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The Youth Anxiety Measure for DSM-5 (YAM-5): Correlations with anxiety, fear, and depression scales  
in non-clinical children

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## Highlights

- We recently developed the Youth Anxiety Measure for DSM-5 (YAM-5)
- We examined the concurrent validity of the YAM-5
- The YAM-5 was found to correlate meaningfully with existing scales for measuring children's anxiety, fear, and depression
- The YAM-5 is a useful scale for measuring DSM-5-defined anxiety symptoms in children and adolescents

## Abstract

The Youth Anxiety Measure for DSM-5 (YAM-5) is a newly developed rating scale for assessing anxiety disorder symptoms of children and adolescents in terms of the contemporary classification system. In the present study, 187 children aged 8 to 12 years completed the new measure as well as the trait version of the State-Trait Anxiety Inventory for Children (STAIC), the Short Form of the Fear Survey Schedule for Children-Revised (FSSC-R-SF), the Spence Children's Anxiety Scale (SCAS), the Selective Mutism Questionnaire (SMQ), and the Children's Depression Inventory (CDI). Results indicated that part one of the YAM-5, which measures symptoms of the major anxiety disorders, was most substantially linked with the trait anxiety scale of the STAIC, whereas part two, which measures phobic symptoms, was most clearly associated with the FSSC-R-SF. The correlation between the YAM-5 and the SCAS was also robust, and particularly strong correlations were found between subscales of both questionnaires that assessed similar symptoms. Further, the selective mutism subscale of the YAM-5 was most clearly linked to the SMQ. Finally, the YAM-5 was also significantly correlated with depression symptoms as indexed by the CDI. These findings provide further support for the concurrent validity of the YAM-5.

*Keywords:* Youth Anxiety Measure for DSM-5; validity; fear; anxiety; depression.

## Introduction

Anxiety disorders are common among children and adolescents. Large-scale epidemiological studies indicate that approximately 10% of the young people in the general population suffer from one or more anxiety disorders before the age of 16 (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003), whereas in clinically-referred youths prevalence rates have been documented of up to 50% (Hammerness, Harpold, Petty, Menard, Zar-Kessler, & Biederman, 2008). Anxiety rating scales are highly valuable assessment instruments that can be employed for research purposes as well as for practical reasons, for example in non-clinical samples to identify children and adolescents at risk for this type of psychiatric problem, or in clinical populations to measure symptom levels and to evaluate the progress that has been made with treatment (Silverman & Ollendick, 2005).

In the past, scales such as the State-Trait Anxiety Inventory for Children (STAIC; Spielberger, 1973) – in particular the trait version – and the Fear Survey Schedule for Children-Revised (FSSC-R; Ollendick, 1983) have been widely used, but in the late 1990s questionnaires like the Screen for Child Anxiety Related Emotional Disorders (SCARED; Birmaher et al., 1997) and the Spence Children’s Anxiety Scale (SCAS ; Spence, 1998) were developed, measuring youths’ anxiety symptoms in terms of the Diagnostic and Statistical Manual of Mental Disorders (DSM; American Psychiatric Association, 1994). Since the DSM has become the dominant psychiatric classification system, these ‘modern’ scales have gained considerable popularity as they facilitate communication about youth’s anxiety problems among clinicians and between clinicians and researchers. Moreover, there are indications that the modern scales are superior in some regards (e.g., sensitivity to measure treatment effects) as compared to the more traditional childhood anxiety questionnaires (Muris, Mayer, Bartelds, Tierney, & Bogie, 2001). With the introduction of DSM-5 (American Psychiatric Association, 2013), various changes have been made in the classification of anxiety disorders. To begin with, obsessive-compulsive disorder and

posttraumatic or acute stress disorder are no longer considered as pure anxiety disorders (Friedman et al., 2011; Stein et al., 2010) and have been moved to distinct sections in the DSM, which implies that these symptoms no longer need to be addressed by childhood anxiety questionnaires. Further, agoraphobia is now regarded as separate from panic disorder (Wittchen, Gloster, Beesdo-Baum, Fava, & Craske, 2010), and as such may require additional items in order to strengthen the measurement of this anxiety problem. Finally, as there is accumulating evidence showing that anxiety is a prominent feature of selective mutism (Muris & Ollendick, 2015), this type of childhood psychopathology is now categorized as an anxiety disorder and so standardized assessment should aim to assess for this presentation.

The Youth Anxiety Measure for DSM-5 (YAM-5) was recently developed as a questionnaire for assessing anxiety disorder symptoms of children and adolescents aged 8 to 18 years in terms of the current classification system. The YAM-5 consists of two parts: YAM-5-I contains 28 items and measures symptoms of the major anxiety disorders including separation anxiety disorder, selective mutism, social anxiety, panic disorder, and generalized anxiety disorder, whereas YAM-5-II is composed of 22 items that focus on symptoms of specific phobias and (given its overlap with situational phobias) agoraphobia. So far, two studies have investigated the psychometric qualities of this new questionnaire. In a first study, which described the development of the scale, Muris et al. (2017) demonstrated that the YAM-5 has good face validity. That is, research experts and clinicians were generally successful in linking the vast majority of its items to the intended anxiety disorders. In addition, a test of the scale in two samples of non-clinical adolescents ( $N = 132$ ) and clinically referred youths ( $N = 64$ , of which  $n = 21$  had an anxiety disorder diagnosis) revealed that (a) the internal consistency was good for both parts as well as for most subscales, (b) the parent-child agreement was satisfactory, and (c) there was also evidence for the validity of the scale: that is, child- and parent-reported YAM-5 scores correlated positively with the number of anxiety symptoms as reported by children and parents during a clinical assessment (i.e.,

