



## Psychometric properties of the Youth Anxiety Measure for DSM-5 (YAM-5) in a community sample



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### ABSTRACT

To detect children with dysfunctional levels of fear and anxiety, we need reliable and valid measures that fit the contemporary diagnostic system and suit and support current practices in mental health. Therefore, we developed the Youth Anxiety Measure for DSM-5 (YAM-5), a questionnaire that assesses symptoms of the full range of the contemporary anxiety diagnoses of the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5). Part I of the YAM-5 measures all of the major anxiety disorders and Part II measures all of the specific phobias. The current study evaluated the psychometric properties of the child self-report version of the YAM-5. Children ( $N = 414$ ) aged 8 to 12 years ( $M = 10.49$ ,  $SD = 1.04$ ) were recruited via regular primary schools and the data were collected at school during regular classes. Good internal consistencies were demonstrated for the subscales of Part I and for the total scale of Part I and Part II. Furthermore, good test-retest reliability, good concurrent validity and good construct validity of both parts of the questionnaire were found. Overall, this study strongly indicates that the YAM-5 is suitable for measuring symptoms of anxiety disorders in community samples.

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### 1. Introduction

Although anxiety is functional in nature, high levels of this emotion can cause significant impairment and dysfunction and undermine the individual's quality of life (Achenbach, Howell, McConaughy, & Stranger, 1995; Essau, Conradt, & Petermann, 2000). Moreover, high levels of anxiety tend to persist over long periods of time and may even develop into anxiety disorders (Kessler et al., 2005; Simon, van der Sluis, Muris, Thompson, & Cartwright-Hatton, 2014). Anxiety disorders are among the most prevalent forms of child psychopathology (Cartwright-Hatton, McNicol, & Doubleday, 2006). In order to detect children with dysfunctional levels of fear and anxiety, we need reliable and valid measures. Questionnaires are time-efficient, cheap and economic as they do not require much engagement of trained professionals. It is important to keep questionnaires up to date, so that they fit the contemporary diagnostic system and suit and support current practices in mental health.

A couple of years ago, the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5, APA, 2013) classification system became available. Whereas previous editions of the DSM were

solely based on a categorical approach, the DSM-5 has added a dimensional component. According to the categorical approach, a diagnosis is either present or absent (Kraemer, Wilson, Fairburn, & Agras, 2002), whereas the dimensional approach also provides insight into the degree to which symptoms or disorders are manifested (Hudziak, Achenbach, Althoff, & Pine, 2007). In addition to this general change in the DSM, the most important changes in the anxiety disorders category were: (1) obsessive-compulsive disorder and the posttraumatic and acute stress disorder are no longer considered as pure anxiety disorders and are now listed under separate categories; (2) the inclusion of selective mutism and separation anxiety disorder, which were previously categorized under the disorders usually first diagnosed in infancy, childhood, or adolescence; and (3) a more clear-cut diagnostic separation of panic disorder and agoraphobia (APA, 2013).

To support the contemporary classification system by assessment tools, the DSM-5 Anxiety, Obsessive-Compulsive Spectrum, Post-traumatic, and Dissociative Disorders workgroup developed dimensional anxiety scales, which were revised by LeBeau et al. (2012). A self-report version for children aged 8–13 years was created by Möller, Majdandžić, Craske, & Bögels (2014), which examines the frequency of cross-cutting fear- and anxiety symptoms for all DSM-5 anxiety disorders, except selective mutism. Möller et al. (2014) examined the convergent validity of the dimensional scales by correlating them to a commonly used DSM-IV-based anxiety screening questionnaire, the 71-item version of the

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Screen for Child Anxiety Related Emotional Disorders (SCARED-71, [Bodden, Bögels, & Muris, 2009](#)). Results revealed positive correlations between both measures supporting their validity, but the pattern of findings also made the researchers conclude that the dimensional anxiety scales are mainly of value in clinical samples. Möller and colleagues proposed that screening questionnaires, such as the SCARED-71, are more appropriate in community populations.

However, apart from the dimensional scales of the DSM-5 workgroup, no other anxiety questionnaire has been updated to the DSM-5, which means that there are currently no DSM-5-based scales available for assessing anxiety symptoms in community populations of children. With this in mind, we developed the Youth Anxiety Measure for DSM-5 (YAM-5), a questionnaire that is comparable to the SCARED-71 as it assesses symptoms of the full range of contemporary DSM anxiety diagnoses. The YAM-5 consists of two parts: Part I measures symptoms of the major anxiety disorders (selective mutism, separation anxiety disorder, social anxiety disorder, panic disorder, generalized anxiety disorder), while Part II assesses the various phobias, including agoraphobia. A first study on the YAM-5 child version mainly focused on exploring the face validity of the questionnaire by asking an international panel of anxiety experts to categorize the items to the anxiety disorders subscales ([Muris et al., 2017](#)). The study indicated that, overall, the face validity of the YAM-5 was good, except for the subscales measuring selective mutism and various types of phobia (which were quite difficult to distinguish from each other). Furthermore, a first inspection of some psychometric properties in a clinical sample of children and adolescents aged 8 to 16 years also yielded promising results ([Muris et al., 2017](#)). More precisely, the internal consistency of the scale appeared sufficient to good, the parent-child agreement was satisfactory, and there was also some support for convergent and divergent validity.

