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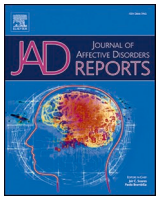

Research Paper

Validation of the Portuguese version of the Youth Anxiety Measure for DSM-5 (*YAM-5-I*)

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ABSTRACT

Early intervention in anxiety symptomatology in school-aged children and adolescents is an effective way to prevent later psychopathology. Several measures have been developed to identify these symptoms although few of them rely on the latest criteria for anxiety disorders and, therefore, can be outdated.

The Youth Anxiety Measure for DSM-5 (*YAM-5*) is a recently developed self-report instrument that assesses symptoms of the main anxiety disorders according to the current edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5). Already translated into several languages, this instrument has consistently revealed good psychometric properties.

In this validation study, we translated and analyzed the psychometric properties of *YAM-5-I* in a Portuguese community sample including 300 participants. Data was collected using an online survey platform. Exploratory Factor Analysis and Parallel Analysis of data revealed a four-factor model accounting for 45% of the total variance in Part I of *YAM-5*, which included the scales of Separation Anxiety Disorder, Selective Mutism, Panic Disorder, and a fourth factor merging Social and Generalized Anxiety Disorders. This four-factor model was confirmed through Confirmatory Factor Analysis, revealing a better fit to the data than the original model. High internal consistency of the *YAM-5-I* was confirmed ($\omega = 0.88$), as well as its convergent validity with similar symptomatology (correlations ranging from 0.38 to 0.74, except for the Selective Mutism Scale). The sample size can be a limitation of the present study, and cultural aspects could have influenced our results on the *YAM-5-I* four-factor model (different from the original version with five factors).

Overall, our study supported the good psychometric properties of the Portuguese version of the *YAM-5-I,* therefore, consisting of a valid and updated tool for screening anxiety symptoms in children and adolescents.

1. Introduction

Anxiety is an emotional state that emerges from the "anticipation of future threat" (APA, 2013, p. 223), and presents a diffuse nature (Ohman, 2008). The duration of this state and its associated significant suffering can lead to anxiety disorders that are currently the most common psychopathologies among school-aged children and adolescents (Muris et al., 2017a, b; Simon et al., 2017). With negative repercussions in personal, interpersonal, and academic contexts, anxiety disorders at this developmental stage can increase the likelihood of future disorders. Therefore, an early diagnosis is crucial for preventing later psychopathology. USPSTF (2022) recommends screening for anxiety symptoms at the ages of 8 – 18 years. For this purpose, several instruments are used to diagnose anxiety disorders (along with diagnostic interviews) but some of them might already be outdated. For example, among the most used questionnaires, we find *The State-Trait Anxiety Inventory for Children* (STAI-C) which was first developed in the '70 s by Spielberger et al. (1973), the *Spence Children's Anxiety Scale* (SCAS) developed by Spence in the '90 s (1998) and, more recently, the *Screen for Child Anxiety Related Emotional Disorder* (SCARED-71) by Bodden et al. (2009). These instruments aim to assess several anxiety disorders, whereas others are designed to assess for a specifical anxiety disorder, such as the *Social Anxiety Scale for Adolescents* (SAS-A; La Greca and Lopez, 1998) and the *Social Phobia and Anxiety Inventory- Brief* (SPAI-B; Piqueras et al., 2012; see also Garcia-Lopez et al. 2015). All of them were developed before the latest publication of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5; APA, 2013) which introduced significant changes in the classification of anxiety disorders by removing obsessive-compulsive, posttraumatic, acute stress, and agoraphobia disorders, while including selective mutism and separation anxiety

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Table 1
Eigenvalues from Parallel Analysis of YAM-5-I.

Factors	Real data eigenvalues	Average eigenvalues	95th percentile eigenvalues
1	9.024	1.605	1.708
2	2.067	1.511	1.555
3	2.023	1.448	1.504
4	1.550	1.391	1.444
5	1.317	1.339	1.400
6	1.149	1.291	1.334
7	0.868	1.244	1.270

disorders in this category.

Facing these changes in the classification system, Muris et al. (2017c) developed a new self-report measure to assess symptoms of anxiety disorders in children and adolescents, according to the DSM-5 (APA, 2013): The Youth Anxiety Measure for DSM-5 (*YAM-5*). This questionnaire assesses symptomatology of the main anxiety disorders described in DSM-5 and is divided into two parts: Part I includes 28 items that assess symptoms of anxiety and Part II includes 22 items assessing phobia symptomatology. Based on the current criteria for anxiety disorders, this instrument informs others about the perception that the child or the adolescent has about something internalizing and, therefore, difficult to observe, whereas is an easy way to collect data in a short time (Muris et al., 2017c).