the Structured Clinical Interview for DSM-5 – Junior version; Roelofs, Muris, Braet, Arntz, & Beelen, 2015) and the internalizing (but not the externalizing ) scale of the Achenbach checklist (Achenbach & Rescorla, 2001). In addition, YAM-5-I – anxiety disorders scores were higher in clinically referred children and adolescents with an anxiety disorder diagnosis as compared to clinical and non-clinical control youths, which provided tentative support for the discriminant validity of the scale.

A second study was conducted by Simon, Bos, Verboon, Smeekens, and Muris (2017) who administered the YAM-5 in 424 primary school children. The total sample was employed to investigate the construct validity (i.e., factor structure) of the measure, whereas subsamples were used to examine the test-retest reliability and concurrent validity through its relations with an alternative scale of anxiety disorder symptoms (i.e., the SCARED) and an index of anxiety proneness (i.e., the Behavioral Inhibition Questionnaire or BIQ; Bishop, Spence, & McDonald, 2003). Confirmatory factor analysis indicated that the hypothesized multi-factor models for anxiety disorder symptoms (YAM-5-I) and the phobia symptoms (YAM-5-II) provided a reasonable fit for the data, providing at least some support for the construct validity of the measure. Further, the 4-weeks test-retest reliability appeared to be satisfactory, with the vast majority of the correlations falling in the .70 to .90 range. Finally, the YAM-5 showed the to-be-expected correlations with the SCARED and the BIQ. That is, substantial and positive correlation coefficients were found between the YAM-5 total scores and the SCARED and BIQ total scores.

Altogether, available evidence indicates that the YAM-5 is a promising measure for assessing DSM-5 anxiety disorder symptoms in a reliable and valid way. The present study was conducted to strengthen the support for this new scale and to further investigate its psychometric qualities. For this purpose, non-clinical children aged 8 to 12 years completed the YAM-5 together with a number of other questionnaires. As noted earlier, the FSSC-R and the trait anxiety version of the STAIC are traditional measures of childhood fear and anxiety that have been employed in numerous studies (e.g., Silverman & Ollendick, 2005) and so it is important to establish their links with the YAM-5. Because the STAIC trait

anxiety scale is a more general anxiety measure particularly strong associations were expected with YAM-5-I (major anxiety disorder symptoms), whereas the FSSC-R – being an index of fear and fearfulness – was anticipated to correlate more convincingly with YAM-5-II (phobia symptoms). The study also included the SCAS (Spence, 1998) as an alternative, widely used DSM-based scale (see Orgiles, Fernandez-Martinez, Guillen-Riquelme, Espada, & Essau, 2016). As various anxiety disorder categories did not change with the transition from DSM-IV to DSM-5, we anticipated especially strong links between corresponding subscales reflecting separation anxiety, social anxiety, panic, generalized anxiety, and fears (which in YAM-5-II, phobias). We also investigated the discriminant validity of the new measure by comparing children scoring in the clinical range on the SCAS and children scoring in the normal range, with the expectation that the former group would exhibit higher symptom scores on the YAM-5 than the latter group. Further, because DSM-5 considers selective mutism as an anxiety problem and the YAM-5 thus includes items to assess symptoms of this disorder, our survey also contained the Selective Mutism Questionnaire (SMQ; Bergman, Keller, Piacentini, & Bergman, 2008) to explore the validity of this specific subscale. Finally, given the high comorbidity rates between anxiety disorders and depression – even at a symptom level (Cummings, Caporino, & Kendall, 2014), we also administered the Children’s Depression Inventory (CDI; Kovacs, 1985). We expected substantial associations between this depression measure and the YAM-5, with correlations being stronger for YAM-5-I (major anxiety disorder symptoms) than for YAM-5-II (phobia symptoms) since the former anxiety problems are generally regarded as more severe and invalidating as compared to the latter (Muris, 2007).

## Method

### *Participants and procedure*

One-hundred-and-eighty-seven children (103 girls, 84 boys) aged between 8 and 12 years ( $M = 10.5$  years,  $SD = 1.0$ ) were recruited from seven regular primary schools located in the vicinity of Venlo, Limburg, The Netherlands. Most participants were from original Dutch descent (i.e., > 95%) and all of them had a good mastery of the Dutch language. Due to constraints set by the schools, no exact information on the socio-economic status of the participants was available.

The study was officially approved by the Ethical Committee of Psychology (ECP) at Maastricht University. After the school boards agreed in taking part in the study, information letters and consent forms were disseminated via the children in the classrooms in order to inform parents or caregivers about the purpose of the study and to ask permission for their children to participate. In this way, the parents of 398 children were approached and almost half of them (i.e., 47.0%) responded positively by signing the consent form thereby granting their child to participate. The participating children completed the set of questionnaires during regular classes at school. Two research assistants were always present during the test session in order to provide clarification if necessary and to ensure confidential and independent responding. The YAM-5 was always filled in first, whereas the other scales were subsequently administered in a counterbalanced order. The session lasted for approximately 30 to 60 minutes, depending on the individual working speed of the children. After completion of the questionnaires, the researchers controlled the survey for missing data, after which children were thanked and received an incentive (a small present) in return for their participation.