The present study provides a first comprehensive test of the psychometric properties of the self-report version of the YAM-5 in a community sample of 8- to 12-year-old children. The following psychometric aspects were evaluated and were expected to be good: (a) internal consistency, (b) test-retest reliability, (c) concurrent validity, and (d) construct validity of the child self-report version.

## 2. Method

### 2.1. Participants

Children 8 to 12 years of age ( $M = 10.49$ ,  $SD = 1.04$ ) were recruited via regular primary schools. Ten primary schools took part, from different parts of the Netherlands. Out of 835 children who were approached, 424 (51%) actually participated and completed the set of questionnaires. The participants were recruited in three groups ( $n_{\text{group1}} = 118$ ,  $n_{\text{group2}} = 107$ ,  $n_{\text{group3}} = 189$ ). Group 1 ( $M_{\text{age}} = 10.72$ ,  $SD = 0.70$ ; boys-girls ratio: 51–49%) only completed the YAM-5. Children of group 2 ( $M_{\text{age}} = 10.13$ ,  $SD = 1.31$ ; boys-girls ratio: 62–38%) and group 3 ( $M_{\text{age}} = 10.56$ ,  $SD = 1.00$ ; boys-girls ratio: 48–52%) completed the YAM-5 as well as another questionnaire (respectively the SCARED-71 and the behavioral inhibition measure). Furthermore, 181 (96%) children of group 3 also completed the YAM-5 for a second time, 1 month after the baseline assessment.

One participant (from group 3) was excluded from the data set because this child did not fall within the age range, four children (from group 3) were removed because they did not complete the YAM-5 at baseline, and five children (3 children from group 2; 2 children from group 3) were discarded because they had >10% missing items on the YAM-5 at baseline. Four children did not fill in their age, but we did not exclude these children from further analyses (age was not imputed). This resulted in a final sample of 414 children, with 217 being boys (52%) and 197 being girls (48%). Girls and boys did not differ in terms of age,  $t(409) = 0.653$ ,  $p = 0.526$ .

### 2.2. Procedure

This study was approved by the local Ethical Committee of Psychology. Regular primary schools from the Netherlands were informed about the project by phone and email. Schools that were interested received a detailed information letter, after which they decided to participate. Parents received an information letter along with a consent form. Only children of whom parents had provided informed consent by signing and returning the form were asked to fill in the questionnaires. The YAM-5 was the target questionnaire in the present investigation and was completed by all children. Two other scales were used to examine the concurrent validity. Group 2 completed the SCARED-71 ([Bodden et al., 2009](#)), which was employed because this questionnaire is comparable to the YAM-5 but is based on the previous version of the DSM (the DSM-IV-TR). Group 3 filled in the Behavioral Inhibition Questionnaire for Children-Short Form (BIQ-C-SF, [Broeren & Muris, 2010](#)), which was utilized because behavioral inhibition predisposes to (enduring) anxiety and this questionnaire does not rely on the previous classification system. The assessment took place at school, with the researcher and teacher being present to ensure confidential and independent responding.

### 2.3. Questionnaires

#### 2.3.1. YAM-5

The YAM-5 ([Muris et al., 2017](#)) is a questionnaire that can be used to assess anxiety symptoms in children and adolescents. This study focused on the child self-report version (see [Appendix A](#)). As noted earlier, the YAM-5 consists of two parts. Part I (28 items) taps symptoms of the major DSM-5 anxiety disorders, and thus contains the following subscales: separation anxiety disorder (6 items), selective mutism (4 items), social anxiety disorder (6 items), panic disorder (6 items), and generalized anxiety disorder (6 items). Part II (22 items) also contains 5 subscales covering the phobia types: animal (5 items), natural environment (4 items), blood-injection-injury (3 items), other (4 items), and situational which in terms of fear content resembles agoraphobia (6 items). All items are rated on a 4-point Likert scale, ranging from 0 (never) to 3 (always). The YAM-5 is an open source questionnaire that is available in English, Dutch, and Spanish. Besides the child self-report there is also a parent-report version, and a version for adults.

#### 2.3.2. SCARED-71

The 71-item version of the SCARED ([Bodden et al., 2009](#)) intends to measure symptoms of childhood anxiety disorders. This scale is based on DSM-IV and contains the following subscales: panic disorder, generalized anxiety disorder, social anxiety disorder, separation anxiety disorder, obsessive-compulsive disorder, post-traumatic stress disorder, and phobia types (situational-environmental; blood-injection-injury type, and animal). The items are scored on a three-point scale (0 = almost never, 1 = sometimes, 2 = often).

The self-report version of the SCARED-71 possesses good internal consistency, with a Cronbach's alpha of 0.95 for the total score and alpha coefficients ranging between 0.64 and 0.87 for various subscales. The SCARED-71 also discriminates well between clinically anxious and non-clinical children ([Bodden et al., 2009](#)) and was shown to be a useful screening tool for anxiety symptoms in primary school children ([Simon & Bögels, 2009](#)). In the current study the internal consistency was good, with a Cronbach's alpha of 0.92 for the total scale.