Psychometric properties of *YAM-5* were first analyzed on a sample of 132 non-clinical and 64 clinical children and adolescents (8 - 18 years old). According to the results, the 50 items were distributed over five factors in each part. Part I included the scales of Separation Anxiety Disorder (6 items), Selective Mutism (4 it.), Social Anxiety Disorder (6 it.), Panic Disorder (6 it.), and Generalized Anxiety Disorder (6 it.). Part II included Animal Phobias (5 it.), Environmental Phobias (4 it.), Blood-Injection-Injury Phobias (3 it.), Situational Phobias/ Agoraphobias (6 it.) and Other Phobias (4 it.) scales. Although the authors pointed out the need to collect more data in clinical samples (Muris et al., 2017a), they reported good internal consistency, specifically regarding Part I, with Cronbach's alpha above 0.90 for the overall score and most of the scales, and item-total correlations (ITC) between 0.30 and 0.80 for the non-clinical adolescent sample. The Selective Mutism scale presented the lowest internal consistency (*Cronbach's alpha* = 0.65; ITC between 0.38 and 0.53 for the non-clinical sample), similar to the results obtained by Simon et al. (2017; *McDonald's omega* = 0.50; *ITC* ranging from 0.42 to 0.58).

Further studies assessing the psychometric properties of *YAM-5* revealed good reliability, namely internal consistency (Muris et al., 2018; Simon et al., 2017), and test-retest reliability (Soltani et al., 2020), with *Cronbach's alphas* and *McDonald's omegas* above 0.80 for Parts I and II, and medium to high correlation coefficients between *YAM-5* and other measures assessing similar constructs. In some cases, factor extraction did not confirm the original distribution of the items. For example, Simon et al. (2017) removed item 17 from the Panic Disorder scale, and Ivaki et al. (2021) removed item 2 from the Selective Mutism scale to confirm the five-factor model. Also, Garcia-Lopez et al. (2017) proposed a short version of *YAM-5* with only 17 items due to internal consistency problems of the Selective Mutism scale, and this version was used in a later study by Fuentes-Rodriguez et al. (2018), revealing good psychometric properties.

Good convergent validity has also been confirmed, with medium to high correlation coefficients between Part I of *YAM-5* and the internalizing cluster of the *Youth Self-Report* (YSR; Achenbach, 1991) ($r = 0.52$), the trait of anxiety of the *State-Trait Anxiety Inventory for Children* (STAI-C; Spielberger et al., 1973) ($r = 0.80$), and the *Fear Survey Schedule for Children- Revised* (FSSC-R; Ollendick, 1983) ($r = 0.86$), as reported by Muris et al. (2017a).

Overall, these studies confirm good reliability and validity of *YAM-5* although not all of them confirmed the original five-factor structure. Furthermore, the Selective Mutism scale does not consistently reveal good psychometric properties- Muris et al. (2017c) had already acknowledged some issues with this scale, stating that the four items included are only focused on the key symptoms of "failure to speak", which presents a low prevalence in the community.

The original version of *YAM-5* has already been translated into several languages revealing acceptable to good psychometric properties across versions (Çankaya and Cevik, 2018; Garcia-Lopez et al., 2017; Ivaki et al., 2021; Maleki et al., 2021; Simon et al., 2017). Based on the proven qualities of this updated instrument and the importance of assessing anxiety symptomatology at early ages, *YAM-5* can be disseminated among research and clinical contexts with linguistic and cultural differences.

The present study intends to contribute to this dissemination by providing a valid version of the *YAM-5-I* for the Portuguese population.

