

## Original Article

# Spence children's anxiety scale through parent report: Psychometric properties in a community sample of Iranian children

Mohsen Jalali<sup>1\*</sup>, Hiva Mahmoodi<sup>2</sup> and Elnaz Pourahmadi Esfestani<sup>3</sup>

1. Assistant Professor of Psychology, Faculty of Humanities and Social Sciences, Golestan University, Gorgan, Iran
2. Assistant Professor of Psychology, Faculty of Humanities and Social Sciences, Golestan University, Gorgan, Iran.
3. Assistant Professor, Department of Psychology, Bandar Gaz Branch, Islamic Azad University, Bandar Gaz, Iran.

### Abstract

This study examined the psychometric properties of the parent version of the Spence Children's Anxiety Scale [SCAS-P] as part of the process of developing the Spence Children's Anxiety Scale for Parents in a community sample of Iranian children; 315 mothers and children aged six to ten years participated in the study. The results of confirmatory factor analysis provided support for six inter-correlated factors, that corresponded with the child self-report as well as with the classification of anxiety disorders by DSM-IV namely separation anxiety, generalized anxiety, social phobia, panic/agoraphobia, obsessive-compulsive disorder, and fear of physical injuries. The SCAS-P demonstrated moderate to high internal consistency ( $\alpha = 0.65-0.89$ ) and test-retest reliability (interclass correlation coefficients =  $0.39-0.68$  over 2 weeks). Evidence was found for both convergent and divergent validity: the measure correlated well with the parent report for internalizing symptoms, and lower with externalizing symptoms. A MANOVA indicated no significant gender or age differences for the total scale score or any subscale scores. The SCAS-P is recommended as a screening instrument for normal children.

### Keywords

Anxiety  
Children  
Parent  
Assessment  
Spence children's  
anxiety scale

Received: 2020/08/08

Accepted: 2020/09/30

Available Online: 2020/09/31

### Introduction

Anxiety disorders are a relatively common problem among children (Beesdo, Knappe, & Pine, 2009). Researchers and clinicians have become increasingly aware of the significance of anxiety disorders in children (Puliafico, Comer, & Albano, 2013). DSM-5 widely accepted as a valid method of classifying anxiety disorders among children recognizes the following anxiety disorders in children and adolescents: panic disorder, agoraphobia, generalized anxiety disorder, separation anxiety disorder, social phobia, specific phobia, selective mutism (American Psychiatric Association, 2013). Epidemiological studies have been reported a point prevalence of around 5–10%, and lifetime prevalence around 15–20%, with estimates varying according to the population, measure, and level of impairment used to

determine presence of a disorder (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003). Corresponding DSM-5 anxiety disorders are more common in females than males in the general population. There is some evidence that this gender difference appears very early – as young as five years of age. In contrast, distributions within treatment-seeking cases in Western societies are more equal and even include slightly more males (American Psychiatric Association, 2013). Onset age of anxiety disorder is preschool and the median age of disorder onset is six years (Merikangas, Burstein, Swanson, Avenevoli, & Sweden., 2010). The presence of anxiety at a young age predicts anxiety presence later in childhood and even in adulthood, and earlier onset is associated with more intractable course of illness (Kessler, Berglund, & Demler, 2005). Children suffering from anxiety disorders frequently experience significant impairment in academic,

social, and family functioning (Grills & Ollendick, 2002; Hughes, Lourea & Kendall, 2008). Children with anxiety disorders experience greater peer victimization and neglect (Storch et al., 2006). They are at elevated risk for the development of depression, sleep disorder, and problematic substance use (Alfano, Ginsburg, & Kingery, 2007). When left untreated, childhood anxiety disorders often persist and are associated with depression and substance abuse in adolescence (Buckner et al., 2008; Kendall, Safford, Flannery, & Webb, 2004) as well as occupational impairments and reduced quality of life in adulthood (Comer et al., 2011).

Thus, it is important that clinically anxious children are identified as early as possible and are provided with appropriate interventions. Early intervention is dependent upon the availability of psychometrically sound, valid assessment instruments to identify children with anxiety problems. There are reliable structured diagnostic interviews to diagnose anxiety symptoms in children, but they are difficult to conduct (Silverman & Ollendick, 2005) and time consuming and require well-trained interviewers (Linyan, Kai, Fang, Yi, & Xueping, 2008). They are not practical as large-scale screening instruments in school (Spence, Rapee, McDonald, & Ingram, 2001).