#### 2.3.3. BIQ-C-SF

The Behavioral Inhibition Questionnaire ([Bishop, Spence, & McDonald, 2003](#)) measures behavioral inhibition, a temperamental construct characterized by a tendency to respond with anxiety and stress when being confronted with unfamiliar people and novel situations. The BIQ originally is a parent-report scale but [Broeren and Muris \(2010\)](#) rephrased the items from the child's perspective, thereby

creating the BIQ for Children. The short form version of the measure (the BIQ-C-SF) contains 14 items tapping children's inhibited behavior in response to peers, unfamiliar adults, performance situations, and separation. Items are scored on a 6-point rating scale, ranging from 1 (hardly ever) to 6 (almost always). Although this specific version of the BIQ, the BIQ-C-SF has not been psychometrically evaluated yet, there is strong support for the 30-item version from which it is derived. Broeren and Muris (2010) reported a Cronbach's alpha of 0.91. A highly similar coefficient of 0.87 was found in the present study for the total score.

#### 2.4. Analyses

The data were entered in the IBM Statistical Package for Social Sciences (SPSS), version 22. There were very few missing values (i.e., only 0.11% of the items were missing), so we imputed the data in a straightforward manner by replacing the missing value with the groups mean score of the item. Because of the large sample size and the small number of missing items, more complex models were highly unlikely to change parameter estimates appreciably (Tabachnick & Fidell, 2007).

Most analyses were run with the statistical package SPSS, except for the internal consistency and the confirmatory factor analyses, which were performed with the statistical package R (R Core Team, 2013). We compared the YAM-5 scores of Part I, Part II and the YAM-5 total scores of children with SCARED-71 scores above the clinical cut-off (Bodden et al., 2009) to children with SCARED-71 below the clinical cut-off by the use of *t*-tests. The internal consistencies were determined by computing McDonald's Omega (McDonald, 1999). The test-retest reliability was evaluated by calculating Pearson's correlations between the baseline and 1-month follow-up scores. The concurrent validity was examined by computing correlations between YAM-5 scales on the one hand and SCARED-71 and BIQ-C-SF scores on the other.

A confirmatory factor analysis was used to investigate the structure of the YAM-5, using the LAVAAN (Rosseel, 2012) package for R (R Core Team, 2013). Errors were assumed to be uncorrelated and maximum likelihood estimation was applied, as this method is relatively insensitive to deviation from normality. First, we examined the structure of Part I (Major anxiety disorders) by testing the fit of a five-factor, a four-factor (in which, given their high overlap, social phobia and selective mutism items were collapsed on one and the same factor), and a one-factor model. Second, we investigated the structure for Part II (Phobias), again testing five-, four-, and one-factor. The relative chi-square ( $\chi^2/df$ ), the Tucker Lewis Index (TLI), the Standardized Root Mean Square Residual (SRMR), and the root-mean-square error of approximation (RMSEA) were used as fit indices. A cut-off values of <2 for the relative chi-square (Arbuckle, 2011), >0.95 for the TLI (Kline, 2011; Tabachnick & Fidell, 2001) and <0.06 for the RMSEA and the SRMR (Arbuckle, 2011) indicate a good fit, and an adequate fit is indicated when TLI exceeds 0.90, and when RMSEA and SRMR are below 0.08 (Arbuckle, 2011; Kline, 2011; Tabachnick & Fidell, 2001).

### 3. Results

#### 3.1. Descriptive statistics

The mean scores (*SD*'s) on the questionnaires are displayed in Table 1. Regarding the analyses comparing children with SCARED71 above and below the clinical cut-off (i.e. clinically anxious), it appeared that clinically anxious children had higher YAM-5 total scores ( $M = 33.34$ ,  $SD = 14.47$ ) than children who were not clinically anxious ( $M = 12.90$ ,  $SD = 7.01$ ),  $p < 0.001$ , as well as higher scores on part I (clinically anxious:  $M = 17.84$ ,  $SD = 9.30$ ; not clinically anxious:  $M = 5.87$ ,  $SD = 4.62$ ) and part II (clinically anxious:  $M = 15.5$ ,  $SD = 8.08$ ; not clinically anxious:  $M = 7.03$ ,  $SD = 4.32$ ), both  $p$ 's < 0.001.

**Table 1**

Mean scores (*SD*'s) on the YAM-5, SCARED-71 and BIQ-C-SF.

