

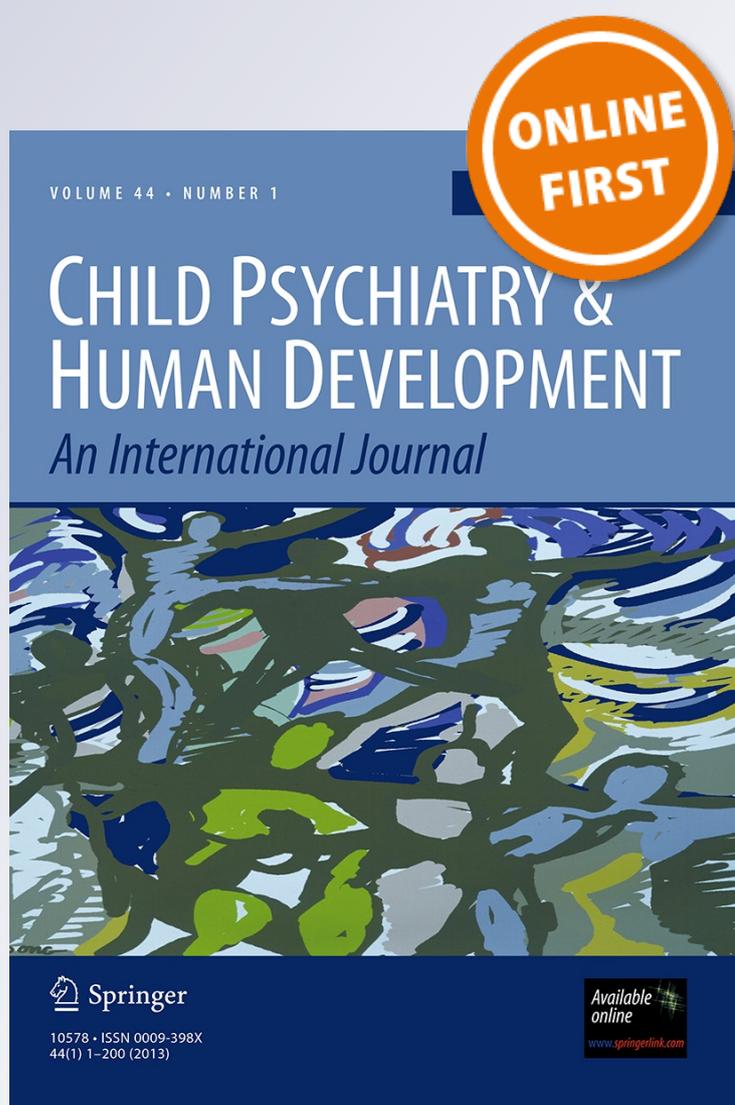
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# Separation Anxiety Avoidance Inventory-Child and Parent Version: Psychometric Properties and Clinical Utility in a Clinical and School Sample

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**Abstract** The psychometric properties and clinical utility of the Separation Anxiety Avoidance Inventory, child and parent version (SAAI-C/P) were examined in two studies. The aim of the SAAI, a self- and parent-report measure, is to evaluate the avoidance relating to separation anxiety disorder (SAD) situations. In the first study, a school sample of 384 children and their parents ( $n = 279$ ) participated. In the second study, 102 children with SAD and 35 children with other anxiety disorders (AD) were investigated. In addition, 93 parents of children with SAD, and 35 parents of children with other AD participated. A two-factor structure was confirmed by confirmatory factor analysis. The SAAI-C and SAAI-P demonstrated good internal consistency, test-retest reliability, as well as construct and discriminant validity. Furthermore, the SAAI was sensitive to treatment change. The parent-child agreement was substantial. Overall, these results provide support for the use of the SAAI-C/P version in clinical and research settings.

**Keywords** Separation anxiety disorder · Assessment · Childhood anxiety disorder · Diagnostic measures

## Introduction

Children with separation anxiety disorder (SAD) have an excessive and unrealistic fear of separation from an attachment figure that is beyond what would be expected from a child's developmental level (for an overview see [1]). Cartwright-Hatton, McNicol, and Doubleday [2] conducted a comprehensive review indicating prevalence rates (point- to 1-year-prevalence) for SAD between 0.5 and 20.2 % with a median of almost 4 %. A well comparable prevalence rate of SAD was found in another study indicating a lifetime prevalence of childhood SAD of 4.1 % [3]. Furthermore, SAD is one of the earliest mental disorders in childhood, with a median age of onset at 7 years of age [4]. Several studies indicate that children with SAD have an increased risk to develop various mental disorders in adolescence or adulthood [5, 6].