### *Assessment*

As noted in the introduction, the YAM-5 (Muris et al., 2017) is a questionnaire for assessing symptoms of the anxiety disorders as listed in DSM-5. The scale consists of 50 items that are divided into two parts. YAM-5-I contains 28 items which assess symptoms of the major anxiety disorders, including



separation anxiety disorder (e.g., “I get frightened if my parents leave the house without me”), selective mutism (e.g., “At school I don’t speak to the teacher at all”), social anxiety disorder (e.g., “I find it scary to eat or drink if other people are looking at me”), panic disorder (e.g., “I suffer from anxiety or panic attacks”), and generalized anxiety disorder (e.g., “I worry about a lot of things”). YAM-5-II contains 22 items referring to symptoms of phobias: animal phobias (e.g., “I’m afraid of snakes”), natural environment phobias (e.g., “I am afraid of heights”), blood-injection-injury phobias (e.g., “I am afraid of getting an injection”), situational phobias/agoraphobia (e.g., “I am afraid when travelling by bus or train”), and other phobias (e.g., “I am afraid of people who are dressed up in costumes”). The YAM-5 can be completed by children and adolescents aged 8-18 years and their parents. The current study focused on the self-report version which asks children to respond to each item using a four-point Likert-type scale with 0 = never, 1 = sometimes, 2 = most of the time, and 3 = always. Ratings are summed to yield total and subscale scores, with higher scores reflecting higher levels of anxiety disorder and phobia symptoms. The YAM-5 (and the other questionnaires) was administered in Dutch, but it is good to note that there exists an official English version of the scale which was obtained after (1) a translation and back-translation procedure by an official translator and a native English speaker who was also fluent in Dutch, and (2) a careful check of the items by all 50 members of the International Child and Adolescent Anxiety Assessment Expert Group (see Muris et al., 2017 for a full description of the procedure).

The *trait anxiety version of the STAIC* (Spielberger, 1973) contains 20 items measuring symptoms of anxiety (e.g., “I am scared”, “I feel troubled”, and “I get a funny feeling in my stomach”). Children are asked to rate the frequency with which (s)he experiences these symptoms using a three-point scale with 1 = almost never, 2 = sometimes, and 3 = often. A total trait anxiety score can be computed by summing the ratings for all 20 items, ranging from a minimum score of 20 to a maximum score of 60. Previous research has indicated that the trait anxiety version of the STAIC is a reliable and valid scale for measuring chronic symptoms of anxiety in children and adolescents (e.g., Seligman, Ollendick, Langley,

& Bechtoldt Baldacci, 2004). In the present study, the reliability of this measure was also excellent, with a Cronbach's alpha of .90.

The *Short Form of the FSSC-R* (FSSC-R-SF; Muris, Ollendick, Roelofs, & Austin, 2014) consists of 25 items that were taken from the full-length version (Ollendick, 1983) for which children have to indicate their fear level using a three-point scale with 1 = none, 2 = some, and 3 = a lot. The FSSC-R-SF yields a total fear score (range: 25-75) as well as subscale scores (range: 5-15) reflecting the following fear tendencies: fear of failure and criticism (e.g., "Failing a test"), fear of the unknown (e.g., "Dark places"), fear of animals (e.g., "Spiders"), fear of danger and death (e.g., "Being hit by a car or truck"), and medical fears (e.g., "Having to go to the hospital"). The study by Muris et al. (2014) demonstrated that the FSSC-R-SF displayed good reliability and validity as shown by substantial correlations with the full-length FSSC-R and alternative childhood anxiety measures. In the current investigation, internal consistency coefficients were also satisfactory with Cronbach's alphas being .90 for the total scale and > .70 for each of the subscales.

The SCAS (Spence, 1998) is a questionnaire measuring DSM-IV-defined anxiety disorders symptoms in youths. The scale contains 38 items that can be allocated to the following six subscales: generalized anxiety (e.g., "I worry that something bad will happen"), separation anxiety (e.g., "I feel scared when I have to sleep on my own"), social anxiety (e.g., "I feel afraid that I will make a fool of myself in front of people"), panic/agoraphobia (e.g., "All of a sudden I feel really scared for no reason at all", "I am afraid of being in crowded places"), obsessions/compulsions (e.g., "I have to think of special thoughts to stop bad things from happening"), and physical-injury fears (e.g., "I am scared of insects or spiders"). SCAS items are rated on four-point scales (0 = never, 1 = sometimes, 3 = often, 4 = always). SCAS total and subscale scores are computed by summing across relevant items. Research has indicated that the SCAS has sufficient to good internal consistency and test-retest reliability (Spence, 1998), and correlates well with other measures of childhood anxiety symptoms (Muris, Merckelbach, Ollendick,

King, & Bogie, 2002). In the current investigation, Cronbach's alphas of the SCAS were comparable to those found in previous studies, varying between .95 for the total scale and .52 for physical injury fears.