Yam-5 <sup>a</sup>	Total group <i>N</i> = 414	Boys <i>n</i> = 217	Girls <i>n</i> = 197
Total score	22.80 (15.04)	26.18 (16.12)	19.73 (13.29)**
Part I major anxiety disorders	12.10 (9.15)	11.05 (8.13)	13.26 (10.05)*
Separation anxiety disorder	2.58 (2.46)	2.32 (2.36)	2.87 (2.53)*
Selective mutism	1.72 (1.58)	1.71 (1.52)	1.72 (1.65)
Social anxiety disorder	2.92 (2.67)	2.66 (2.41)	3.21 (2.96)*
Panic disorder	1.27 (1.97)	1.10 (1.75)	1.46 (2.18)
Generalized anxiety disorder	3.61 (3.05)	3.26 (2.68)	4.01 (3.38)*
Part II phobias	10.69 (7.60)	8.68 (6.63)	12.91 (7.98)**
Animal type	3.53 (2.61)	2.84 (2.31)	4.29 (2.72)**
Natural environment type	2.12 (2.04)	1.85 (1.95)	2.42 (2.09)**
Blood-injection-injury type	2.34 (2.08)	1.91 (1.90)	2.81 (2.16)**
Situational type/agoraphobia	1.33 (1.82)	1.03 (1.39)	1.66 (2.16)**
Other types	1.37 (1.57)	1.04 (1.41)	1.73 (1.67)**
SCARED-71 <sup>b</sup>	<i>N</i> = 107	<i>n</i> = 66	<i>n</i> = 41
Total score	25.48 (14.47)	26.17 (13.86)	24.34 (15.51)
Separation anxiety disorder	4.12 (3.12)	4.65 (3.28)	3.27 (2.66)*
Social anxiety disorder	4.54 (2.92)	4.18 (2.89)	5.12 (2.93)
Panic disorder	2.80 (2.63)	2.92 (2.51)	2.61 (2.84)
Generalized anxiety disorder	2.77 (2.40)	2.94 (2.31)	2.49 (2.54)
Specific phobia animal type	0.65 (1.07)	0.53 (0.90)	0.85 (1.30)
Specific phobia blood-injection-injury type	3.74 (2.57)	3.74 (2.54)	3.73 (2.64)
Specific phobia situational type	1.20 (1.38)	1.09 (1.17)	1.37 (1.67)
Specific phobia total score	5.59 (4.00)	5.36 (3.56)	5.95 (4.65)
Obsessive compulsive disorder	4.00 (2.63)	4.47 (2.66)	3.24 (2.43)*
Posttraumatic stress disorder	1.64 (1.96)	1.64 (1.82)	1.66 (2.19)
BIQ-C-SF <sup>c</sup>	<i>N</i> = 189	<i>n</i> = 91	<i>n</i> = 98
Total score	18.12 (14.22)	16.10 (12.62)	19.95 (15.37)

<sup>a</sup> YAM-5: Youth Anxiety Measure.

<sup>b</sup> SCARED-71: Screen for Child Anxiety Related Emotional Disorders.

<sup>c</sup> BIQ-C-SF: Behavioral Inhibition Questionnaire for Children-Short Form.

\*  $p < 0.05$ .

\*\*  $p < 0.01$ .

#### 3.2. Internal consistencies

Table 2 shows the internal consistency at baseline and at 1-month follow-up. On both assessment occasions, McDonald's omegas of the total score of Part I Major Anxiety Disorders were excellent (0.91 and 0.92, respectively), and the internal consistency coefficients of the subscales ranged between 0.75 (acceptable) for separation anxiety disorder and 0.82 (good) for generalized anxiety disorder. Only the subscale selective mutism displayed poor internal consistency, with a McDonald's omega of 0.50. At the 1-month follow-up, the internal consistencies of all Part I subscales were somewhat higher than at baseline, with omegas ranging between 0.61 and 0.86. McDonald's omegas of the total score of Part II Phobias were good on both assessment occasions (0.84 and 0.87 respectively). The internal consistency coefficients of the subscales ranged between 0.55 (poor) for phobia other types and 0.70 (acceptable) for phobia blood-injection-injury type and were all somewhat higher on the second assessment occasion (from 0.58 to 0.77).

#### 3.3. Test-retest reliability

The test-retest period was 1 month. As depicted in Table 2, the test-retest reliability was good: correlations for the total scale and total scores on Part I and II were 0.90, 0.86, and 0.89, respectively. The test-retest reliabilities of the subscales of Part I were generally substantial, ranging between 0.75 for separation anxiety disorder and 0.81 for social anxiety disorder and panic disorder, except for selective mutism which displayed a lower test-retest reliability of 0.54. The test-retest correlations of the subscales in Part II were all substantial, ranging between 0.73 for other type and 0.85 for animal and natural environment type.

**Table 2**  
Internal consistency coefficients with 95% CI at baseline and 1-month follow-up assessment, and test-retest correlations of the YAM-5<sup>a</sup>.

	$\omega$ (N = 414)	$\omega$ at T2 <sup>b</sup> (N = 189)	Test-retest reliability (N = 181)
Yam-5 total score	0.92 [0.91, 0.93]	0.93 [0.91, 0.94]	0.90
Part I major anxiety disorders	0.91 [0.89, 0.92]	0.92 [0.90, 0.94]	0.86
Separation anxiety disorder	0.75 [0.72, 0.79]	0.78 [0.73, 0.83]	0.75
Selective mutism	0.50 [0.42, 0.58]	0.61 [0.51, 0.71]	0.54
Social anxiety disorder	0.77 [0.74, 0.81]	0.81 [0.77, 0.85]	0.81
Panic disorder	0.79 [0.76, 0.82]	0.83 [0.79, 0.87]	0.81
Generalized anxiety disorder	0.82 [0.80, 0.85]	0.86 [0.83, 0.89]	0.78
Part II phobias	0.84 [0.82, 0.87]	0.87 [0.84, 0.89]	0.89
Animal type	0.63 [0.58, 0.69]	0.67 [0.60, 0.75]	0.85
Natural environment type	0.59 [0.53, 0.66]	0.61 [0.51, 0.70]	0.85
Blood-injection-injury type	0.70 [0.65, 0.75]	0.77 [0.70, 0.82]	0.83
Situational type/agoraphobia	0.59 [0.53, 0.66]	0.61 [0.53, 0.70]	0.81
Other	0.55 [0.48, 0.62]	0.58 [0.48, 0.68]	0.73

Note. All test-retest correlations were significant, all  $p$ 's < 0.01.