The most frequently reported symptoms by children with SAD and their parents are separation related distress, avoidance of being alone or without an adult, and avoidance of sleeping away from caregivers or from home [7]. Therefore, in addition to the distress in separation situations the avoidance of situations is an important characteristic of SAD. In addition, avoidance behavior is a significant maintenance factor in anxiety disorders [8, 9]. The avoidance of feared stimuli results in a diminished experience of fear (a condition that is intrinsically rewarding and thereby negatively reinforced). Therefore, since the individual does not approach the feared stimuli, new learning is hindered and extinction does not occur. Thus, avoidance is a crucial component of anxiety and

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subsequently should be considered in the assessment of SAD.

Reliable and valid diagnostics, including an anamnesis, is an important prerequisite for a successful treatment. In addition to structured interviews, questionnaires are widely used to assess symptoms, treatment progress and treatment evaluation. It is recommendable to consider multiple sources of information, particularly the parents and the child [10]. As highlighted by Silverman and Ollendick [10], it is important to distinguish between specific types of anxiety disorders in order to assign appropriate exposure tasks in and out of treatment sessions. While well validated rating scales assessing anxiety as a trait feature (e.g. RCMAS [11]) or DSM criteria across the different anxiety disorders including SAD criteria do exist (e.g. SCAS [12], SCARED-R [13–15], MASC [16]), disorder-specific anxiety questionnaires are sparse. First self-report scales specifically for SAD have been developed but adequate psychometric properties have not been published to date. The 34-item *Separation Anxiety Assessment Scale, parent and child versions* (SAAS [17]), measures specific dimensions of childhood SAD based on DSM-IV diagnostic criteria and related anxiety symptoms. However, its psychometric properties have not been published so far. The *Separation Anxiety Scale for Children* (SASC [18]) in Spanish assesses the frequency of symptoms of separation anxiety in children from 8 to 11 years. Psychometric properties for the SASC have been established but only in a nonclinical sample. Both the SASC and the SAAS assess DSM-IV symptoms of SAD, however they do not measure avoidance behavior, which is an important clinical factor of SAD.

In addition to these questionnaires, the *Separation Anxiety Daily Diary* (SADD), the first disorder-specific diary for the assessment of SAD, has been developed and investigated. Child and parent versions (SADD-C/P) assess parent–child separations that are anxiety or non-anxiety provoking for children, along with associated emotions, thoughts and behaviors. The SADD-C/P demonstrated good divergent and convergent validity with hypothesized measures in a sample of children with SAD ( $n = 81$ ), children with other AD ( $n = 37$ ) and healthy controls ( $n = 42$  [19, 20]).

While the existing SAD rating scales and the SADD assess symptoms and their frequency, they do not include a precise assessment of avoidance behavior, which is essential for a subsequent cognitive-behavioral treatment. A disorder-specific measure for SAD assessing avoidance behavior has been missing so far. Therefore, the *Separation Anxiety Avoidance Inventory*, child and parent version (SAAI-C/P), was developed to assess avoidance behavior in separation situations. Thus, the SAAI is an additional measure to other existing broader questionnaires assessing frequency and intensity of symptoms. Furthermore, the

SAAI provides relevant information to help the description of the current status of the child, selection and description of therapeutic goals, controlling of quality and processes during treatment, documentation of the treatment progress and treatment outcome regarding SAD. The present study examined the psychometric properties of the child and the parent version of the SAAI. Factor structure, reliability, construct and differential validity, and sensitivity to change were investigated in an initial study of a school sample and in a second study of children with SAD, children with other AD, and their parents.

## Method

### Participants

A total of 521 children (251 girls and 270 boys) between the ages of 4–15 years ( $M = 9.37$ ,  $SD = 1.94$ ) and 407 parents (326 mothers) participated in this study. The groups consisted of children with SAD, a clinical control group of children with other anxiety disorders than SAD and a school sample.