Alternatively, clinician-based rating scales can also be used to measure anxiety symptoms, yet several studies have questioned their discriminant validity (Perrin & Last, 1992; Seligman, Ollendick, & Langley, 2004), and their efficacy of differentiating individual anxiety disorders (Essau, Muris, & Ederer, 2002). By contrast, child, teacher or parent questionnaires are an efficient, less expensive and easy way to screen for childhood anxiety disorders (Pavuluri & Birmaher, 2004). The most widely used self-report scales to screen for childhood anxiety disorders include instruments such as, the revised children's manifest anxiety scale, the revised fear survey schedule for children (Ollendick, 1983), the state-trait anxiety inventory for children (Spielberger, 1973) and the social anxiety scale for children-revised (La Greca & Stone, 1993). These questionnaires possess adequate psychometric properties, such as moderate to high internal consistency, moderate test-retest reliability and positive concurrent validity and divergent validity (Essau et al., 2002). However, these questionnaires did not examine specific anxiety disorders and were typically designed to measure indicators of anxiety in general. Moreover, they were generally derived from adult anxiety measures rather than being based on child specific items (Nauta et al., 2004), and thus they do not always ascertain DSM-IV related anxiety symptoms (American Psychiatric Association, 2000).

In the past few years, research on the assessment of childhood anxiety has focused on constructing child self-report questionnaires that are related to the commonly used classification system of DSM-IV and led to the development of measures such as the Spence Children's

Anxiety Scale (Spence, 1997) and the Screen for Child Anxiety Related Emotional Disorders (Birmaher, Khetarpal, Brent, Cully, & Balach, 1997). Although both scales have corresponded with current diagnostic criteria with satisfactory internal consistency, test-retest reliability, and sufficient validity (Muris, Merckelbach, Ollendick, King, & Bogie, 2002), it has been argued that the SCAS and SCARED have some differences. For instance, despite fewer items, the SCAS shows a broader scope and a closer connection to the DSM-IV structure. Furthermore, since the SCAS items are based on 4-point scales, the SCAS has a broader range of possible answers (Nauta et al., 2004). Finally, the SCAS has been translated into various languages and used in several countries, including the Netherlands (Muris, Schmidt, & Merckelbach, 2000), Belgium (Nauta et al., 2004), South Africa (Muris, Schmidt, Engel Brecht, & Perold, 2002), Japan (Ishikawa, Sato & Sasagawa, 2009), China (Zhao, Xing, & Wang, 2012) and Iran.

Essau, Olaya, Pasha, O'Callaghan, and Bray (2012) investigated anxiety symptoms among Iranian children and adolescents using the SCAS's Persian version. Factor analysis using confirmatory factor analyses based on data from 1,984 aged 12-17 years, in Ahvaz City, Iran supported a 6-factor model reflecting the original factor structure (Spence, 1998). Also the internal consistency (Cronbach Alpha = .92) and the convergent validity of the Iranian translation of the SCAS was excellent, the reliability of the scale was satisfactory to excellent. One limitation of Essau et al.'s (2012) study was that it only relied on youth self-reports.

In the assessment of childhood disorders, it is both common and recommended to include multiple informants, most commonly children, parents and teachers. Each informant may contribute information about different aspects of the disorder and complement each other. Therefore, there is a need for a relatively quick, but sufficiently detailed, reliable and valid parent questionnaire that provides a screen to identify children and adolescents who show high levels of anxiety symptoms across a range of anxiety disorders, and for whom a more detailed structured, clinical interview may then be warranted (Spence et al., 2001).

The SCAS-P items correspond with the child version, and a confirmatory factor analysis supported the 6-factor structure that was consistent with the SCAS (Reynolds & Richmond, 1978). While child self-reports provide useful information, parental reports are also important in the cross-cultural study of childhood anxiety disorders (Kendall, Krain, & Treadwell, 1999). For example, children with generalized anxiety disorders sometimes present with socially desirable behaviors (Ollendick & Ishikawa, 2012), and can be very socially gracious, eager to please, and charming (Chen, Chen, & Wang, 2009). Within Asian countries, for example in Iran, such behavior is likely to be viewed positively. For example,

shy and sensitive children and adolescents are likely to be more accepted by their peers and teachers in Iran. Moreover, if not too excessive, socially anxious behaviors, such as being non-assertive, humble, and inhibited, are viewed as favorable in Iran (Rabie, Khoramdel, Zerehpoush, Palahang, & Hojatkhah, 2014). In light of these indications, adults who are in contact with a child that has anxiety symptoms are likely to overlook the underlying problem, even if the child subjectively feels an impairment. Therefore, more information is necessary regarding parental reports of childhood anxiety symptoms among Asian countries. Since the initial publication of the SCAS-P, the psychometric properties of this screening instrument have been examined in clinical, community, and primary care samples. The SCAS-P was found reliable in terms of internal consistency, test-retest reliability. The convergent and divergent validity of the SCAS-P was supported because of its significant correlations with other measures for childhood anxiety disorders. Evidence has also been accumulated for the good discriminant validity of the SCAS-P between anxiety disordered children and normal controls (Nauta et al., 2004).