<sup>a</sup> YAM-5 = Youth Anxiety Measure for DSM-5.

<sup>b</sup> T2 is time 2.

### 3.4. Concurrent validity

Table 3 displays the correlations between various YAM-5 (sub)scales and scores on the SCARED-71 and the BIQ-C-SF. Note that there were strong positive correlations between the total scores of the YAM-5 and the SCARED-71 ( $r = 0.85, p < 0.01$ ), between the total score of YAM-5 Part II and the total phobias score of the SCARED-71 ( $r = 0.75, p < 0.01$ ), and between the YAM-5 and SCARED-71 subscales tapping generalized anxiety disorder ( $r = 0.74, p < 0.01$ ). There were moderate positive relationships between the YAM-5 and the SCARED-71 subscales measuring separation anxiety disorder ( $r = 0.69, p < 0.01$ ), panic

disorder ( $r = 0.59, p < 0.01$ ), phobia animal type ( $r = 0.51, p < 0.01$ ), and phobia blood-injection-injury type ( $r = 0.55, p < 0.01$ ). Additionally, the correlations between the YAM-5 and the SCARED-71 subscales tapping social anxiety disorder ( $r = 0.48, p < 0.01$ ) and phobia situational type ( $r = 0.48, p < 0.01$ ) were moderately positive. Further, we found a moderate positive relationship between the BIQ-C-SF and the YAM-5 total score ( $r = 0.65, p < 0.01$ ). All subscales of the YAM-5 correlated significantly with the BIQ-C-SF total score, all  $p$ 's < 0.01.

### 3.5. Factor structure

The five-factor structure of Part I of the YAM-5, using 28 items and allowing for correlated factors, provided a reasonably good fit for the correlation structure. However, the modification index representing the covariance between the error terms of item 17 (“When I panic I am afraid to die”) and item 26 (“I am afraid of having a new anxiety or panic attack”) was quite large (51.3). Additionally, the wording of this item refers to a conditional state (“when I panic...”) whereas the other items in the subscale ask whether states actually occur. Furthermore, the item's frequency was rather low in this sample (90% of the children checked ‘never’). This deviation was also represented by the small factor loading in the CFA on all 28 items. Because of the high modification index, item 17 was removed from the analysis. The CFA on the remaining 27 items yielded good fit according to most fit criteria ( $\chi^2 = 829, df = 314; \chi^2/df = 2.5; RMSEA = 0.063, SRMR = 0.057$ ). However, the TLI was somewhat below the critical value of adequate fit (TLI = 0.838). The factor loadings for all separate items of Part I are provided in Table 4.

Next, we analyzed a four-factor structure without the selective mutism items because of its relatively low factor loading. The fit values for this model were very similar to those of the model with the 27 items and five factors ( $\chi^2 = 622, df = 224; \chi^2/df = 2.8; RMSEA = 0.066, SRMR = 0.058, TLI = 0.861$ ).

Finally, we compared the five-factor model with the one-factor model to test whether the five-factor model yielded a better description of the data than the one factor model. The fit values of the one factor model were:  $\chi^2 = 1243, df = 324; \chi^2/df = 3.9; RMSEA = 0.083, SRMR = 0.069; TLI = 0.727$ . The  $\chi^2$  difference test indicated that the five-factor model was indeed a significant improvement as compared to the one-factor model ( $\Delta\chi^2 = 413, df = 10, p < 0.001$ ).

The five-factor structure of Part II using the five phobia subscales with all 22 items showed an acceptable fit to the correlation structure according to most criteria ( $\chi^2 = 483, df = 199; \chi^2/df = 2.4; RMSEA = 0.059, SRMR = 0.055$ ). The TLI, however, did not indicate an adequate fit (TLI = 0.811). Next, we compared this model with the one-factor