The *SMQ* (Bergman et al., 2008) originally is a parent-report questionnaire consisting of 17 items quantifying the degree of mutism in three social and interpersonal contexts: school (e.g., "I talk to other children of the same age at my school"), family (e.g., "I talk to my parents, even when I'm not home"), and other social situations (e.g., "I talk to my doctor and/or dentist"). Children have to rate the applicability of each item using a four-point scale consisting of 0 (totally disagree), 1 (somewhat disagree), 2 (somewhat agree), and 3 (totally agree). A total *SMQ* score can be computed by summing ratings across all items (range: 0-51), with lower scores on this scale reflecting higher symptom levels of selective mutism. In the present study, a Cronbach's alpha of .82 was found for the *SMQ*, which compares well with the coefficient as documented for the parent version of the scale (Bergman et al., 2008; Letamendi et al., 2008).

The *CDI* (Kovacs, 1985) is a commonly used self-report instrument for measuring depression symptoms in children and adolescents (Sun & Wang, 2015). The scale consists of 27 items relating to sadness, self-blame, loss of appetite, insomnia, interpersonal relationships, and school adjustment. Sample items are "I am sad all the time" and "I feel like crying every day". *CDI* items are rated on a three-point scale (0 = *not true*, 1 = *somewhat true*, 2 = *very true*). A total *CDI* score can be calculated by summing ratings across all items, with higher scores indicating higher levels of depression symptoms. Previous research has indicated that the *CDI* is a highly reliable and valid index of depression symptoms in youths (e.g., Timbremont, Braet, & Dreesen, 2004). In the current study, the *CDI* had a Cronbach's alpha of .91.

## Results

### *Descriptive statistics*

Table 1 shows descriptive statistics for the YAM-5 in this sample of non-clinical children. Three conclusions can be drawn from this table. First, significant gender differences were found for both parts of the YAM-5. That is, girls displayed higher levels of both major anxiety disorders symptoms [YAM-5-I;  $t(185) = 2.95, p < .01$ ] and phobia symptoms [YAM-5-II;  $t(184.66, \text{adjusted } df) = 4.26, p < .001$ ] as compared to boys, and this pattern showed itself statistically in the majority of the subscales (except for selective mutism and panic disorder in YAM-5-I, and blood-injection-injury phobias in YAM-5-II). Second, age appeared to have little impact on the YAM-5 scores: only the subscales for measuring symptoms of separation anxiety disorder, panic disorder, and other phobias showed small significant, negative correlations with age ( $r$ 's between  $-.16$  and  $-.18, p$ 's  $< .05$ ), indicating that the frequency of these symptoms slightly decreased when children's age increased. Third, reliability coefficients of various YAM-5 scales were generally satisfactory. That is, most Cronbach's alphas were  $> .70$ , with exceptions being the selective mutism subscale which displayed poor internal consistency with an alpha of  $.41$ , and some phobia subscales (i.e., animal phobias, natural environment phobias, and blood-injection-injury phobias) which showed moderate alphas in the  $.60$  range. Table 2 displays YAM-5-I and YAM-5-II items that were most and least frequently endorsed by the children.

### *Correlations between YAM-5 and traditional childhood anxiety measures*

Correlations (corrected for gender) between the YAM-5 and the two traditional childhood anxiety scales, the STAIC and the FSSC-R, are shown in Table 3. Note that our main prediction was supported by the data. That is, the STAIC total score – being a general anxiety scale – was statistically stronger associated with YAM-5-I major anxiety disorders than with YAM-5-II phobias ( $r$ 's being  $.80$  versus  $.62, Z = 5.14, p < .001$ ). The reverse was true for the FSSC-R total score, which – being an index of fear and fearfulness – was statistically more convincingly linked with YAM-5-II phobias than with YAM-5-

I major anxiety disorders ( $r$ 's being .86 versus .73,  $Z = 4.57$ ,  $p < .001$ ). Note further that at a subscale level, YAM-5 scores also showed the predicted correlations with FSSC-R-SF subscales.

*Correlations between the YAM-5 and another DSM-based scale*

Table 4 displays correlations (corrected for gender) between the YAM-5 and the SCAS, which is also based on the DSM (more precisely, the DSM-IV). As can be seen, the total score of the SCAS was statistically stronger associated with YAM-5-I major anxiety disorders than with YAM-5-II phobias ( $r$ 's being .86 versus .75,  $Z = 3.97$ ,  $p < .001$ ), which is not surprising because this measure contains more items/subscales (i.e., 33/5) pertaining to symptoms of major anxiety disorders than to symptoms of phobias (i.e., 5/1). Note further that the most substantial correlations were found between the corresponding subscales of both measures. In addition, YAM-5-I selective mutism was most substantially linked to SCAS social anxiety, and YAM-5-II situational phobias/agoraphobia and other phobias with respectively SCAS separation anxiety and generalized anxiety.

To further explore the discriminant validity of the YAM-5, we compared scores on YAM-5-I (symptoms of major anxiety disorders) and YAM-5-II (symptoms of phobias) of children who displayed clinically elevated scores on the SCAS (as determined by gender-specific  $T$ -scores of the total scale; see <http://scaswebsite.com>;  $n = 14$ , i.e., 7.49% of the total sample) with those of children scoring in the normative range on this scale ( $n = 173$ ).  $T$ -tests revealed highly significant group differences for both YAM-5-I [ $t(185) = 10.80$ ,  $p < .001$ , Cohen's  $d = 2.64$ ] and the YAM-5-II [ $t(185) = 9.98$ ,  $p < .001$ , Cohen's  $d = 2.59$ ]. As can be seen in Figure 1, children who scored in the clinical range of the SCAS displayed higher symptom levels of major anxiety disorders and phobias on the YAM-5 than children who scored in the normative range of the SCAS.