### Study 1

The school sample consisted of 384 children (180 girls and 204 boys), aged 5–14 years ( $M = 9.6$ ,  $SD = 1.68$ ). The sample of the parents consisted of 279 parents of the school sample.

### Study 2

The clinical group of children with SAD consisted of 102 children (53 girls and 49 boys), ranging in age from 4 to 15 years ( $M = 8.61$ ,  $SD = 2.43$ ). These children were diagnosed using the *Diagnostic Interview for Mental Disorders in Children and Adolescents* (Kinder-DIPS [21]), a structured interview in German based on DSM-IV-TR-criteria [22]), similar to the ADIS-C/P for DSM-IV [23]. They met criteria for a principal separation anxiety disorder. Fifty-six children (50 %) met criteria for at least one comorbid clinical disorder (specific phobia, generalized anxiety disorder, social phobia, major depression, oppositional defiant disorder, insomnia, attention deficit hyperactivity disorder, enuresis, tic disorder). The clinical control group (children with other anxiety disorders than SAD) consisted of 35 children (18 girls), 22 children with social phobia and 13 children with specific phobia, ranging in age from 4 to 14 years ( $M = 9.06$ ,  $SD = 2.19$ ). Sixteen children (46 %) met criteria for at least one comorbid clinical disorder (major depression, tic disorder, insomnia, generalized anxiety disorder). The parent sample consisted of 93 parents of children with SAD and 35 parents of children

within the clinical control group. With regard to family characteristics of the entire sample, the parents were primarily Caucasian and well educated. Data relating to family composition, parental marital status, and socioeconomic status were not available for the school children. The samples were different in respect to age; the children with SAD were significantly younger than the school sample,  $F(2, 529) = 11.19$ ,  $p < 0.01$ . The samples were comparable with respect to gender,  $\chi^2(2, n = 532) = 2.78$ ,  $p = 0.25$ .

#### Procedure

Parents and children gave written consent and assent to participate in the study, approved by the Ethics Committee of Basel, Switzerland, which informed them of the child's right to withdraw at any time. No child withdrew from participation.

School children were recruited through teachers from different schools in Basel, Switzerland and the surrounding region. The school children filled out the questionnaires in the classroom on an individual basis, in the presence of a researcher. Items were read aloud for children who experienced problems reading the items. Parent questionnaires were completed at home and returned by mail. In the school sample, 102 children completed the SAAI for the second time 6–7 days following the first administration.

All clinical children had either been referred to the Department of Clinical Child and Adolescent Psychology at the University of Basel for participation in a study on separation anxiety disorder or had contacted the department to participate in the clinical control group. Assessment of the clinical groups was based on both the child and parent versions of the Kinder-DIPS (see "Measures"). As the second study was part of an extensive study on the cognitive-behavioral treatment of children with SAD, the SAAI was administered to 54 children again 4 weeks after the end of a 16-session combined child-parent therapy to test for the effect of the therapeutic intervention [24]. For children with limited reading ability, a psychology student blind to the diagnoses of the child read the questions aloud and asked the child which response was most adequate to him or her.

#### Measures

##### *Development of the Separation Anxiety Avoidance Inventory*<sup>1</sup>

The SAAI, assessing the avoidance behavior in separation situations, was modeled on the mobility inventory [25] by the

first and last authors, both clinical psychologists and psychotherapists. The separation situations are based on DSM-IV and clinical experiences. In addition, three practicing clinical therapists with experience in children with SAD added and evaluated the items as treatment relevant.

##### *Separation Anxiety Avoidance Inventory, Child Rating*

The *Separation Anxiety Avoidance Inventory for children* (SAAI-C [26, 27]) is a self-report questionnaire designed to assess the degree to which the rater avoids 12 different separation situations (see "Appendix"). The starting point of each item is "Because I am anxious, I avoid ..." e.g., "... going alone to school", "... sleeping in my own bed", "... being alone at home". Items are rated on a 5-point Likert-type scale ranging from 0 (never) to 4 (always). A total SAAI score is obtained by summing scores of the items. The higher the score, the higher is the avoidance behavior.