**Table 3**  
Correlations between YAM-5, SCARED-71 and BIQ-C-SF (sub)scales.

YAM-5 scales													
SCARED-71 scales	TOT <sup>a</sup>	Part I	Part II	SEP	SM	SAD	PAN	GAD	ANI	NAT	BII	SIT	OTH
TOT	<b>0.85<sup>*</sup></b>	0.81	0.69	0.72	0.22	0.68	0.48	0.78	0.48	0.59	0.36	0.55	0.63
SEP	0.60	0.65	0.39	<b>0.69</b>	0.14 <sup>ns</sup>	0.50	0.40	0.58	0.23	0.37	0.14 <sup>ns</sup>	0.34	0.54
SAD	0.55	0.47	0.50	0.40	0.36	<b>0.48</b>	0.11 <sup>ns</sup>	0.42	0.42	0.37	0.23	0.43	0.43
PAN	0.75	0.75	0.56	0.63	0.19	0.67	<b>0.59</b>	0.66	0.36	0.46	0.31	0.47	0.54
GAD	0.70	0.72	0.51	0.60	0.14 <sup>ns</sup>	0.64	0.43	<b>0.74</b>	0.30	0.49	0.15	0.52	0.48
ANI	0.43	0.28	0.50	0.30	0.07 <sup>ns</sup>	0.25	0.09 <sup>ns</sup>	0.29	<b>0.51</b>	0.43	0.31	0.17	0.38
BII	0.56	0.44	0.58	0.37	0.04 <sup>ns</sup>	0.35	0.24	0.51	0.40	0.37	<b>0.55</b>	0.40	0.45
SIT	0.65	0.48	0.70	0.44	0.10 <sup>ns</sup>	0.43	0.20	0.53	0.52	0.76	0.29	<b>0.48</b>	0.55
SPEC	0.70	0.52	0.75	0.47	0.08 <sup>ns</sup>	0.44	0.24	0.59	0.57	0.62	0.54	0.47	0.58
OCD	0.50	0.51	0.36	0.42	0.15	0.36	0.37	0.54	0.21	0.31	0.13 <sup>ns</sup>	0.34	0.37
PTSD	0.54	0.58	0.36	0.55	0.09 <sup>ns</sup>	0.46	0.46	0.51	0.22	0.33	0.23	0.24	0.33
BIQ-C-SF total score	0.65	0.64	0.54	0.48	0.48	0.65	0.38	0.48	0.28	0.46	0.42	0.45	0.47

Note. Corresponding subscales are depicted in bold; <sup>ns</sup>: non-significant correlation; if  $r > 0.20$  then  $p < 0.01$ ; if  $0.15 < r < 0.20$ , then  $p < 0.05$ ; if  $r < 0.15$  then  $p > 0.05$ .

Abbreviations of (sub)scales: TOT: total score; SEP: separation anxiety disorder; SM: selective mutism; SAD: social anxiety disorder; PAN: panic disorder; GAD: generalized anxiety disorder; ANI: specific phobia animal type; NAT: specific phobia natural environment type; BII: phobia blood-injection-injury type; SIT: phobia situational type/agoraphobia; OTH: phobia other types; SPEC: sumscore of phobia subtypes; OCD: obsessive-compulsive disorder; PTSD: posttraumatic stress disorder.

**Table 4**  
Factor loadings resulting from the confirmatory factor analysis of the YAM-5 items of part-I.

Item	Factor loadings				
	SEP <sup>a</sup>	SM <sup>b</sup>	SAD <sup>c</sup>	PAN <sup>d</sup>	GAD <sup>e</sup>
I am afraid to go anywhere without my parents	0.445				
I get frightened if my parents leave the house without me	0.445				
I am afraid that my parents will leave and never come back	0.652				
I am afraid that something bad will happen, so I'll never see my parents again	0.802				
I have very scary dreams that I lose my parents	0.603				
I don't feel well when I have to go somewhere without my parents	0.463				
At school I don't speak to the teacher at all		0.354			
If I meet a new person, I don't speak at all		0.604			
At school I don't speak at all to the kids in my class		0.169			
I don't speak at all when there is a new visitor at our home		0.538			
I find it scary to meet new people			0.500		
I find it scary to eat or drink if other people are looking at me			0.419		
I am afraid that others will see that I blush			0.462		
I am afraid I'll do something embarrassing			0.704		
I am very afraid that other kids don't like me			0.679		
I am afraid that I might do or say something stupid in front of others			0.758		
I panic for no reason				0.673	
I suffer from anxiety or panic attacks				0.677	
All of a sudden I become so scared that my heart starts to beat very quickly				0.694	
I have severe anxiety attacks during which I tremble all over my body				0.602	
I am afraid of having a new anxiety or panic attack				0.560	
I worry about a lot of things					0.709
I think a lot about what can go wrong					0.731
I find it hard to stop worrying					0.660
I worry a lot about not doing well at school					0.600
I worry a lot about all the bad things than happen in the world					0.538
I don't feel well because I worry so much					0.721

<sup>a</sup> SEP: separation anxiety disorder.<sup>b</sup> SM: selective mutism.<sup>c</sup> SAD: social anxiety disorder.<sup>d</sup> PAN: panic disorder.<sup>e</sup> GAD: generalized anxiety disorder.

model to test whether the five-factor model described the correlation structure substantially better than the more parsimonious one-factor model representing a general phobia factor. Fit measures of the one-factor model were ( $\chi^2 = 640$ ,  $df = 209$ ;  $\chi^2/df = 3.1$ ; RMSEA = 0.071, SRMR = 0.063; TLI = 0.727). The  $\chi^2$  difference test indicated that the five-factor model was significantly better than the one-factor model ( $\Delta\chi^2 = 157$ ,  $df = 10$ ,  $p < 0.001$ ). The factor loadings for all separate items of Part II are provided in Table 5.