*Correlations between the YAM-5 and selective mutism and depression scales*

Correlations (corrected for gender) between the YAM-5 on the one hand and the SMQ and CDI on the other are presented in Table 5. As expected, the SMQ correlated more substantially with YAM-5

selective mutism than with other YAM-5 (sub)scales (all  $Z$ 's  $\geq 1.91$ ,  $p$ 's  $\leq .05$ ). With regard to depression symptoms as indexed by the CDI, the most convincing correlations were found for YAM-5-I major anxiety disorders total score ( $r = .70$ ,  $p < .001$ ) and especially the subscales measuring symptoms of generalized anxiety disorder and social anxiety disorder ( $r$ 's being  $.65$  and  $.62$ , respectively,  $p$ 's  $< .001$ ). Further statistical comparisons revealed that the correlations between YAM-5-I anxiety disorders and the STAIC and the SCAS – being the other two anxiety measures ( $r$ 's being  $.80$  and  $.86$ , respectively,  $p$ 's  $< .001$ ) were significantly stronger than the correlation between YAM-5-I anxiety disorders and the CDI ( $r = .70$ ,  $p < .001$ ; with  $Z$ 's being  $3.33$  and  $5.44$ , respectively, both  $p$ 's  $< .001$ ).

### Discussion

The present study further examined the psychometric properties of the YAM-5, a recently developed questionnaire for assessing children and adolescents' anxiety symptoms in terms of the current DSM-5 classification system. More specifically, we investigated its concurrent validity by relating the measure to a number of existing scales for assessing symptoms of anxiety, fear, and depression in young people. First of all, it was found that the YAM-5 showed the expected strong, positive correlations with the STAIC and the FSSC-R-SF, being the two traditional childhood anxiety measures that were included in this study. This indicates that the new measure indeed taps symptoms in a similar domain of internalizing problems. Importantly, the two parts of the YAM-5 also showed differential relations with the two traditional scales. That is, YAM-5-I, which assesses symptoms of the major anxiety disorders, was most substantially linked to the trait anxiety scale of the STAIC, whereas YAM-5-II, which measures phobic symptoms, was most clearly associated with the FSSC-R-SF. This is nicely in keeping with the idea that the trait anxiety scale of the STAIC addresses "temporarily stable anxiety across situations" (Stallings & March, 1995; p. 134-135), which seems to be the case in the major anxiety disorders, while the FSSC-R-SF taps "reactivity to [specific] fear stimuli" (Stallings & March, 1995; p. 136), which corresponds rather well with the clinical picture of phobias. At a subscale level, the YAM-5 and the

FSSC-R-SF showed some anticipated correlations. More precisely, social anxiety disorder was most clearly associated with ‘fear of failure and criticism’, animal phobias with ‘fear of animals’, and blood-injection-injury phobias with ‘medical fears’. This is in line with previous findings on the relationships between DSM-based scales and FSSC-R subscales (e.g., Bouvard, Roulin, & Denis, 2013; Muris et al., 2002)

The correlation between the YAM-5 (especially YAM-5-1) and the SCAS appeared particularly strong. This is hardly surprising given the fact that both measures tap childhood anxiety symptoms in terms of the DSM. Although DSM-5, compared to its previous edition (i.e., DSM-IV), includes selective mutism as an anxiety problem and has discarded obsessive-compulsive disorder, all other anxiety disorders have been retained. This implies that the YAM-5 and the SCAS for the larger part assess similar categories of anxiety symptoms. As in the previous study by Simon et al. (2017) who compared the YAM-5 with another DSM-based scale (the SCARED), subscales of the new measure correlated most substantially with their SCAS counterparts, providing further support for its concurrent validity. In addition, it was found that children who displayed clinically elevated SCAS scores (according to available norm data on this measure) also exhibited significantly higher levels of anxiety disorder and phobia symptoms on the YAM-5 as compared to children who scored in the normative range on the SCAS. This result not only underlines that the YAM-5 and SCAS are convergent measures, but also can be taken as an indication that our new measure has fair discriminant validity.

The YAM-5 includes a subscale for assessing symptoms of selective mutism, and in order to validate this subscale we specifically added the SMQ to our survey. Results revealed the predicted negative correlations between various YAM-5 scales and the SMQ (for which lower scores indicate higher levels of selective mutism), which supports the idea that children’s lack of speech, which is the key symptom of this disorder, is at least in part driven by anxiety (Muris & Ollendick, 2015). It is also encouraging that YAM-5-1 selective mutism was most substantially correlated with the SMQ, indicating

that this subscale displayed some specificity in tapping this type of symptoms. Obviously, there were also problems with the selective mutism subscale: some items were rather infrequently endorsed by the participants (which is in line with the low prevalence rate of this disorder; Bergman, Piacentini, & McCracken, 2002), and in addition its reliability appeared to be below acceptable limits (see also Muris et al., 2017; Simon et al., 2017). On the basis of these findings, a cautionary note should be made with regard to the selective mutism subscale of the YAM-5: maybe it can be used as a brief, initial screen, but subsequently validation with a more psychometrically sound measure (such as the SMQ) seems appropriate.