In general, these studies support the usefulness of the SCAS-P as a reliable and valid screening tool for childhood anxiety disorders. Previous studies on the psychometric properties of the SCAS-P have been primarily conducted with Caucasian samples in Western countries (Whiteside & Brown, 2008). This issue poses a significant limitation in prior studies because the factor structure obtained from Western populations may not be appropriate for other ethnic/racial groups and ethnicity has been suggested to be a potentially significant variable in the differential expression of psychopathology (Carter, Miller, Sbrocco, Suchday, & Lewis., 1999). To our knowledge, the SCAS-P has not been validated in Iran. Therefore, the purpose of the current study was to address this gap in the literature by examining the psychometric properties of the SCAS-P in a community sample of parents who had a child in elementary school in Iran.

## Method

### Participants

Participants for this study were parents who had a child aged six to ten years old. Parents were selected from ten public elementary schools in the urban area of Golestan province, Iran. In total, 315 mothers completed the questionnaire (mothers' mean age = 39.44,  $SD = 4.44$ ). Their children consisted of 137 boys (mean age = 9.02,  $SD = 1.12$ ) and 178 girls (mean age = 9.08,  $SD = 1.04$ ). Most respondents were middle-class, and there were very few families with a low SES. In addition, all participants were Iranian and could read/write Farsi. Since all of the parents and children had resided exclusively in Iran, no significant differences in cultural background emerged.

## Instrument

### Spence Child Anxiety Scale for Parents [SCAS-P]

The items of the SCAS-P were formulated as closely as possible to the corresponding item of the child version of the SCAS (Spence, 1999). Items referring to an internal state (e.g. item 4, I feel afraid) were rephrased into observable behavior for parents (e.g. My child complains of feeling afraid). The positive filler items were not included in the SCAS-P, leaving 38 items assess specific anxiety symptoms relating to six sub-scales, namely social phobia, separation anxiety, panic attack/agoraphobia, obsessive-compulsive disorder, generalized anxiety and physical injury fears. Respondents are asked to indicate frequency with which each symptom occurs on a four-point scale ranging from Never (scored 0) to Always (scored 3). A total SCAS score is obtained by summing scores of the 38 anxiety symptom items. Previous studies have demonstrated high concurrent validity with other measures of child and adolescent anxiety, construct validity, discriminant validity, high internal consistency (Reynolds & Richmond, 1978), and adequate test-retest reliability (Whiteside & Brown, 2008). Translation of the SCAS-P into Persian was used in this study.

### Child Behavior Checklist [CBCL]

The CBCL was designed to capture information across a broad range of children's behavioral and emotional problems (Achenbach, 1991). This scale is a standardized measure where parents report on their children's problems. The version used for children aged four to 18 years [CBCL/four to 18] includes 118 items. In terms of children's behavioral and emotional problems, parents were asked to evaluate each description on a scale from 0 [not true] to two [very true or often true]. The psychometric properties of this scale have been well established and the measure is widely used internationally. In this study, the internalizing subscale was used to evaluate convergent validity of the SCAS-P, and the externalizing subscale for divergent validity. The Iranian version of the CBCL has also been established, and its reliability and validity has been confirmed (Minaee, 2004). For the current study, 14 items dealing with anxiety/depression were used.

### Procedure

The main aims and methods of the present study were explained to the school principals and teachers. After the school gave their approval, the questionnaires were distributed to the children. The children then brought the questionnaires and a consent form home for their parents. Parents only completed the questionnaires when they consented to participate. Students handed in the completed

questionnaires, which were sealed by their parents before submission.

The SCAS-P was translated according to widely accepted guidelines for the successful translation of instruments in cross-cultural research (Brislin, 1970). One bilingual translator, who was a native Farsi speaker and understood Iranian culture, blindly translated the questionnaire from the original English version into Farsi. Another bilingual translator back-translated the questionnaire into English. Differences in the original and the back-translated versions were discussed and resolved by joint agreement of both translators.

## Results

Descriptive information is presented in Table 1. In general, this sample was 315 mothers who had a child aged 6 to 10 years old with an average age of 39.44 years ( $SD = 4.44$ ). Their children consisted of 137 boys (mean age = 9.02,  $SD = 1.12$ ) and 178 girls (mean age = 9.08,  $SD = 1.04$ ). Table 1 shows demographic variables SCAS-P reports.

**Table 1.** Demographic variables

Variables	Groups	M	SD
Age	Boy	9.02	<b>1.12</b>
	Girl	9.08	<b>1.04</b>
Gender	Mother	39.44	<b>4.44</b>
	Male	137	<b>43.5</b>
Marital status parents	Female	178	<b>55.5</b>
	Married	289	<b>91.7</b>
	Separated/divorced	26	<b>8.3</b>

Table 2 shows the mean value and standard deviations by gender for mothers' reports for 315 children. Analyses of variance were conducted to examine gender differences in anxiety symptoms. A MANOVA revealed no significant effects for gender for either the total scale score or any of the subscales scores ( $F(7,30) = 1.89, p > .05$ ).

