psychiatric sample ($n=166$)		Non-psychiatric sample ($n=146$)	
Factor	**Items**	**Item Total Correlation**	**Alpha If Item Deleted**	**Item Total Correlation**	**Alpha If Item Deleted**
		Depression Cronbach's Alpha = 0.895		Depression Cronbach's Alpha = 0.835	
Depression	I did not enjoy anything	0.625	0.888	0.475	0.829
	I hated my life	0.754	0.873	0.717	0.797
	There was nothing nice I could look forward to	0.662	0.884	0.505	0.832
	I could not stop feeling sad	0.559	0.895	0.565	0.815
	I hated myself	0.742	0.874	0.656	0.806
	I felt like I was no good	0.733	0.876	0.641	0.803
	I felt that life was terrible	0.797	0.867	0.630	0.805
		Anxiety Cronbach's Alpha = 0.856		Anxiety Cronbach's Alpha = 0.810	
Anxiety	I felt dizzy, like I was about to faint	0.613	0.836	0.580	0.782
	I had trouble breathing (e.g., fast breathing), even though I wasn't exercising and I was not sick.	0.663	0.829	0.555	0.784
	My hands felt shaky	0.626	0.834	0.580	0.779
	I felt terrified	0.619	0.835	0.399	0.808
	I felt like I was about to panic	0.689	0.826	0.559	0.783
	I could feel my heart beating really fast, even though I hadn't done any hard exercise	0.619	0.836	0.610	0.773
	I felt scared for no good reason	0.513	0.850	0.559	0.783
		Stress Cronbach's Alpha = 0.826		Stress Cronbach's Alpha = 0.853	
Stress	I got upset about little things	0.463	0.819	0.509	0.848
	I found myself over-reacting to situations	0.618	0.795	0.743	0.815
	I was stressing about lots of things.	0.515	0.812	0.567	0.840
	I was easily irritated	0.716	0.779	0.712	0.818
	I found it difficult to relax	0.584	0.800	0.504	0.848
	I got annoyed when people interrupted me	0.408	0.832	0.512	0.848
	I was easily annoyed	0.716	0.778	0.772	0.808

DASS-Y Depression Anxiety Stress Scales for Youth

[30]. All these findings support that DASS-Y stress is a distinct construct related to excessive worrying and irritability, differing from depression and anxiety.

Our results reveal that the DASS-Y questionnaire demonstrates a satisfactory level of internal consistency, with Cronbach's alpha coefficient values of at least 0.80 for depression, anxiety, and stress, which supports our hypothesis. In the initial validation study involving Australian youths aged 7 to 18, the DASS-Y showed high internal consistency: Cronbach's alpha values were $\alpha = 0.89$ for Depression, $\alpha = 0.84$ for Anxiety, and $\alpha = 0.84$ for Stress [28]. Furthermore, the DASS-Y has been translated and validated into various languages, with studies reporting internal consistency measures and Cronbach's alpha values of at least 0.80 for each DASS-Y subscale [29–32, 41]. Alongside the evidence that the DASS-Y can be reliably administered in community settings [28–32, 41], our findings emphasize that the DASS-Y is a trustworthy instrument for children and adolescents in both psychiatric and non-psychiatric clinical settings. Validating this scale in clinical settings is crucial because it confirms the scale's usefulness for diagnosis, monitoring the severity of internalizing symptoms, and guiding treatment planning for clinicians.

Study limitations

This study has some limitations. First, participants under 13 were a small portion of our sample and were not well-represented in this study. Given the more widespread internalizing issues among adolescents and our inclusion criteria requiring the presence of these problems, this outcome can be anticipated. Therefore, there was a larger number of adolescent participants in our sample. Second, our study is the first evaluation of the DASS-Y psychometric features in clinical settings, including both psychiatric and non-psychiatric samples. However, since the participants are from a tertiary hospital, our findings cannot be generalized to other populations. Third, although the pediatrician screened for psychiatric disorders through using checklists, parental and self-reports and/or by reviewing hospital records in the non-psychiatric sample, any psychiatric diagnostic interview by a child and adolescent psychiatrist was not provided. Finally, this study focused exclusively on participants

with internalizing disorders as the psychiatric sample. Future studies should also assess the properties of DASS-Y in youth with externalizing disorders.

Conclusion

This study suggests that depression, anxiety, and stress among children and adolescents can be recognized as distinct constructs through DASS-Y. The Turkish version of the DASS-Y has shown satisfactory psychometric properties, demonstrating its validity and reliability in evaluating depression, anxiety, and stress in both psychiatric and non-psychiatric samples of Turkish youth. The Turkish version of DASS-Y offers a concise assessment of depression, anxiety, and stress, using simplified language and appropriate terminology for children and adolescents aged 8 to 17. The publicly available DASS-Y fills a crucial gap in assessing negative emotional states in Turkish youth and is expected to be useful in both research and clinical settings, similar to the adult DASS-21.

Supplementary Information

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Supplementary Material 1.

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Authors' contributions
EA and GŞD conceptualized the study. EA, ADÇ, and MŞ analyzed, interpreted the data. ADÇ, YEA, and TÇ collected and curated the data. EA wrote the main manuscript. EA, MŞ and EÇ reviewed the related literature. GŞD and EÇ reviewed the manuscript critically. The authors have read and approved the final manuscript.

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Data availability
No datasets were generated or analysed during the current study.

Declarations

Ethics approval and consent to participate
The study was conducted in accordance with the Declaration of Helsinki and approved by the ethics board of the Ankara Bilkent City Hospital (Approval number: 564/2024). All parents provided informed consent, and children and adolescents gave their assent to participate in the study.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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