#### 4. Discussion

This study evaluated the psychometric properties (i.e., internal consistency, test-retest reliability, concurrent validity, construct validity) of the new DSM-5-based anxiety questionnaire, the YAM-5, in a community sample of 8–12 year old children. As expected, the internal consistencies of part I (all major anxiety disorders) and of the total scores were good, pointing to a good coherence of the items tapping the major anxiety disorders, as well as a good overall coherence of both parts of the YAM-5. The coherence of the subscale selective mutism was unacceptable, which is likely to result from the limited number of

**Table 5**  
Factor loadings resulting from the confirmatory factor analysis of the YAM-5 items of part-II.

Item	Factor loadings				
	ANI <sup>a</sup>	NAT <sup>b</sup>	BII <sup>c</sup>	SIT <sup>d</sup>	OTH <sup>e</sup>
I am afraid... of wasps		0.571			
of dogs		0.226			
of spiders		0.588			
of snakes		0.631			
of cats		0.313			
of the dark			0.553		
of heights			0.363		
of thunderstorms			0.639		
to swim in deep water			0.457		
of getting an injection				0.692	
of undergoing a small medical operation				0.729	
of blood				0.496	
to travel in an airplane					0.442
when crossing a large town square					0.339
of being in crowded places with lots of people					0.546
when travelling by bus or train					0.458
to go in an elevator					0.483
to go through a long tunnel					0.606
of loud noises					0.589
of people who are dressed up in costumes					0.349
that I will feel sick and have to vomit					0.518
of choking when I eat or drink					0.427

<sup>a</sup> ANI: phobia animal type.<sup>b</sup> NAT: phobia natural environment type.<sup>c</sup> BII: phobia blood-injection-injury type.<sup>d</sup> SIT: phobia situational type/agoraphobia.<sup>e</sup> OTH: other types.

items in this scale and the fact that symptoms of this disorder have a low prevalence (Muris et al., 2017), certainly in community samples. Furthermore, the face validity study (Muris et al., 2017) showed that almost 20% of the experts had difficulty to correctly categorize the items of this scale, and most frequently categorized these symptoms as social anxiety disorder, whereas they found it less difficult to categorize the items of any of the other Part I subscales to the correct subscale. The experts' difficulty could also reflect a low coherence within the subscale selective mutism. With regard to the internal consistencies of part II (phobias), much lower internal consistencies of the subscales were retrieved compared to part I. In contrast to part I, the items of part II do not tap various symptoms of one and the same disorder, but, rather, tap the possible presence of different phobias. However, the overall internal consistency of Part 2 was good.

In line with the expectation, the test-retest reliabilities of the total scores and the subscales of Part I (Major anxiety disorders) and Part II (Phobias) were good. Comparable scores were obtained for all the YAM-5 (sub)scales when measuring at different time points, indicating that the YAM-5 is suitable for measuring anxiety development over time and for picking up score changes related to treatment gains.

Regarding the concurrent validity, we found significant positive relationships between the YAM-5 total and subscales scores and the corresponding scales of the SCARED-71 and BIQ-C-SF. Furthermore, it appeared that children who were labeled as clinically anxious based on their SCARED-71 scores had significantly higher YAM-5 total scores, as well as significantly higher YAM-5 Part I and Part II scores. Together with the findings of the study of Muris et al. (2017), these findings confirm that the YAM-5 indeed measures the concept child anxiety validly. Although the study of Muris et al. (2017) included children who were referred for their anxiety to a clinical practice, the generalizability of the good validity of the YAM-5 to clinical populations needs to be further established by performing more studies in clinically anxious children.

Although all relationships were significant, the YAM-5 and SCARED-71 relationships between the social anxiety disorder subscales and between the phobia situational type subscales were relatively weak.

Compared to the social anxiety disorder items of the SCARED-71, the social anxiety disorder items of the YAM-5 contain less concrete examples and are generalizable over more situations, which is likely to explain the weak correlation between. The weak relationship between the phobia situational type subscales of the two questionnaires is related to the fact that this subscale contained items that measured both situational and environmental fears in the SCARED-71, whereas these two fear types are measured separately in the YAM-5. The two subscales selective mutism and phobia natural environmental type had no existing corresponding SCARED-71 subscales, and no conclusions can thus be drawn on the convergent validity of these two subscales.

Finally, the confirmatory factor analysis supported the expected five factor structure, and thus the construct validity, of Part I (Major anxiety disorders) and the five-factor structure of Part II (Phobias). This also supports the inclusion of the selective mutism scale in the YAM-5. For the construct separation anxiety disorder and social anxiety disorder, some of the loadings are between 0.40 and 0.50, which some scholars could consider to be small. However, the items do actually touch upon an important aspect of the constructs, so, from a theoretical perspective, we believe it is valuable to continue to include these items in the instrument. The absolute fit values showed adequate fit, but the relative fit index (TLI) did not. The TLI compares the  $\chi^2/df$  of the tested model with the  $\chi^2/df$  of the null model. The index depends on the average size of the correlations between the variables. If the correlations are generally low this index is also low. In fact, when the RMSEA of the independence model is smaller than 0.158, the TLI may not be informative (Kenny, 2015). In our data, the RSMEA of the independence model was 0.156 (part I) and 0.135 (part II), which may explain why the TLI is not in line with the other fit indices.