**Table 2.** Means and standard deviations of SCAS-P subscales and between sex group differences

Measure		M	SD
<b>Panic attack and agoraphobia</b>	Boys	5.56	4.58
	Girls	5.81	4.23
<b>Obsessive-compulsive disorder</b>	Boys	6.13	2.98
	Girls	6.22	3.18
<b>Physical injury fears</b>	Boys	4.53	3.11
	Girls	4.70	3.52
<b>Separation anxiety disorder</b>	Boys	6.52	3.91
	Girls	6.92	4.23

<b>Social phobia</b>	Boys	4.68	2.43
	Girls	4.81	2.56
<b>Generalized anxiety disorder</b>	Boys	6.11	3.43
	Girls	6.23	3.35
<b>Total</b>	Boys	35.89	19.80
	Girls	37.50	18.29

## Confirmatory factor analysis (CFA)

As CFA results suggested previous 6 correlated factors provide a good fit for the present data. This model proposed that anxiety symptoms would cluster into 6 correlated dimensions. The model hypothesized that parents would report their children's anxiety symptoms as multiple and intercorrelated clusters corresponding with the DSM. In this model, 35 items had a loading in excess of 0.40 on each hypothesized factor. Specifically, only 3 items, item 12 "My child complains of suddenly feeling as if [s]he can't breathe when there is no reason for this [Panic/Ag]", item 16 "My child is scared of dogs [PhInj]," and item 24 "My child has to think special thoughts [like numbers and words] to stop bad things from happening [OCD]" had lower factor loadings. This six-factor model proved to be a good fit as indicated by the various fit indices employed (i.e., Chi-square, Root Mean Square Residual [RMR], Root Mean Square Error of Approximation [RMSEA], goodness-of-fit index [GFI], and the adjusted goodness-of-fit index [AGFI] Normed Fit Index [NFI]). Crowley and Fan (1997) noted that acceptable GFI, NFI and AGFI values are typically higher than the .90 cutoff and RMR and RMSEA lower than the .08 cutoff. Three goodness fit indices, namely GFI, AGFI, and NFI, were in excess of .90 and RMR and RMSEA were at its lowest value in the model evaluated in this study. The value of  $X^2$  is a likelihood ratio test statistic.

A statistically significant  $X^2$  value that is large with regard to the degrees of freedom reveals a significant difference between the hypothesized model and the observed data, thus rejecting the null hypothesis that the model fits the data. The  $X^2$  value is known to be dependent on sample size ( $n = 56$ ) with models often being rejected in large samples. Given that the  $X^2$  value ( $X^2 = 1666, df = 650$ ) is influenced by sample size, and that the other indices give support for the hypothesized model, it is concluded that this model provided a relatively good fit for the data. Thus, the six correlated-factor model was used as the preferred model. The factor loadings of each item are shown in Table 3. An exploratory factor analysis was also performed using Varimax original and rotated indices (Table 4) resulting in a small difference with the questionnaire factors, but generally consistent with the proposed factor structure.

**Table 3.** Goodness fit indices for the six correlated factors model

Model	X2	df	P	GFI	AGFI	NFI	RMR	RMSEA
6	1666	650	.001	.963	.933	.901	.054	.045

correlated factors

Note: AGFI= Adjusted Goodness Fit Index, GFI= Goodness Fit Index, NFI = Normed Fit Index, RMR = Root Mean Square Residual, RMSEA =Root Mean Square Error of Approximation [RMSEA]

**Table 4.** Confirmatory factor analysis of the SCAS-P

Original scale	SCAS-P items	F 1	F 2	F 3	F 4	F 5	F 6
<b>Separation Anxiety Disorder</b>	[5] My child would feel afraid of being on his/her own at home	.59					
	[8] My child worries about being away from us/me	.62					
	[11] My child worries that something awful will happen to someone in our family	.51					
	[14] My child is scared if s/he has to sleep on his/her own	.59					
	[15] My child has trouble going to school in the mornings because s/he feels nervous or afraid	.44					
	[38] My child would feel scared if s/he had to stay away from home overnight	.43					
<b>Social Phobia</b>	[6] My child is scared when s/he has to take a test	.43					
	[7] My child is afraid when s/he has to use public toilets	.53					
	[9] My child feels afraid that s/he will make a fool of him/herself in front of people	.47					
	[10] My child worries that s/he will do badly at school	.44					
	[26] My child worries what other people think of him/her	.54					
	[31] My child feels afraid when s/he has to talk in front of the class	.54					
<b>Generalized anxiety disorder</b>	[1] My child worries about things	.41					
	[3] When my child has a problem, s/he complains of having a funny feeling in his/her stomach	.40					
	[4] My child complains of feeling afraid	.61					
	[18] When my child has a problem, s/he complains of his/her heart beating really fast	.41					
	[20] My child worries that something bad will happen to him/her	.58					
	[22] When my child has a problem, s/he feels shaky	.40					
<b>Panic attack and agoraphobia</b>	[12] My child complains of suddenly feeling as if s/he can't breathe when there is no reason for this	.34					
	[19] My child suddenly starts to tremble or shake when there is no reason for this	.45					
	[25] My child feels scared if s/he has to travel in the car, or on a bus or train	.43					
	[27] My child is afraid of being in crowded places [like shopping centers, the movies, buses, busy	.43					