2. Methods

Part I of the *YAM-5* (assessing anxiety symptomatology) is analyzed in a Portuguese community sample of 300 school-aged children and adolescents (11 to 16 years old; 188 female). Translation and back-translation of the *YAM-5-I* are first performed, following the guidelines of the International Test Commission (2017). Second, we conduct Parallel Analysis, Exploratory, and Confirmatory Factor Analysis to confirm the structure of the Portuguese version of *YAM-5-I*. And finally, we examine its reliability and validity, expecting good internal

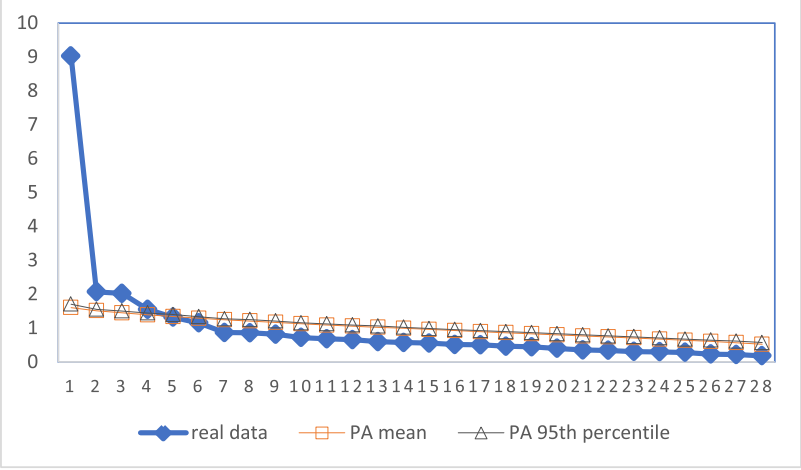

Fig. 1. The plot of actual versus randomly generated eigenvalues for YAM-5-I items.

Table 2
Factor loadings resulting from EFA (after Direct Oblimin rotation) for YAM-5-I.

YAM-5 items and factors	F1	F2	F3	F4
Separation Anxiety Disorder				
1. I am afraid to go anywhere without my parents	.548	.117	.095	−0.120
6. I get frightened if my parents leave the house without me	.487	.008	.050	−0.088
10. I am afraid that my parents will leave and never come back	.808	−0.023	−0.177	.147
15. I am afraid that something bad will happen, so I'll never see my parents again	.774	−0.061	−0.109	.071
19. I have very scary dreams that I lose my parents	.387	.068	.040	.222
24. I don't feel well when I have to go somewhere without my parents	.513	.242	.214	−0.267
Selective Mutism				
2. At school I don't speak to the teacher at all	.039	.481	−0.081	.156
11. If I meet a new person, I don't speak at all	.016	.491	.249	−0.056
20. At school I don't speak at all to the kids in my class	.016	.591	−0.150	.094
25. I don't speak at all when there is a new visitor at our home	.036	.631	.269	−0.090
Social and Generalized Anxiety Disorder				
3. I find it scary to meet new people	−0.007	.167	.511	.006
7. I find it scary to eat or drink if other people are looking at me	.054	.116	.389	.197
12. I am afraid that others will see that I blush	−0.044	.025	.545	.115
16. I am afraid I'll do something embarrassing	−0.073	.024	.841	−0.033
23. I am very afraid that other kids don't like me	.100	−0.006	.603	.081
28. I am afraid that I might do or say something stupid in front of others	−0.013	.030	.826	−0.009
5. I worry about a lot of things	.157	−0.121	.470	.244
9. I think a lot about what can go wrong	.178	−0.130	.450	.264
14. I find it hard to stop worrying	.176	−0.204	.500	.215
18. I worry a lot about not doing well at school	.272	−0.142	.280	.092
22. I worry a lot about all the bad things than happen in the world	.234	−0.050	.330	.151
27. I don't feel well because I worry so much	.174	−0.029	.452	.313
Panic Disorder				
4. I panic for no reason	−0.042	.152	.273	.570
8. I suffer from anxiety or panic attacks	−0.079	.052	.160	.729
13. All of a sudden I become so scared that my heart starts to beat very quickly	.280	−0.016	.217	.334
17. When I panic, I am afraid that I could die	.338	.002	.109	.280
21. I have severe anxiety attacks during which I tremble all over my body	.022	.135	.082	.652
26. I am afraid of having a new anxiety or panic attack	.104	.053	.082	.713

Table 3
Goodness of Fit Indices for the original and the four-factor model of YAM-5-I.

Indices	χ^2/df	CFI	AIC	RMSEA	SRMR
Original Model	2.35	.87	930.07	.07	.08
Four-Factor Model (specified model)	1.74	.94	496.76	.05	.07

Notes. χ^2/df = Chi-square / degree of freedom; CFI = Comparative Fit Index; AIC = Akaike Information Criterion; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Square Residual.

consistency and moderate to high correlations with similar measures of psychopathological symptomatology from the following instruments: FSSC-R (Ollendick, 1983), YSR (Achenbach, 1991), and *Brief Symptom Inventory* (BSI; Derogatis, 1993).