##### *Separation Anxiety Avoidance Inventory, Parent Rating*

Parents rated the *Separation Anxiety Avoidance Inventory for parents* (SAAI-P [26, 27]), assessing the parent's view of the degree to which the child avoids the same 12 separation situations as in the child version. The starting point of each item is "Due to anxiety, my child avoids..."

##### *Separation anxiety, Child Rating*

As described above, the *Spence Children's Anxiety Scale* (SCAS [12], German [28]) assesses different anxiety symptoms and consists of six subscales. The subscale on separation anxiety consists of five items, which was utilized to evaluate construct validity of the SAAI-C. The self-report measure has a 4-point Likert-type scale (0 = never to 3 = always). In the current sample of all children the items had an internal consistency of 0.70.

##### *Manifest Anxiety, Child Rating*

Children rated their manifest anxiety by completing the *Revised Children's Manifest Anxiety Scale-Child version* (RCMAS [11], German Version [29]) a self-report measure with 37 items. A short version of six items was administered in order to assess the construct validity of the SAAI. Cronbach's alpha for the German version of the current sample was 0.63.

##### *Childhood Anxiety Sensitivity Index, Child and Parent Rating*

The CASI ([30], German version [31]) is a 17-item self-report questionnaire assessing the fear of anxiety symptoms

<sup>1</sup> The German and English versions of the SAAI can be provided by the last author.

in children on a 3-point Likert scale ranging from 1 (never) to 3 (often). In the current child sample the CASI had an internal consistency of 0.83, and in the parent sample it had an internal consistency of 0.81.

#### *Children's Depression Inventory, Child Rating*

The children indicated their level of depressed mood by completing the German version of the CDI (CDI [32], German version: DIKJ [33]), a self-report measure of depression for children and adolescents. Depressed mood is often associated with chronic anxiety among both children and adults. The CDI includes the cognitive, affective and behavioral signs of depression; children indicate whether each item characterizes them during the past 2 weeks. We administered a short version consisting of 10 items for construct validity. The internal consistency of the German version of the 10-item CDI in the current sample was good, with Cronbach's alpha of 0.93.

#### *Diagnoses of Mental Disorders in the Clinical Sample*

Children's mental disorders were diagnosed using a structured interview, the *Diagnostic Interview for Mental Disorders in Children and Adolescents* (Kinder-DIPS [21]), which has different forms for child and parent. The structured interview assesses all anxiety disorders, depression, attention-deficit hyperactivity disorder, oppositional defiant disorder, sleep disorders, eating disorders, and elimination disorders. The Kinder-DIPS has good validity and inter-rater reliability for anxiety disorders (child version: kappa = 0.88; parent version: kappa = 0.85) and other axis I disorders (child version, kappa = 0.48–0.88, parent version, kappa = 0.85–0.94). Inter-rater-reliability (kappa) for SAD of the child version was 0.64 and 0.85 for the parent version [34]. Diagnoses were based on composite information from the two separate child and parent interviews. SAD was diagnosed if either one of the interviewers rendered a positive diagnosis. Doctoral students in clinical child psychology were first systematically trained in conducting the interviews.

#### Data Analysis and Preparation

For descriptive statistics and item analysis we used SPSS (version 18); for exploratory factor analysis (EFA) and for confirmatory factor analysis (CFA) we used the software package Mplus Version 6 [35]. When performing confirmatory factor analyses, Mplus is particularly recommended if item responses are of ordered categorical form and because of its ability to accommodate non-normality without reliance on very large samples [36, 37]. For data analysis we used the weighted least squares mean and variance adjusted (WLSMV) estimator [38]. Cut off

criteria for good model fit are  $CFI \geq 0.95$ ,  $TLI \geq 0.95$ ,  $RMSEA \leq 0.06$  ( $<0.08$  acceptable), and  $WRMR < 0.9$  as recommended by Hu and Bentler [39]. Regarding RMSEA, Muthén [40] pointed out that the more skewed the variables are, the lower is the cutoff of RMSEA. We also checked for univariate or multivariate outliers and for multicollinearity of item values. No outliers were detected and multicollinearity proved not to be a problem.