	playgrounds]						
	[28] All of a sudden my child feels really scared for no reason at all	.42					
	[30] My child complains of suddenly becoming dizzy or faint when there is no reason for this	.40					
	[32] My child complains of his/her heart suddenly starting to beat too quickly for no reason	.52					
	[33] My child worries that s/he will suddenly get a scared feeling when there is nothing to be afraid of	.49					
	[34] My child is afraid of being in small closed places, like tunnels or small rooms	.60					
<b>Obsessive-compulsive disorder</b>	[13] My child has to keep checking that s/he has done things right (like the switch is off, or the door is locked)	.48					
	[17] My child can't seem to get bad or silly thoughts out of his/her head	.68					
	[24] My child has to think special thoughts (like numbers or words) to stop bad things from happening	.37					
	[35] My child has to do some things over and over again (like washing his/her hands, cleaning or putting things in a certain order)	.47					
	[36] My child gets bothered by bad or silly thoughts or pictures in his/her head	.57					
	[37] My child has to do certain things in just the right way to stop bad things from happening	.51					
<b>Physical injury fears</b>	[2] My child is scared of the dark	.63					
	[16] My child is scared of dogs	.34					
	[21] My child is scared of going to the doctor or dentist	.50					
	[23] My child is scared of heights (e.g. Being at the top of a cliff)	.48					
	[29] My child is scared of insects or spiders	.51					

SAD: separation anxiety disorder; SoPh: Social phobia; GAD: generalized anxiety disorder; Panic/Ag: panic/ agoraphobia; OCD: obsessive-compulsive disorder; Ph Inj: physical injury fears.

According to Table 5, the internal consistency was computed for the SCAS-P total scale score as well as each of the subscales. Cronbach's alpha for the SCAS-P total score was .89. The internal consistency of each subscale was moderate: .70 for separation anxiety disorder, .67 for social phobia, .71 for generalized anxiety disorder, .68 for panic attack and agoraphobia, .69 for obsessive-compulsive disorder, and .65 for physical injury fears.

To examine test-retest reliability, a total of 100 mothers (31.74%) with a mean age of 34.80 (3.44) years old, were reassessed 2 weeks after the baseline evaluation. The results indicated that the Pearson correlation coefficients [r] of the SCAS-P total score were .68 in children. Also, Pearson correlation coefficients in children were .52 for separation anxiety disorder, .57 for social phobia, .61 for generalized anxiety disorder, .45 for panic attack and agoraphobia, .58 for obsessive-compulsive disorder, and .39 for physical injury fears.

**Table 5.** The reliability of the SCAS-P total and subscales score

	Cronbach's alpha	test-retest
Separation Anxiety	0.70	0.52
Social Phobia	0.67	0.57
Generalized Anxiety	0.71	0.61
panic attack and agoraphobia	0.68	0.45
Obsessive-Compulsive Disorder	0.69	0.58
Fear of Physical Injury	0.65	0.39
Total	0.89	0.68

### Intercorrelations of SCAS-P subscales

Table 6 displays the intercorrelations of SCAS-P subscales. Intercorrelations of the SCAS-P subscales ranged from weak to moderate,  $r = .31$  to  $.60$ . Also, the correlation coefficients of SCAS-P subscales with the total scale score ranged from  $.69$  to  $.86$ .

**Table 6.** Intercorrelations of the SCAS-P subscales

<i>n</i> = 315	Separation anxiety disorder	Social Phobia	Generalized anxiety disorder	Panic attack and agoraphobia	Obsessive-compulsive disorder	Physical injury fears	Total
SAD							
SoP	.60**						
GAD	.50**	.59**					
Panic/Ag	.40**	.40**	.57**				
OCD	.41**	.51**	.47**	.30**			
PhInj	.55**	.48**	.52**	.33**	.31**		
Total	.86**	.81**	.74**	.71**	.69**	.78**	

\*\*  $p < .001$

### Convergent and divergent validity

To determine convergent and divergent validity of the SCAS-P, the total score was correlated with other parent reports. The correlation between the SCAS-P total score and CBCL-internalizing subscale ( $0.61$ ,  $p < .001$ ) and significantly, but at a lower level, with the CBCL-externalizing subscale ( $0.40$ ,  $p < .001$ ). As predicted, the correlation with the CBCL-internalizing subscale was significantly higher than the correlation with the CBCL-externalizing subscale ( $Z = 53.41$ ,  $p < .001$ ), thus providing evidence for convergent and divergent validity, respectively.