2.1. Participants and measures

Our sample included students from two public school clusters in Portugal's north and center regions. After obtaining permission from the schools' principals, the authors sent 944 Informed Consents to the guardians of 7th-grade, 8th-grade, and 9th-grade students, through their teachers, with a detailed description of the study. 416 guardians gave their permission but, despite the guardians' consent, only 300 students agreed to participate. As such, our final sample consisted of 300 participants (188 female; Mage = 13.13; SD = 1.29) distributed over the three grades (39% in 7th grade, 25% in 8th grade, and 36% in 9th grade), assenting to participate in the study (this represents 32% of the targeted participants).

Each participant received a link giving access to an online survey platform. The online protocol included four measures (among others) presented in the order below, and the participants self-managed the completion of the questionnaires, pausing whenever they needed.

- The Youth Anxiety Measure for DSM-5- Part I *(YAM-5-I;* Muris et al., 2017c)

Twenty-eight items assessing the main anxiety disorders symptomatology (APA, 2013) in children and adolescents (8 – 18 years) are included in Part I of the *YAM-5*. Five factors include Separation Anxiety Disorder (6 items), Selective Mutism (4 it.), Social Anxiety Disorder (6 it.), Panic Disorder (6 it.) and Generalized Anxiety Disorder (6 it.). Higher scores reflect higher levels of anxiety symptomatology, and each item is rated on a four-point Likert scale (1 = *never;* 4 = *always*).

The translation of the *YAM-5-I* was previously performed, following the International Test Commission (2017) guidelines- after permission from the authors of *YAM-5* (Muris et al., 2017c), the original version was translated by two of the authors (*MO, RA*) and standardized into a single translation by another author (*FB*). This version was evaluated by an expert committee (minor adjustments were made) and five adolescents were assessed for a spoken reflection regarding items' content and instructions. Another author (*FFS*), highly proficient in English, performed blind back-translation and *MO* compared the two versions (minor adjustments were made). The final version was approved by the original authors of the scale, and a Pilot Study was then performed with 45 adolescents (26 female; 12–15 years old; M_{age}= 13.73; *SD*= 1.27) to assess preliminary qualities of this instrument, revealing good internal consistency with the total Cronbach's alpha of 0.87 and between 0.62 (Selective Mutism) and 0.81 (Panic Disorder) for the scales (item-total correlations ranging from 0.23 to 0.78).

- The Fear Survey Schedule for Children- Revised (FSSC-R; Ollendick, 1983; Dias and Gonçalves, 1999)

The *FSSC-R* is an 80-item instrument (distributed according to five factors) designed to screen fear problems in children and adolescents through a three-point Likert scale (0 = *none;* 4 = *a lot*). Reliability analysis of the Portuguese version revealed a Cronbach's alpha coefficient of 0.96, ranging from 0.57 to 0.89 for the scales.

In the present study, we focused on the score obtained on the dimension Fear of Failure and Criticism (18 it.) that reveals the level of fear the participant feels about specific situations.

- The Youth Self-Report Inventory (YSR; Achenbach, 1991; Fonseca and Monteiro, 1999)

The *YSR* includes 119 items rated on a three-point Likert scale (0 = *not true;* 2 = *many tomes true*). Reliability analysis of the Portuguese version revealed a Cronbach's alpha coefficient of 0.93, with ITC between 0.22 and 0.72 for the scales. Thirty-one items compose the