Three items (items 4, 5, 10) had to be excluded since too much data were missing (age related items). We used the school sample for CFA and EFA, as this sample is most representative. Exploratory factor analysis (EFA) was employed to examine the structure of SAAI. According to EFA, two items (items 6, 11) had to be excluded due to low loadings. Therefore, the SAAI-C and SAAI-P consisted of 7 items for further analysis. Based on the Kaiser-Guttman criterion, we identified two factors.

Internal consistency was computed with Cronbach's  $\alpha$  coefficient. Cronbach's  $\alpha > 0.70$  indicate acceptable,  $>0.80$  good, and  $>0.90$  excellent internal consistency. Test-retest-reliability throughout the first and second SAAI assessments was evaluated by calculating Pearson product-moment correlation coefficients between the SAAI scores across the two administrations. The same coefficient was used to evaluate the relationship between SAAI scores and other measures of anxiety and depression. One-way analyses of variance and effect sizes (Cohen's  $d$ ) were used to assess differences in SAAI scores across diagnostic groups. Paired two-sample  $t$  tests were conducted to examine the SAAI sensitivity to treatment. Significance levels were set at  $\alpha = 0.05$ .

## Results

Results of study 1 with the school sample and study 2 with the clinical sample will be presented combined as some analyses were done independently with both samples (test-retest reliability, construct validity) and/or for the entire sample (internal consistency, discriminant validity).

#### Exploratory Factor Analysis (EFA)

Exploratory factor analysis was employed because this is the first study examining the structure of the SAAI-C/P. Children's and parents' data were examined separately. The results of EFA of the child version suggested an adequate fit for a two factors structure  $\chi^2(8) = 20.35$ ,  $p < 0.01$ ,  $CFI = 0.99$ ,  $TLI = 0.99$ ,  $RMSEA = 0.06$ . The factor loadings for factor one (items 3, 7, 8, 9) ranged from 0.74 to 0.99 and for factor two (items 1, 2, 12) from 0.45 to 0.75. For the entire child sample, each of the two factors explained 37.11 % and 32.06 % of the variance, in total 69.17 %.

The results of EFA of the parent version also suggested an adequate fit to the data  $\chi^2(8) = 22.03, p < 0.01, CFI = 0.99, TLI = 0.97$ , except the  $RMSEA = 0.10$ . The factor loadings for factor one (items 3, 7, 8, 9) ranged from 0.45 to 0.96 and for factor two (items 1, 2, 12) from 0.73 to 0.96. For the entire parent sample, each of the two factors explained 43.18 % and 29.62 % of the variance, in total 72.80 %.

**Confirmatory Factor Analysis (CFA)**

To examine the hypothesized two-factor solution, a CFA was carried out. Children and parent data were examined separately. The results of CFA using the school sample ( $n = 381$ ) indicate the hypothesized two factors structure. The first factor, comprising items relating to “going alone to school” or “to bed alone”. The second factor included items relating to “being or going home alone if no-one is there”. The results suggested an adequate fit to the data  $\chi^2(13) = 37.47, p < 0.01, CFI = 0.99, TLI = 0.98, RMSEA = 0.07, WRMR = 0.68$ . The factor loadings (completely standardized) were for factor one (items 3, 7, 8, 9) 0.79, 0.92, 0.92, 0.86 and for factor two (items 1, 2, 12) 0.92, 0.65, 0.73. The correlation between the two factors was 0.62 ( $SE = 0.05, p < 0.01$ ).

The results of the parent version ( $n = 169$ ) suggested an adequate fit to the data  $\chi^2(13) = 47.53, p < 0.01, CFI = 0.97, TLI = 0.95, RMSEA = 0.13, WRMR = 0.85$ . The factor loadings (completely standardized) are for factor one (items 3, 7, 8, 9) 0.67, 0.88, 0.76, 0.74 and for factor two (items 1, 2, 12) 0.99, 0.81, 0.81. The correlation between the two factors was 0.58 ( $SE = 0.07, p < 0.01$ ).

**Reliability**

*Internal Consistency*

Internal consistency was examined using the entire sample of 532 children and 349 parents as well as separately for the SAD and school sample. Cronbach’s  $\alpha$  reliability coefficients for the total SAAI and for the two factors are presented for both children and parents in Table 1. For the entire child sample, values for the SAAI-C ranged between 0.81 and 0.84 with corrected item correlations ranging between 0.50 and 0.70. For the entire parent sample, values for the SAAI-P ranged between 0.76 and 0.89 with corrected item correlations ranging between 0.49 and 0.79.