Furthermore, in order to examine convergent validity of the SCAS-P, scores were compared with those obtained from the CBCL-anxiety/depression subscale. The correlation between the SCAS-P total score and the CBCL-anxiety/depression score was  $0.61$  ( $p < .001$ ). Each subscale also correlated significantly with the CBCL-anxiety/depression score:  $r = .52$  for generalized anxiety disorder,  $r = .41$  for social phobia,  $r = .38$  for separation

anxiety disorder,  $r = .42$  for panic attack and agoraphobia,  $r = .35$  for obsessive-compulsive disorder, and  $r = .31$  for physical injury fears ( $p < .001$ ).

### Discussion

In this study, we developed the Iranian version of the SCAS-P and examined its reliability and validity among Iranian children. Confirmatory factor analysis based on mothers' ratings revealed that the parent scale could be satisfactorily explained by a 6-factor structure corresponding to current diagnostic criteria. The original study on the SCAS-P also suggested that a model including a higher factor could not be satisfactorily analyzed because most of the variance in the generalized anxiety disorder factor was explained by an overarching general anxiety factor (Reynolds & Richmond, 1987). Whereas a higher order factor model hypothesized that intercorrelations within the SCAS-P would be relatively steady, our correlation analysis indicated moderate to weak coefficients among the subscales. In particular, highest correlations were found among separation anxiety disorder, social phobia, and generalized anxiety disorders, as well as among generalized anxiety disorders and panic attack and, but correlations were relatively weak between obsessive-compulsive disorder and physical injury fears/panic attack and agoraphobia besides panic attack and agoraphobia and separation anxiety disorder/social phobia. Therefore, in light of the intercorrelations among the subscales, a correlated 6-factor model might have some advantages relative to a higher order factor structure.

Internal reliabilities of the subscales were satisfactory. Reliability coefficients that were corrected for scale length ranged from  $0.65$  to  $0.71$ , thus providing evidence for internal consistency of the subscales, supporting their use for research purposes, but not for clinical practice (Nunnally, 1978). Although the internal consistency of the full scale was satisfactory, the reliability of each subscale was moderate. However, these results were similar to the original study using a non-clinical sample (ranging  $.58$  from  $.74$ ) (Nauta et al., 2004). Also, test-retest reliability revealed a modest level of stability in children's total and sub-scale scores on the SCAS-P over a 2 weeks' period. It is difficult to compare the present result for test-retest reliability with that found for other measures of anxiety. However, for shorter periods test-retest reliabilities for other anxiety measures have tended to be moderate, in keeping with the results of the present study (March, Sullivan & Parker, 1999). The SCAS-P showed good convergent validity for the Iranian sample. The SCAS-P total scale correlated strongly and significantly with the CBCL-internalizing subscale and significantly, but at a lower level, with the CBCL-externalizing subscale. As predicted, the correlation with the CBCL-internalizing subscale was significantly higher than the correlation with the CBCL-externalizing subscale, thus providing evidence

for convergent and divergent validity. On the other hand, as predicted, the correlation between the full-scale scores and subscale scores of the SCAS-P and the anxiety/depression subscale of the CBCL were significant and moderate. However, the present study did not examine discriminant validity of the SCAS-P. Future studies should utilize data from a clinical sample of children with anxiety disorders. Psychometric characteristics of the parent reports of anxiety symptoms were consistent with previous studies in Western countries (Essau et al., 2002; Spence, 1998) and Japan (Ishikawa, Shimotsu, Ono, & Spence, 2013). The current study indicated no age and gender differences within the SCAS-P. The original study also showed no gender differences. This finding contrasts with research indicating that child self-reports of anxiety are influenced by gender, with girls typically indicating higher levels of anxiety (Muris, Schmidt, & Merckelbach, 2000). Similarly, prevalence rates of anxiety disorders are generally higher in females than in males (Weiss & Last, 2001). Studies regarding parent reports of their child's anxiety symptoms have produced conflicting results. Bouldin and Pratt (1998) and Birmaher et al. (1997) and found significant gender effects on parent measures of childhood anxiety, whereas Spence et al. (2001) and Nauta et al. (2004) found no gender differences in parent reported anxiety among preschoolers. Further studies should explore these apparently conflicting results in greater depth.

There are several methodological limitations for the present study. First, we failed to include data from fathers into our entire analysis. Second, questionnaires focusing on adult psychopathology were not included in this study. These variables might influence parents' reports of their own child's psychopathology. Third, although results are broadly consistent with the structure of DSM-IV anxiety disorders, it is important to note that the study did not aim to validate the actual clinical diagnoses produced by DSM-IV. To do so, it would require information about the length of time that symptoms had occurred and the number of symptoms experienced simultaneously. The present study was limited to a rating of the frequency with which specific symptoms were experienced. Fourth, we failed to assess older children as well a child clinical sample. Furthermore, an evaluation of discriminant validity by comparing children with and without anxiety disorders is important for future research.