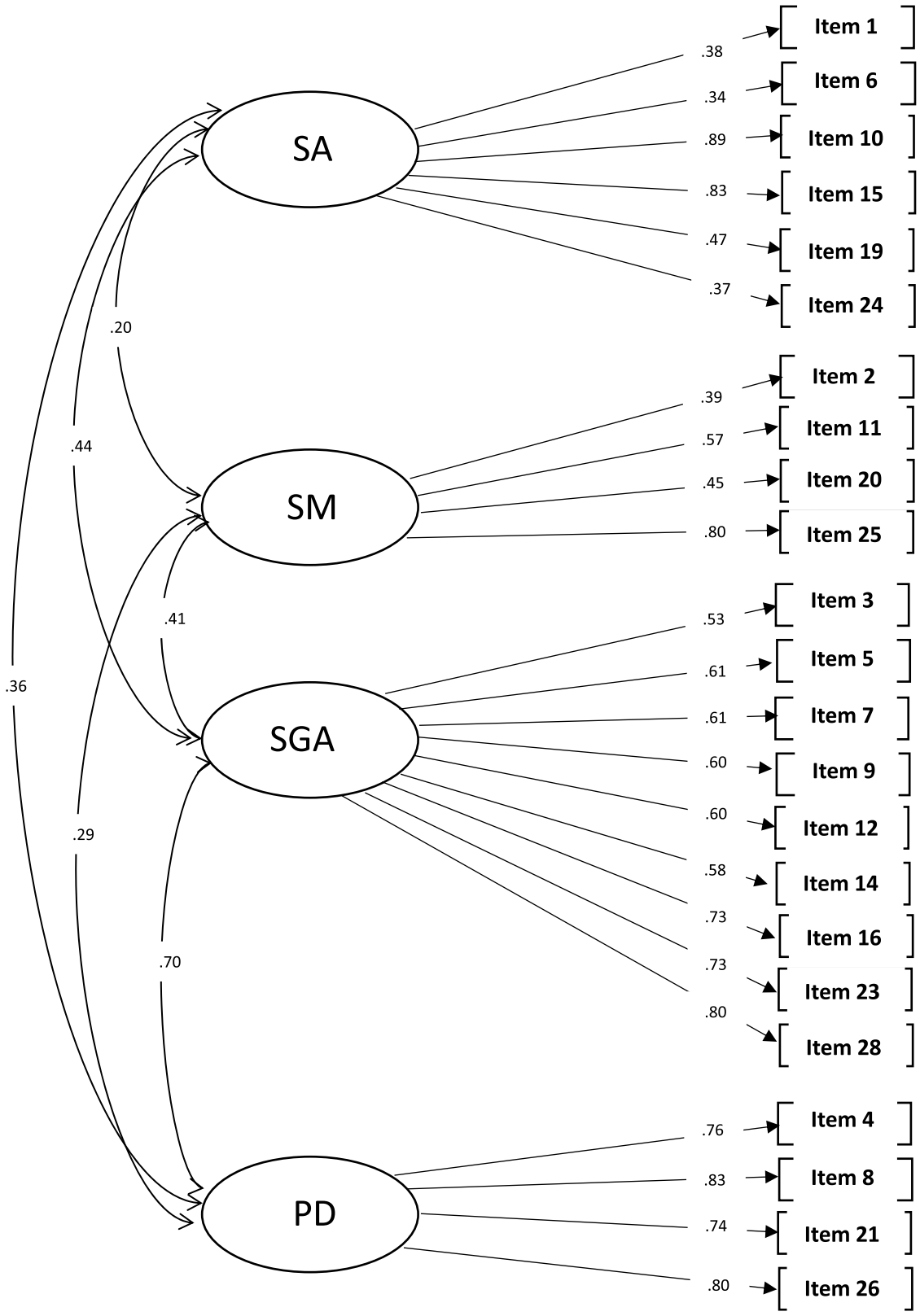

Fig. 2. CFA specified model results for YAM-5-I.

internalizing cluster of *YSR* that includes three scales: Anxiety/Depression (13 it.), Isolation (8 it.), and Somatic Complaints (10 it.). This cluster was used in the present study as it assesses psychopathological functioning in 11–18-year-old students.

- Brief Symptom Inventory (BSI; Derogatis, 1993; Canavarro, 1999)

The *BSI* measures the intensity of psychopathological symptomatology through 53 items assessed with a five-point Likert scale (0 = *not at all;* 4 = *extremely*). The Portuguese version of *BSI* presents good

Table 4
Internal consistency (ω) and descriptive statistics for YAM-5-I scales.

YAM-5-I factors	Total group (*N = 300*) *Mean (SD)*	Female (*n = 188*) *Mean (SD)*	Male (*n = 112*) *Mean (SD)*	*t* (298)	Cohen's *d*	Item-total correlations	ω
F1: Separation Anxiety Disorder (6 it.)	4.73 (3.44)	5.07 (3.46)	4.15 (3.35)	−2.26*	0.27	[.429; 0.667]	.77
F2: Selective Mutism (4 it.)	3.05 (2.59)	3.24 (2.64)	2.72 (2.48)	−1.69	0.20	[.406; 0.521]	.68
F3: Social and Generalized Anxiety Disorder (9 it.)	10.01 (5.72)	11.40 (5.87)	7.68 (4.61)	−6.09**	0.71	[.480; 0.755]	.88
F4: Panic Disorder (4 it.)	2.16 (2.67)	2.71 (2.84)	1.24 (2.04)	−5.18**	0.59	[.677; 0.764]	.86
Total (23 it.)	19.95 (10.78)	22.43 (11.01)	15.79 (9.02)	−5.39**	0.66	[.144; 675]	.88

* $p < .05$; ** $p < .001$.