The inclusion of the CDI in the present study was useful for a number of reasons. First, we were able to confirm that symptoms of anxiety disorders as assessed by the YAM-5 were positively associated with symptoms of depression, which is in keeping with a vast amount of literature showing the co-occurrence and comorbidity of both types of internalizing problems (e.g., Brady & Kendall, 1992; Cummings, Caporino, & Kendall, 2014). Second, the patterns of correlations as documented with the CDI yielded some support for the divergent validity of the YAM-5. That is, YAM-5-I major anxiety disorders was more clearly linked with this index of depression than YAM-5-II phobias, which is in keeping with the observation that the former type of anxiety problems is associated with greater distress and impairment in daily life (and hence depression) than the latter type (Muris, Dreessen, Bögels, Weckx, & Van Melick, 2004). In addition, it was found that YAM-5-I major anxiety disorders was still statistically stronger related to the other anxiety scales (i.e., STAIC and SCAS) than to the CDI, which indicates that at least this part of the YAM-5 is more an index of anxiety than of depression symptoms. In relation to this point, it can be noted that the more modern anxiety questionnaires such as the SCARED, SCAS, and certainly also the YAM-5 have been developed in such a way that there is minimal symptom overlap with depression, which used to be a problem of 'traditional' scales such as the STAIC and the Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1985). Although there are indications



that the modern scales are indeed better in discriminating between anxiety and depression (e.g., Dierker et al., 2001; Monga et al., 2000), it remains a clinical fact that symptoms of anxiety and depression often co-occur. As noted by Cummings et al. (2014), this could point at a causal relation (i.e., depression symptoms resulting from anxiety-related impairment, or vice versa: anxiety symptoms resulting from depression-related impairment) or a shared diathesis for both types of emotional problems.

The present study also yielded a number of additional results. To begin with, the internal consistency of the YAM-5 proved to be satisfactory, and this was true for the total scores of YAM-5-I (major anxiety disorders) and YAM-5-II (phobias) as well as most of the subscales. However, there were some exceptions to this rule. The insufficient reliability of the selective mutism subscale has already been discussed, but there were also a number of specific phobia subscales (i.e., animal phobias, natural environment phobias, and blood-injection-injury phobias) with moderate Cronbach's alphas. Note, however, that these subscales only consist of a limited set of items and that most phobias are by definition specific, implying that scoring high on one item (e.g., "I am afraid of the dark") does not necessarily mean that a child also scores high on another item (e.g., "I am afraid of heights"), even though those items belong to the same phobic category (i.e., natural environment phobias). Further, in general girls displayed higher scores on the YAM-5 than boys, which is in keeping with other research showing that symptoms of anxiety disorders and phobias are more prevalent in girls/females than in boys/males (Craske, 1997). Age was found to have little influence on YAM-5 scores. Whereas there is some evidence in the literature showing developmental trends for certain anxiety disorders (e.g., separation anxiety decreasing as children become older; Westenberg, Siebelink, Warmenhoven, & Treffers, 1999), the age range in this study was probably too small to detect robust effects. Finally, inspection of the item frequencies indicated that symptoms of generalized anxiety disorder, social anxiety disorder, animal phobias, and blood-injection-injury phobias were most prevalent in these children, whereas symptoms of selective mutism, panic disorder, and situational phobias/agoraphobia

were least common. Although these frequencies by and large mimic the prevalence rates of anxiety disorders as noted in community samples (see Costello, Egger, & Angold, 2004), it should be borne in mind that this was a non-clinical middle childhood sample, and that slightly different frequencies of anxiety/phobia symptoms might emerge in clinically referred and/or youths in other age groups (i.e., early childhood or adolescence).

Altogether, this study provides further support for the validity of the YAM-5 as an index for measuring anxiety disorders symptoms as defined by the contemporary classification system (i.e., DSM-5). Like all other self-report scales for assessing childhood fear and anxiety (i.e., FSSC-R, RCMAS, SCARED, SCAS, STAIC), the YAM-5 is just a questionnaire measuring symptoms and thus only provides a first impression on the possible presence of anxiety pathology in youths. A subsequent (semi-)structured interview (e.g., Anxiety Disorders Interview Schedule; Silverman & Albano, 1996) or a standardized clinician rating (e.g., Pediatric Anxiety Rating Scale; Research Units on Pediatric Psychopharmacology Anxiety Study Group, 2002) remains always necessary to evaluate the actual severity of the anxiety problem in terms of avoidance and interference and to explore whether a clinical diagnosis is warranted (e.g., Wehry, Beesdo-Baum, Hennelly, Connolly, & Strawn, 2015). Future studies should address whether the YAM-5 indeed can be used as a sensitive screen for detecting real anxiety disorders in community as well as clinical populations of children and adolescents.