## Conclusion

In summary, the SCAS-P represents a relatively reliable and valid instrument for the assessment of anxiety among children and adolescents, especially when combined with the child version of the SCAS. In research, this new instrument can provide us with information on how the parents perceive anxiety symptoms in their child in terms

of the clusters that are provided by the DSM-IV. In clinical practice, parents can be asked to fill out the questionnaire at home and take it to the intake evaluation. In this way, children can be screened for anxiety disorders in a cost-effective way. Reported anxiety symptoms by the parents may enable the clinician to further evaluate a possible anxiety disorder in their cases, for instance, through a semi-structured interview. Finally, both the child and parent versions may give important information for treatment and may be used to evaluate the effects of interventions.

The limitation of this study, like other questionnaire studies, such as the desire of the questioners to the desirability of performance and the difficulty of obtaining honest answers, which are difficult to access in such a study. But since the respondents did not need to be named, they were able to answer the questions honestly. Thus, researchers interested in this field are advised to use the Spence Children Anxiety Scale to measure child anxiety, because by referring to this questionnaire, they can determine the level of anxiety of the children, which will save them time and money

## Disclosure Statement

No potential conflict of interest was reported by the authors.

## ORCID

Mohsen Jalali <http://orcid.org/0000-0002-3152-2595>

## References

- Achenbach, T. M. (1991). Manual for the Child Behavior Checklist/4-18 and 1991 profile. *University of Vermont, Department of Psychiatry*.
- Alfano, C. A., Ginsburg, G. S., & Kingery, J. N. (2007). Sleep-related problems among children and adolescents with anxiety disorders. *Journal of the American Academy of Child & Adolescent Psychiatry*, 46(2), 224-232. doi:10.1097/01.chi.0000242233.06011.8e
- American Psychiatric Association (2000). *Diagnostic and Statistical Manual of Mental Disorders*. Washington: American Psychiatric Association.
- American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders [5th ed.]*. Washington: American Psychiatric Pub.
- Beesdo, K., Knappe, S., & Pine, D. S. (2009). Anxiety and anxiety disorders in children and adolescents: developmental issues and implications for DSM-V. *Psychiatric Clinics*, 32(3), 483-524. doi: 10.1016/j.psc.2009.06.002
- Birmaher, B., Khetarpal, S., Brent, D., Cully, M., Balach, L., Kaufman, J., & Neer, S. M. (1997). The screen for child anxiety related emotional disorders (SCARED): Scale construction and psychometric characteristics.