*Test–Retest Reliability*

Retest reliability was assessed 4 weeks after the initial data collection in children with SAD and 6–7 days in the school sample (see Table 2). Test–retest reliability of the child version was  $r = 0.80, p < 0.01$  for the school sample

**Table 1** Cronbach’s  $\alpha$  reliability coefficients for the total SAAI-C and SAAI-P and its two factors for the entire, school, and SAD sample

	Total SAAI	Factor 1: “going to school, to bed alone”	Factor 2: “being or going home alone when no-one is there”
<b>SAAI-C</b>			
Entire child sample	0.84	0.83	0.81
School sample child	0.82	0.73	0.85
SAD child sample	0.70	0.72	0.66
<b>SAAI-P</b>			
Entire parent sample	0.87	0.89	0.76
School sample parent	0.78	0.80	0.67
SAD parent sample	0.75	0.86	0.71

**Table 2** Means and (SD) of SAAI-C and SAAI-P by sample at baseline, retest, and after CBT

	M baseline (SD)	M retest (SD)	M CBT (SD)
School children	1.66 (0.81)	1.59 (0.78)	–
Clinical children	2.59 (0.79)	–	–
SAD children	3.09 (0.96)	2.81 (1.03)	2.13 (0.92)
Parents of school children	1.81 (0.72)	1.73 (0.68)	–
Parents of clinical children	2.91 (1.03)	–	–
Parents of children SAD	3.52 (0.89)	3.47 (0.82)	2.47 (0.83)

– = not available

( $n = 102$ ), and  $r = 0.60, p < 0.01$  for the SAD sample ( $n = 54$ ). Test–retest reliability of the parent version was  $r = 0.82, p < 0.01$  for the school sample ( $n = 150$ ), and  $r = 0.80, p < 0.01$  for the SAD sample ( $n = 63$ ).

**Validity**

*Construct Validity: Convergent and Divergent Validity*

To determine convergent and divergent validity of the SAAI-C and SAAI-P, the total score was correlated with other child and parent measures. Correlations were run for the school and SAD sample. It was expected that the SAAI would correlate highly with questionnaires assessing SAD symptoms and anxiety sensitivity and to a lower degree with general anxiety measures and depression symptoms.

For the school sample, the SAAI-C total score correlated significantly with the separation anxiety subscale of the SCAS ( $r = 0.35, n = 367, p < 0.01$ ), the CASI ( $r = 0.23, n = 369, p < 0.01$ ), and the RCMAS ( $r = 0.16, n = 376, p < 0.01$ ). Correlations were then examined between the

SAAI-C and child report on the CDI in order to explore divergent validity. Results indicated a significant correlation between the SAAI-C total score and scores on the CDI ( $r = 0.17$ ,  $n = 366$ ,  $p < 0.01$ ). The correlation between the SAAI-C and the CDI was significantly lower than the correlation between the SAAI-C and the separation anxiety subscale of the SCAS ( $z = 2.57$ ,  $p < 0.01$ , using the Fisher  $z$ -transformation). This finding supports the divergent validity of the SAAI-C as an indicator of anxious, rather than depressive symptoms.

For the SAD sample, the SAAI-C total score correlated significantly with the separation anxiety subscale of the SCAS ( $r = 0.49$ ,  $n = 49$ ,  $p < 0.01$ ), whereas the correlations between the SAAI-C and the CASI ( $r = 0.02$ ,  $n = 51$ ,  $p = 0.89$ ), and the RCMAS ( $r = 0.21$ ,  $n = 81$ ,  $p = 0.07$ ) were not significant. A significant correlation was found again between the SAAI-C and the CDI ( $r = 0.29$ ,  $n = 54$ ,  $p = 0.03$ ). There was no significant difference in the correlation between the SAAI-C and the CDI and the correlation between the SAAI-C and the separation anxiety subscale of the SCAS ( $z = 1.17$ ,  $p = 0.12$ ).