Table 5
Correlations (corrected for sex) between YAM-5-I total score and scales, and the FSSC-R, YSR, and BSI dimensions.

Dimensions	Failure and Criticism (*FSSC-R*)	Internalizing Cluster (*YSR*)	Anxiety (*BSI*)	Interpersonal Sensitivity (*BSI*)
YAM-5-I	.68	.74	.73	.67
Separation Anxiety Disorder	.47	.43	.43	.38
Selective Mutism	.17[a]	.26	.23	.21
Social and Generalized Anxiety Disorder	.71	.72	.67	.70
Panic Disorder	.46	.63	.68	.49

[a] $p = .003$; for all the other correlations, $p < .001$.

psychometric properties, with Cronbach's alpha coefficients for scales ranging between 0.62 and 0.80.

Nine dimensions compose this instrument, although, in the present study, we used only two of these dimensions: Interpersonal Sensitivity (4 it.) and Anxiety (6 it.). The *BSI* is suitable for individuals presenting a minimum reading knowledge of sixth grade (Derogatis and Melisaratos, 1983).

2.2. Data analysis

Statistical analyses within participants were performed using *The Statistical Package of Social Sciences (IBM-SPSS* and *AMOS, v.27)*. Parallel Analysis, Exploratory Factor Analysis, and the observation of the scree-plots were conducted for factor extraction. Confirmatory Factor Analysis was performed with maximum likelihood estimation and the goodness of fit of the original and the modified model was assessed through model fit indices: χ^2/df ratio, Comparative Fit Index (CFI), Akaike Information Criterion (AIC), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (RSMR). The internal consistency of the Portuguese version of *YAM-5-I* and respective scales was assessed through McDonald's omega (ω) as well as item-total correlations. Convergent validity was also assessed through Pearson correlation coefficients (corrected for sex) between *YAM-5-I* and dimensions of *BSI, YSR,* and *FSSC-R*.

2.3. Ethics statement

The present study was approved by the Data Protection Committee of the University of Porto, with a favorable appraisal by the Ethics Committee of the authors' institution.

3. Results

3.1. Parallel analysis (PA)

To determine the factor structure of the *YAM-5-I* in a Portuguese sample, we first conducted Parallel Analysis, which is one of the most accurate factor retention methods, compensating for the limitations of other factor extraction methods. According to the guidelines of Hayton et al. (2004), we began to generate fifty random data matrices with the same dimensions as the real dataset ($n = 300$, variables $= 28$) and performed a Principal Component Analysis of the generated datasets, extracting the eigenvalues. Based on these, we calculated each factor's average and the 95th percentile and presented the values for the first seven factors in Table 1.

Also, we plotted these values for visual inspection, using the average and the 95th percentile as a threshold for the real data eigenvalues (Fig. 1).

The PA helped our decision about the number of factors to retain as Kaiser's criteria usually retain too many factors. In this case, the K1 rule would indicate the retention of the first six factors because these actual eigenvalues are greater than 1. However, according to Hayton et al. (2004), the real data eigenvalues are retained only when they are greater than the mean or 95th percentile eigenvalues from random data sets, assuming that the remaining eigenvalues are due to sampling error. Therefore, we accept the solution proposed by PA also supported by the inspection of the scree-plot: the first four actual eigenvalues are greater than those generated by PA (for both the average and 95th percentile criteria) and thus will be retained.

3.2. Exploratory factor analysis (EFA)

After PA, we conducted an Exploratory Factor Analysis based on the criteria of a fixed number of factors (four) according to the previous method, using Principal Axis Factoring as the extraction method and performing a Direct Oblimin Rotation. The good factorability of our data was confirmed through the overall KMO sampling adequacy statistic (0.902) and Bartlett's Test of Sphericity ($\chi 2 = 3784.761$; $p < .001$). Medium to high values of communalities were obtained ([.312; 0.680]) as well as Measures of Sampling Adequacy obtained through an anti-image matrix (diagonal values greater than 0.703).