#### 4.1. Limitations

Adding to the findings of the face validity study on the YAM-5 (Muris et al., 2017), this second study offered further evidence of the validity and reliability of this questionnaire. Together, these studies have supported the questionnaire's face validity, the convergent validity, the divergent validity, the parent-child correspondence (Muris et al., 2017), the internal consistency, the test-retest reliability, the concurrent validity, and the construct validity (current study). However, we should bear in mind that the findings so far only offer a first insight into the psychometric aspects of the YAM-5. That is, the divergent and discriminant validity need to be more thoroughly evaluated in population and in clinical samples. It would also be of interest to examine whether having high scores on the YAM-5 is predictive of receiving an anxiety diagnosis. Furthermore, it is of value to gain further insight into the association between the parent and child report version of this questionnaire, and into the psychometric properties of the parent and adult version. Additionally, more psychometric studies on the YAM-5 need to be performed in various samples in order to gain grounded insight in the psychometric properties across time and situations. Finally, the YAM-5 is a fairly non-invasive instrument for clients as well as clinicians, but the clinical usefulness needs to be confirmed empirically. Clinical samples should also be included to gain more insight into the clinical usefulness of the instrument. It would be of interest to assess the questionnaire's sensitivity and specificity to establish clinical cut-off scores.

The concurrent validity has been supported by comparing the YAM-5 questionnaire to another anxiety instrument and to an instrument measuring behavioral inhibition. Although the other anxiety questionnaire has been through extensive psychometric evaluations, the specific version of the behavioral inhibition questionnaire was not psychometrically tested. However, other versions were assessed on psychometric characteristics and this study revealed a high internal consistency of the current version.

Selective mutism has been added to the anxiety disorders category in the DSM, and should thus be examined in standardized anxiety assessments. Unfortunately, the internal consistency of this scale was

low and information on the convergent validity is missing. However, the factor analysis supported the inclusion of this subscale. Future studies on the YAM-5 should measure the psychometric properties of this scale in groups with relatively high rates of selective mutism and include other selective mutism scales, such as the Selective Mutism Questionnaire (Bergman, Keller, Piacentini, & Bergman, 2008) to examine the convergent validity.

The YAM-5 was developed for children and adolescents. This study did not include adolescents and the findings can, therefore, not be generalized to adolescents. However, the face validity study (Muris et al., 2017) also included non-clinical adolescents and showed promising results of a first examination of the internal consistency and validity indicators. Another constraint of this study's results generalizability comes forth from the limited amount of information we have on the characteristics of the participating versus non-participating schools and of the participating children.

#### 4.2. Conclusion

The YAM-5 is a new anxiety questionnaire for examining anxiety disorders in youth conform the classification system DSM-5. The questionnaire contains two parts, with Part I measuring major anxiety disorders and Part II measuring phobias. Overall, this study showed good internal consistencies of the subscales and total scale of Part I, good internal consistency of the total scale of Part II, good test-retest reliability and good construct validity of both parts of the questionnaire. This study strongly indicates that the YAM-5 is suitable for measuring symptoms of anxiety disorders in community samples.

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#### Appendix A. Youth anxiety measure for DSM-5 (YAM-5)

##### Part-I

1. I am afraid to go anywhere without my parents
2. At school I don't speak to the teacher at all
3. I find it scary to meet new people
4. I panic for no reason
5. I worry about a lot of things
6. I get frightened if my parents leave the house without me
7. I find it scary to eat or drink if other people are looking at me
8. I suffer from anxiety or panic attacks
9. I think a lot about what can go wrong
10. I am afraid that my parents will leave and never come back
11. If I meet a new person, I don't speak at all
12. I am afraid that others will see that I blush
13. All of a sudden I become so scared that my heart starts to beat very quickly
14. I find it hard to stop worrying
15. I am afraid that something bad will happen, so I'll never see my parents again
16. I am afraid I'll do something embarrassing
17. When I panic, I am afraid that I could die
18. I worry a lot about not doing well at school
19. I have very scary dreams that I lose my parents
20. At school I don't speak at all to the kids in my class
21. I have severe anxiety attacks during which I tremble all over my body
22. I worry a lot about all the bad things than happen in the world
23. I am very afraid that other kids don't like me
24. I don't feel well when I have to go somewhere without my parents

25. I don't speak at all when there is a new visitor at our home
26. I am afraid of having a new anxiety or panic attack
27. I don't feel well because I worry so much
28. I am afraid that I might do or say something stupid in front of others

Note. The Confirmatory Factor Analysis showed a significant better fit when item 17 was deleted from the questionnaire

#### Part-II

1. I am afraid of wasps
2. I am afraid of loud noises
3. I am afraid of dogs
4. I am afraid of the dark
5. I am afraid to travel in an airplane
6. I am afraid of heights
7. I am afraid when crossing a large town square
8. I am afraid of people who are dressed up in costumes
9. I am afraid of spiders
10. I am afraid of thunderstorms
11. I am afraid of getting an injection
12. I am afraid to swim in deep water
13. I am afraid of snakes
14. I am afraid that I will feel sick and have to vomit
15. I am afraid of undergoing a small medical operation
16. I am afraid of being in crowded places with lots of people
17. I am afraid when travelling by bus or train
18. I am afraid of cats
19. I am afraid of blood
20. I am afraid choking when I eat or drink
21. I am afraid to go in an elevator
22. I am afraid to go through a long tunnel

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