The relationship between the SAAI-P and parents' rating of the entire sample on the CASI indicated a significant correlation between the SAAI-P and the CASI-P ( $r = 0.25$ ,  $n = 71$ ,  $p = 0.03$ ).

#### *Discriminant Validity Between Children with SAD, Children with Other AD and School Children*

We assessed discriminant validity of the SAAI-C by comparing the responses of children with SAD, children with other AD and school children. Univariate ANOVA with groups as the between-subject factor was used to examine the discriminant validity of the SAAI. ANOVA indicated a significant difference between groups on the SAAI-C,  $F(2, 509) = 109.83$ ,  $p < 0.01$ . A priori contrasts indicated significant differences between the three groups (all  $p < 0.01$ ) using Bonferroni-corrected  $\alpha$  level. Children with SAD scored significantly higher compared to children with other AD (Cohen's  $d = 0.57$ ) and also significantly higher compared to school children (Cohen's  $d = 1.61$ ). In addition, children with other AD also scored significantly higher compared to school children ( $d = 0.95$ ). Similarly, significant differences between the groups were found in the parent version indicating higher SAAI-P scores of parents of children with SAD compared to children with other AD (Cohen's  $d = 0.63$ ), and compared to school children (Cohen's  $d = 2.11$ ).

#### *Sensitivity to Treatment Change*

Mean scores at pre- and post-treatment are presented in Table 2. Data on 64 treated children with SAD were

available. They completed the SAAI 4 weeks after treatment. After treatment, children with SAD scored significantly lower than before treatment,  $F(1, 63) = 53.2$ ,  $p < 0.01$ , Cohen's  $d = 1.02$ . Similarly, after treatment parents scored significantly lower than before treatment  $F(1, 63) = 68.04$ ,  $p < 0.01$ , Cohen's  $d = 1.29$ . An unpaired samples  $t$  test indicated that treatment responders ( $n = 46$ ) and non-responders (children still meeting DSM-IV criteria of SAD after treatment,  $n = 18$ ) significantly differed on SAAI-C  $t(59) = 5.76$ ,  $p < 0.01$ , Cohen's  $d = 1.50$ , and SAAI-P  $t(61) = 6.07$ ,  $p < 0.01$ , Cohen's  $d = 1.55$ .

#### *Parent-Child Agreement*

Parent-Child agreement of the SAAI for the entire sample ( $n = 405$ ) was  $r = 0.63$ , for the school sample ( $n = 278$ )  $r = 0.33$ , and for the SAD sample ( $n = 85$ )  $r = 0.50$ . All three correlations were significant at  $\alpha$  of 0.01.

#### **Discussion**

The aim of the current study was to examine the psychometric properties and utility of the SAAI-C and SAAI-P first in a school sample, and second in a clinical sample of children with SAD, children with other AD, and the parents of the child samples. Taken together, results indicate that the SAAI, child and parent version, is a reliable and valid measure for the assessment of avoidance behavior relating to SAD for clinical and research purposes.

Results of the exploratory factor analysis indicated that the structure of the SAAI consists of two factors. The first factor includes items about "going to school" or "to bed alone", the second factor includes items about "being or going home alone if no-one is there", showing an adequate match with the data (69 % for the child sample and 73 % for the parent sample). Confirmatory factor analysis demonstrated that a model with two correlated factors provided a good fit with the data for both child and parent reports. Excluded items were mainly items, which depended on age, such as "going on a school camp", "going home alone", or "staying home alone with a babysitter". Parents often commented that their child had not yet encountered the situation of going on a school camp. Older children said that they did not have a babysitter. Based on this feedback, the item should be modified to "staying home alone with a babysitter or an older sibling".

Examination of the internal consistency of the entire SAAI and the two factors revealed satisfactory reliabilities. With respect to the SAAI-C, alpha coefficients for the total scores of the different samples ranged from 0.70 to 0.84. For the SAAI-P the coefficients ranged from 0.75 to 0.87.

These coefficients have to be interpreted considering the fact that the SAAI only consists of 7 items. Test–retest reliability with subsamples of children and parents showed high indexes of correlations, indicating stability of the scores over a one-week period in the school sample and four-week period in the children with SAD.