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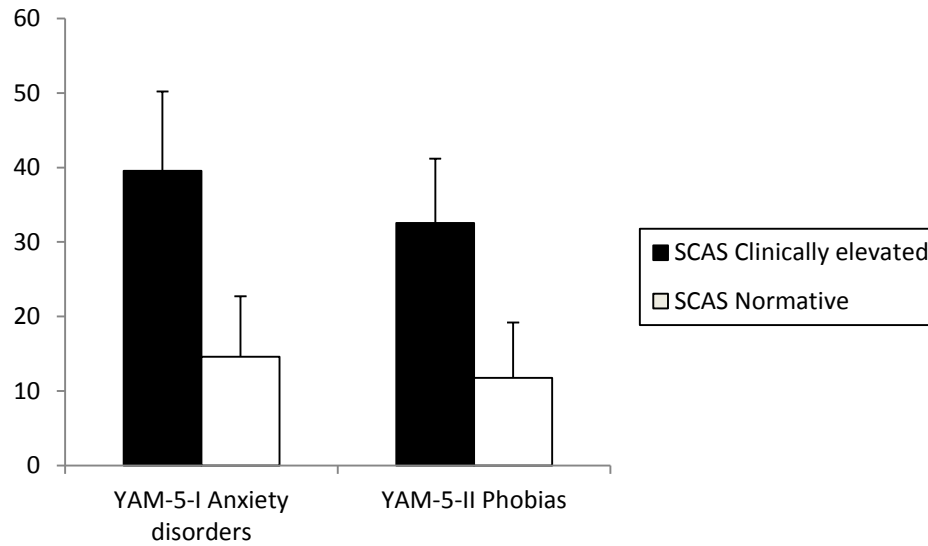
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Figure 1

Mean YAM-5 scores (standard deviations) for children with clinically elevated scores on the Spence Children's Anxiety Scale (SCAS) and children scoring in normative range on this scale



*Note.* YAM-5 = Youth Anxiety Measure for DSM-5. For both YAM-5-I and YAM-5-II scales, scores differed significantly between both groups of children at  $p < .001$ .



Table 1

Descriptive statistics for the YAM-5: Mean scores (standard deviations), gender differences, relation with age, and reliability coefficients

	Total sample ( <i>N</i> = 187)	Boys ( <i>n</i> = 84)	Girls ( <i>n</i> = 103)	<i>r</i> with age	Cronbach's $\alpha$
<b>YAM-5-I Anxiety disorders</b>					
Total score	16.45 (10.61)	13.96 (9.31)	18.48 (11.20)*	-.14	.92
Separation anxiety disorder	3.57 (3.35)	2.80 (3.04)	4.20 (3.48)*	-.18 <sup>†</sup>	.84
Selective mutism	2.08 (1.68)	2.02 (1.71)	2.13 (1.67)	-.09	.41
Social anxiety disorder	3.89 (2.78)	3.08 (2.41)	4.54 (2.90)*	.02	.76
Panic disorder	1.79 (2.23)	1.62 (2.24)	1.93 (2.22)	-.16 <sup>†</sup>	.77
Generalized anxiety disorder	5.12 (3.07)	4.44 (2.70)	5.67 (3.25)*	-.13	.78
<b>YAM-5-II Phobias</b>					
Total score	13.33 (9.28)	10.33 (7.64)	15.77 (9.80)*	-.08	.89
Animal phobias	4.13 (2.89)	3.06 (2.42)	5.00 (2.96)*	.03	.67
Natural environment phobias	2.49 (2.19)	2.00 (1.90)	2.89 (2.34)*	-.05	.61
Blood-injection-injury phobias	2.82 (2.20)	2.50 (2.09)	3.08 (2.27)	-.11	.68
Situational phobias/Agoraphobia	2.03 (2.43)	1.42 (1.94)	2.52 (2.67)*	-.07	.72
Other phobias	1.86 (2.01)	1.36 (1.75)	2.27 (2.12)*	-.17 <sup>†</sup>	.72

Note. YAM-5 = Youth Anxiety Measure for DSM-5. \* Significant gender difference at  $p < .05/6$ . <sup>†</sup> $p < .05$

Table 2

Most and least frequently endorsed YAM-5 items by the children in this study

YAM-5-I Anxiety disorders	Subscale	%*
Most frequent		
1. I think a lot about what can go wrong	Generalized anxiety disorder	81.2
2. I worry about a lot of things	Generalized anxiety disorder	76.5
3. I worry a lot about all the bad things than happen in the world	Generalized anxiety disorder	74.9
4. I am afraid I'll do something embarrassing	Social anxiety disorder	71.1
5. I am afraid that I might do or say something stupid in front of others	Social anxiety disorder	66.3
Least frequent		
1. At school I don't speak at all to the kids in my class	Selective mutism	9.6
2. When I panic, I am afraid that I could die	Panic disorder	13.9
3. I am afraid of having a new anxiety or panic attack	Panic disorder	15.0
4. I have severe anxiety attacks during which I tremble all over my body	Panic disorder	17.6
5. I find it scary to eat or drink if other people are looking at me	Social anxiety disorder	18.2
YAM-5-II Phobias	Subscale	%
Most frequent		
1. I am afraid of wasps	Animal phobias	75.4
2. I am afraid of undergoing a small medical operation	Blood-injection-injury phobias	72.2
3. I am afraid of snakes	Animal phobias	69.5
4. I am afraid of spiders	Animal phobias	67.4
5. I am afraid of getting an injection	Blood-injection-injury phobias	66.2
Least frequent		
1. I am afraid when crossing a large town square	Situational phobias/agoraphobia	11.2
2. I am afraid when travelling by bus or train	Situational phobias/agoraphobia	13.4
3. I am afraid of cats	Animal phobias	16.0
4. I am afraid of being in crowded places with lots of people	Situational phobias/agoraphobia	19.8
5. I am afraid to go through a long tunnel	Situational phobias/agoraphobia	23.0

*Note.* YAM-5 = Youth Anxiety Measure for DSM-5. \*Percentage of positive endorsement, that is, children rating the item with a frequency of at least 'sometimes'.