This four-factor solution accounted for 45% of the total variance and the items revealed loadings between 0.330 and 0.826 (except for it. 17 and 18 that presented loading values lower than 0.30) on four factors corresponding to the scales of Separation Anxiety Disorder, Selective Mutism, Panic Disorder, and a scale including the items of Social Anxiety and Generalized Anxiety Disorder.

Table 2 presents the items' factor loadings on the four factors extracted.

The analysis of the items revealed evidence for cross-loading. Items

13, 17, 18, 22, and 27 exhibited differences lower than 0.15 between their primary and secondary factors and were eliminated based on Worthington & Whittaker's criteria (2006). The remaining version included 23 items, with four items included on the Panic Disorder scale, nine items on the Social and Generalized Anxiety Scale, six on the Separation Anxiety Scale, and four on the Selective Mutism Scale.

3.3. Confirmatory factor analysis (CFA)

We performed Confirmatory Factor Analysis to assess model fit based on the original factor structure of the scale and on the four-factor structure of the 23-item version of *YAM-5-I*, to determine which CFA model best represented the data of the total sample. The goodness of fit indices of the original and the modified model are presented in Table 3.

Given that some of the items presented similarity regarding their content (e.g., it. 1 "I am afraid to go anywhere without my parents" & it. 24 "I don't feel well when I have to go somewhere without my parents"; it. 16 "I am afraid I'll do something embarrassing" & it. 28 "I am afraid that I might do or say something stupid in front of others") and taking into consideration the large Modification Indices (MI $\geq$4 [$\chi^2_{0.95;(1)}$ = 3.84]; Schermelleh-Engel and Moosbrugger, 2003), some of the errors were correlated in our model. Based on this specification, the model achieved a better fit to our data, compared to the original model, presenting the minimum required fitting (χ^2/df ratio = 1.74; RMSEA = 0.05; SRMR = 0.07; CFI = 0.94;). AIC was calculated to compare the quality of the models, also revealing the better quality of the modified model (with lower AIC values indicating a better-fit model). The results of CFA for the four-factor model are presented in Fig. 2.

All estimated factor loadings were medium or high, ranging between 0.34 (it. 6) and 0.89 (it. 10, both from the Separation Anxiety Disorder scale). The four factors were also correlated, with a low correlation between Separation Anxiety and Selective Mutism scales ($r = 0.20$), and medium to high correlations between the other factors (e.g., $r = 0.70$ between Social and Generalized Disorder scale and the Panic Disorder Scale).

3.4. Internal consistency

The internal consistency coefficients (ω) of the *YAM-5-I* and the respective scales ranged from 0.68 to 0.88, and medium to high item-total correlations were obtained within the scales of *YAM-5-I*, ranging from 0.406 to 0.764 (Table 4). Two of the Selective Mutism Scale items (it. 2 & it. 20) correlated with the total scale with very low coefficients (ITC = 0.231 and 0.144, respectively), whereas all the other items revealed ICT ranging from 0.305 (it. 6) to 0.675 (it. 28) with the total scale. Medium to large sex differences were found in all dimensions, except for the Selective Mutism and the Separation Anxiety scales of *YAM-5-I* (Table 4.).

3.5. Convergent validity

Convergent validity of the four-factor structure of *YAM-5-I* was assessed regarding its four dimensions and other dimensions previously described with evidence for construct similarity, namely Anxiety (*BSI*), Interpersonal Sensitivity (*BSI*), Internalizing Symptomatology (*YSR*), and the Fear of Failure and Criticism (*FSSC-R*). Positive associations were found between *YAM-5-I* (scales and total score), and all the other dimensions, with medium to high values of correlation (corrected for sex differences). Only the Selective Mutism scale presented low/ very low correlations with the other dimensions assessed (Table 5).

4. Discussion

This cross-sectional study was conducted to validate the Portuguese version of the *YAM-5* (Part I), a self-report instrument with good psychometric properties that assesses anxiety symptomatology based on the current diagnostic criteria. With this updated instrument, school-aged children and adolescents with anxiety symptomatology can be identified early and benefit from timely intervention.