Convergent validity of the SAAI-C and SAAI-P was supported by significant and strong correlations between child and parent measures. Such parent–child agreement emerges especially for anxiety symptoms that are more readily observable, such as SAD [41, 42]. The lower correlation of the school sample compared to the clinical sample could be due to the fact that although some school children might be anxious in separation situations, they do not talk about it with their parents and/or do not show their anxiety. Furthermore, and more importantly, convergent validity was supported by a strong correlation between the SAAI-C and the separation anxiety subscale of the SCAS ( $r = 0.35$ ) and the CASI, which both are questionnaires measuring similar concepts. In addition and as expected, the SAAI-C correlated less with the RCMAS and symptoms of depression. The correlation between the SAAI-C and the SCAS separation subscale was significantly higher than the correlation between the SAAI-C and the CDI. This underlines the divergent validity of the SAAI-C. Consistent with the results of the SAAI-C, also the SAAI-P correlated significantly with the CASI-P.

Discriminant validity of the SAAI-C and SAAI-P was supported by the significant differences between children with SAD, children with other AD and school children. According to Cohen, the effect size between children with SAD and children with other AD was medium, and a large effect was found between children with SAD and school children. Child self-reports on general anxiety (e.g., RCMAS, SCARED) have been found to discriminate clearly between children with anxiety disorders and normal controls, but not within anxiety disorders [43]. Therefore, the SAAI indicates a progress in childhood anxiety measures.

A disorder specific measure for SAD, which is sensitive to treatment change, such as the SAAI-C/P is called for, as SAD is an early and frequent anxiety disorder and a major risk factor for the development of further mental disorders [2, 4, 5]. Avoidance behavior is a major maintenance factor for anxiety disorders, including SAD. Reducing avoidance behavior is crucial for treatment change and should therefore be assessed before and after treatment. In this context, the large effect sizes according to both children and parent ratings prove that SAAI is highly sensitive to treatment change following cognitive-behavioral therapy.

Some limitations of the present study should be noted. SAAI consists, due to the elimination of age-related items, merely of 7 items. Further research on the SAAI should investigate whether different age versions are needed and

should be developed. In addition, the time span for the retest in the non-clinical sample should be expanded. Furthermore, there is need for additional analyses such as item analyses, sensitivity and specificity analyses, and norms for different age groups. As a general limitation it should be mentioned that the questionnaires should be validated in preschool children. Nevertheless, the SAAI has shown its utility, also in the application in young children. Additional evidence of divergent validity should be provided in future studies.

### Summary

Overall, the SAAI-C and SAAI-P was found to have acceptable psychometric properties in terms of reliability and validity in school and clinical samples. In sum, the SAAI is a highly valuable assessment tool that can be used in clinical and research contexts, for example for treatment evaluation [24]. In agreement with the requirement of a multi-informant approach [10], the SAAI is available as a child and a parent version. It provides a disorder-specific measure that can be used next to measures assessing the frequency and severity of separation situations. A reasonable addition to the SAAI is the SAD disorder-specific diary, assessing parent–child separation situations and associated symptoms [19, 20].

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### Appendix: Separation Anxiety Avoidance Inventory, Child Version (SAAI-C)

On the following page you will find in one row a list of situations that can make you anxious.

Please record, how often you *avoid* the following situations *due to anxiety*. There are no wrong answers!

*Because I am anxious, I avoid...*

		Never	Seldom	Half of the time	Most of the time	Always
1.	Being alone at home	<input type="checkbox"/>				
2.	Being at home alone in the evening	<input type="checkbox"/>				

Appendix continued

	Never	Seldom	Half of the time	Most of the time	Always
3. Going alone to school/ kindergarten	<input type="checkbox"/>				
4. Going to visit friends	<input type="checkbox"/>				
5. Going on a school field trip	<input type="checkbox"/>				
6. Staying somewhere else overnight	<input type="checkbox"/>				
7. Going to sleep alone	<input type="checkbox"/>				
8. Going to sleep in my own bed	<input type="checkbox"/>				
9. Sleeping in the dark	<input type="checkbox"/>				
10. Staying home alone with a babysitter	<input type="checkbox"/>				
11. Going home alone	<input type="checkbox"/>				
12. Going home if no-one is there	<input type="checkbox"/>				

Please check that you have answered all of the questions-Thank you!

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