Table 3

Correlations (corrected for gender) between YAM-5 scales and the STAIC and FSSC-R-SF

	STAIC	FSSC-R-SF					
	Trait anxiety	Total score	Fear of failure and criticism	Fear of the unknown	Fear of animals	Fear of danger and death	Medical fears
YAM-5-I Anxiety disorders							
Total score	<b>.80</b>	.73	.63	.67	.39	.57	.48
Separation anxiety disorder	.65	.61	.55	<b>.58</b>	.30	.48	.39
Selective mutism	.44	.51	.40	.35	.35	<b>.43</b>	.41
Social anxiety disorder	.71	.60	<b>.56</b>	.52	.33	.47	.40
Panic disorder	.55	.54	.41	<b>.60</b>	.30	.41	.32
Generalized anxiety disorder	.77	.61	.56	<b>.56</b>	.30	.48	.41
YAM-5-II Phobias							
Total score	.62	<b>.86</b>	.55	.77	.69	.59	.65
Animal phobias	.34	.66	.36	.49	<b>.76</b>	.44	.46
Natural environment phobias	.52	.72	.40	<b>.79</b>	.50	.51	.50
Blood-injection-injury phobias	.48	.69	.42	.53	.49	.43	<b>.72</b>
Situational phobias/Agoraphobia	.57	.65	.57	<b>.64</b>	.46	.40	.42
Other phobias	.55	.64	.40	<b>.56</b>	.41	.55	.45

*Note.* YAM-5 = Youth Anxiety Measure for DSM-5, STAIC = State-Trait Anxiety Inventory for Children, FSSC-R-SF = Fear Survey Schedule for Children-Revised-Short Form.  $N = 187$ . All correlations were significant at  $p < .001$ . Flagged correlations indicate the STAIC and FSSC-R-SF scale that was most substantially associated with the pertinent YAM-5 scale.

Table 4

Correlations (corrected for gender) between YAM-5 scales and the SCAS

	SCAS						
	Total score	Separation anxiety	Social anxiety	Obsessions/ compulsions	Panic/ agoraphobia	Generalized anxiety	Physical injury fears
<b>YAM-5-I Anxiety disorders</b>							
Total score	<b>.86</b>	.83	.72	.70	.73	.79	.52
Separation anxiety disorder	.77	<b>.81</b>	.58	.59	.70	.68	.40
Selective mutism	.46	.45	<b>.47</b>	.39	.31	.41	.33
Social anxiety disorder	.69	.61	<b>.72</b>	.58	.50	.66	.44
Panic disorder	.69	.68	.49	.54	<b>.70</b>	.61	.44
Generalized anxiety disorder	.74	.67	.60	.64	.61	<b>.71</b>	.45
<b>YAM-5-II Phobias</b>							
Total score	.75	.68	.64	.64	.65	.68	<b>.80</b>
Animal phobias	.44	.38	.45	.34	.36	.42	<b>.71</b>
Natural environment phobias	.61	.57	.48	.57	.54	.53	<b>.73</b>
Blood-injection-injury phobias	.53	.45	.49	.45	.43	.51	<b>.61</b>
Situational phobias/Agoraphobia	.72	<b>.71</b>	.57	.60	.66	.59	.57
Other phobias	.65	.59	.52	.56	.58	<b>.63</b>	.46

*Note.* YAM-5 = Youth Anxiety Measure for DSM-5, SCAS = Spence Children's Anxiety Scale.  $N = 187$ . All correlations were significant at  $p < .001$ . Flagged correlations indicate the SCAS scale that was most substantially associated with the pertinent YAM-5 scale.

Table 5

Correlations (corrected for gender) between YAM-5 scales and the STAIC, SMQ, and CDI

	SMQ Selective mutism†	CDI Depression
YAM-5-I Anxiety disorders		
Total score	-.53	<b>.70</b>
Separation anxiety disorder	-.44	.59
Selective mutism	<b>-.63</b>	.39
Social anxiety disorder	-.40	.62
Panic disorder	-.32	.49
Generalized anxiety disorder	-.39	.65
YAM-5-II Phobias		
Total score	-.47	.52
Animal phobias	-.34	.28
Natural environment phobias	-.39	.46
Blood-injection-injury phobias	-.33	.43
Situational phobias/Agoraphobia	-.45	.53
Other phobias	-.31	.33

*Note.* YAM-5 = Youth Anxiety Measure for DSM-5, SMQ = Selective Mutism Questionnaire, CDI = Children's Depression Inventory.  $N = 187$ . † Higher scores on the SMQ indicate a stronger tendency to speak in social interaction situations and thus reflect lower scores of selective mutism. All correlations were significant at  $p < .001$ . Flagged correlations indicate the YAM-5 scale that was most substantially associated with the SMQ or CDI.