Contrary to our expectations, the original five-factor structure of *YAM-5-I* (Muris et al., 2017c) was not upheld in this validation study-factor extraction through *PA* and *EFA* revealed a four-factor model accounting for 45% of the total variance. Cross-loading issues led to the removal of five of the original items, and this 23-item model was assessed through CFA resulting in a better fit of the four-factor model to our data, in comparison to the original five-factor model. We found good internal consistency for the total *YAM-5-I* and the scales (with high McDonald's omegas and medium to high item-total correlations). Regarding convergent validity, our results were similar (or better) than those previously obtained by Muris et al. (2017a) confirming medium to high correlations for *YAM-5-I* scales with the dimensions Anxiety and Interpersonal Sensitivity (*BSI*), Internalizing Symptomatology (*YSR*) and Fear of Failure and Criticism (*FSSC-R*). However, the correlation coefficients obtained for convergent validity of the Selective Mutism scale were low. Our results on this scale were consistent with the results reported in other studies (Muris et al., 2017a, c; Garcia-Lopez et al., 2017), namely the low correlation coefficients of this scale with other dimensions (ranging from 0.17 to 0.26). Possible causes for this may be the reduced number of items (4) of the Selective Mutism Scale (Ivaki et al., 2021; Simon et al., 2017) or the nature of this disorder and its low prevalence in the population (Soltani et al., 2020) since it "taps a low-frequent anxiety problem by means of a limited set of items" (Muris et al., 2017c, p. 14).

The Portuguese version of *YAM-5-I* is composed of 23 items and four factors: Separation Anxiety Disorder; Selective Mutism; Panic Disorder; Social and Generalized Anxiety Disorder. The last factor includes items from the original scales of Social Anxiety Disorder and Generalized Anxiety Disorder. As reported in previous studies (Fuentes-Rodriguez et al., 2018; Garcia-Lopez et al., 2017; Ivaki et al., 2021; Simon et al., 2017), the small structural differences from the original version did not affect the good psychometric properties of *YAM-5-I*. This four-factor model of the Portuguese version of *YAM-5-I* merging Social and Generalized Anxiety Disorders into a 9-item factor can be related to the cross-cultural aspects of anxiety disorders. Contextual factors (like social norms) can influence the experience and expression of anxiety, and in some countries (including Southern European countries), people highly value social aspects and their life satisfaction depend on it (Hofmann and Hinton, 2014). Analyzing the items on this 9-item factor, we find that items included in the original Social Anxiety Disorder scale described anxiety in social contexts, where the adolescent is concerned about the perception that others might have about him/her (e.g. "I am afraid I'll do something embarrassing"; "I am afraid that I might do or say something stupid in front of others"). On the other hand, items of the original Generalized Anxiety Disorder scale referred to "things" that can worry the person (e.g. "I worry about a lot of things"; "I find it hard to stop worrying"). Portuguese adolescents frequently manifest concern about how others view and treat them, and bullying is widely discussed especially at these ages. It seems plausible that most Portuguese adolescents' worries can be associated with their peers' relationships, namely the perception of others regarding themselves. This could share some light on why these two scales were merged in our sample. Nevertheless, we believe that this study should be replicated with other samples in the Portuguese population, to further validate (either supporting or revising) the factorial structure we report.

The sample size (N = 300) can also be a limitation of the present study. Furthermore, based on our results, we do not have strong evidence that each of the *YAM-5-I* scales effectively assesses a specific anxiety disorder. Further studies are needed to test criterion validity and to continue to analyze the psychometric properties of the scales, namely the Selective Mutism scale, with clinical and nonclinical samples.

Overall, *YAM-5-I* stands as an updated screening tool for assessing anxiety symptoms in children and adolescents, which along with a

diagnostic interview to confirm the diagnosis (USPSTF, 2022) allows these youth to benefit from early intervention, namely school-based intervention programs that can help to reduce the symptoms of anxiety.

Author statement

I will be serving as the corresponding author for this manuscript. All the authors listed in the byline have agreed to the byline order and submission of the manuscript in this form (Rita Almeida – almeida.c.rita@gmail.com; Fernando Barbosa – fbarbosa@fpce.up.pt; Fernando Ferreira-Santos – frsantos@fpce.up.pt). MO, RA, FB, and FFS were involved in the study design and translation process. MO and RA conducted data collection. MO conducted data analysis under FFS supervision.

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Declaration of Competing Interest

The authors have no actual or potential conflict of interest, including any financial, personal, or other relationships with other people or organizations within three years of beginning the work submitted that could inappropriately influence their work.

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