- Journal of the American Academy of Child & Adolescent Psychiatry*, 36(4), 545-553. doi: 10.1097/00004583-199704000-00018
- Bouldin, P., & Pratt, C. (1998). Utilizing parent report to investigate young children's fears: a modification of the Fear Survey Schedule for Children-II: a research note. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 39(2), 271-277.
- Buckner, J. D., Schmidt, N. B., Lang, A. R., Small, J. W., Schlauch, R. C., & Ewinsohn, P. M. (2008). Specificity of social anxiety disorder as a risk factor for alcohol and cannabis dependence. *Journal of Psychiatric Research*, 42(3), 230-239. doi: 10.1111/1469-7610.00321
- Campbell, D., Brislin, R., Stewart, V., & Werner, O. (1970). Back-translation and other translation techniques in cross-cultural research. *International Journal of Psychology*, 30, 681-692. doi: 10.1177/135910457000100301
- Carter, M. M., Miller, O., Sbrocco, T., Suchday, S., & Lewis, E. L. (1999). Factor structure of the anxiety sensitivity index among African American college students. *Psychological Assessment*, 11(4), 525-533. doi: 10.1037/1040-3590.11.4.525
- Chen, X., Chen, H., Li, D., & Wang, L. (2009). Early childhood behavioral inhibition and social and school adjustment in Chinese children: A 5-year longitudinal study. *Child Development*, 8, 692-1704. doi: 10.1111/j.1467-8624.2009.01362.x
- Comer, J.S., Blanco, C., Grant, B., Hasin, D., Liu, S.M., Turner, J.B., & Olfson, M. (2011). Health-related quality of life across the anxiety disorders: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Journal of Clinical Psychiatry*, 72(1), 43-50.
- Costello, E. J., Mustillo, S., Erkanli, A., Keeler, G., & Angold, A. (2003). Prevalence and development of psychiatric disorders in childhood and adolescence. *Archives of General Psychiatry*, 60(8), 837-844.
- Crowley, S. L., & Fan, X. (1997). Structural equation modeling: basic concepts and applications in personality assessment research. *Journal of Personality Assessment*, 68(3), 508-531.
- Essau, C. A., Muris, P., & Ederer, E. M. (2002). Reliability and validity of the Spence Children's Anxiety Scale and the Screen for Child Anxiety Related Emotional Disorders in German children. *Journal of Behavior Therapy and Experimental Psychiatry*, 33(1), 1-18.
- Essau, C.A., Olaya, B., Pasha, G., O'Callaghan, J., & Bray, D. (2012). The structure of anxiety symptoms among adolescents in Iran: a confirmatory factor analytic study of the Spence Children's Anxiety Scale. *Journal of Anxiety Disorder*, 26(28), 871-8
- Grills, A. E., & Ollendick, T. H. (2002). Peer victimization, global self-worth, and anxiety in middle school children. *Journal of Clinical Child and Adolescent Psychology*, 31(1), 59-68.
- Hughes, A. A., Lourea-Waddell, B., & Kendall, P. C. (2008). Somatic complaints in children with anxiety disorders and their unique prediction of poorer academic performance. *Child Psychiatry and Human Development*, 39(2), 211-220.
- Ishikawa, S., Sato, H., & Sasagawa, S. (2009). Anxiety disorder symptoms in Japanese children and adolescents. *Journal of Anxiety Disorders*, 23(1), 104-111.
- Ishikawa, S., Shimotsu, S., Ono, T., & Spence, S.H. (2013). A parental report of children's anxiety symptoms in Japan: Psychometric properties of the Spence Children's Anxiety Scale for Parents in a community sample. *Child Psychiatry and Human Development*, 45(3), 351-363.
- Kendall, P. C., Krain, A., & Treadwell, K. R. H. (1999). *Generalized anxiety disorders*. In Ammerman, R. T., Hersen, M., & Last, C. G. [Eds.], *Handbook of prescriptive treatments for children and adolescents* [2nd ed., pp. 155-171.]. Needham Heights, MA: Allyn & Bacon.
- Kendall, P.C., Safford, S., Flannery-Schroeder, E., & Webb, A. (2004). Child anxiety treatment: Outcomes in adolescence and impact on substance use and depression at 7.4-year-follow-up. *Journal of Consulting and Clinical Psychology*, 72(2), 276-287.
- Kessler, R. C., Berglund, P., & Demler, E. (2005). Prevalence and age of onset distributions of DSM-IV child and adult separation anxiety disorder in the national comorbidity survey. *Archives of general psychiatry*, 62(6), 593-602.
- La Greca, A. M., & Stone, W. L. (1993). Social anxiety scale for children-revised: factor structure and concurrent validity. *Journal of Clinical Child Psychology*, 22, 17-27.
- Linyan, S., Kai, W., Fang, F., Yi, S., & Xueping, G. (2008). Reliability and validity of the screen for child anxiety related emotional disorders (SCARED) in Chinese children. *Journal of Anxiety Disorders*, 22(4), 612-621.
- March, J. S., Sullivan, K., & Parker, J. (1999). Test-retest reliability of the Multidimensional Anxiety Scale for Children. *Journal of Anxiety Disorders*, 13(4), 349-58.
- Merikangas, K. R., He, J. P., Burstein, M., Swanson, S. A., Avenevoli, S., Cui, L., Sweden, J. (2010). Lifetime prevalence of mental disorders in U.S. adolescents: Results from the National Comorbidity Survey Replication-Adolescent Supplement (NCS-A) *Journal of the American Academy of Child and Adolescent Psychiatry*, 49(10), 980-989.
- Minaee, A. (2004). *Normalization of Achenbach System of Empirically Based Assessment (ASEBA)*. Tehran: Special Education Organization press.



- Muris, P., Merkelbach, H., Ollendick, T., King, N., & Bogie, N. (2002). Three traditional and three new childhood anxiety questionnaires: their reliability and validity in a normal adolescent sample. *Behavior Research and Therapy*, *40*(7), 753–772.
- Muris, P., Schmidt, H., & Merckelbach, H. (2000). Correlations among two self-report questionnaires for measuring DSM-defined anxiety disorder symptoms in children: The Screen for Child Anxiety Related Emotional Disorders and the Spence Children's Anxiety Scale. *Personality and Individual Differences*, *28*(2), 333–346.
- Muris, P., Schmidt, H., Engelbrecht, P., & Perold, M. (2002). DSM-IV-defined anxiety disorder symptoms in South African children. *Journal of the American Academy of Child and Adolescent Psychiatry*, *41*(11), 1360–1368.
- Nauta, M.H., Scholing, A., Rapee, R.M., Abbott, M., Spence, S.H., & Waters, A. (2004). A parent-report measure of children's anxiety: psychometric properties and comparison with child-report in a clinic and normal sample. *Behavior Research and Therapy*, *42*(7), 813–839.
- Nunnally, J. C. (1978). *Psychometric theory*. New York: McGraw-Hill.
- Ollendick T. H. (1983) Reliability and validity of the Revised Fear Survey Schedule for Children (FSSC-R). *Behavior Research and Therapy*, *21*(6), 685–692.
- Ollendick, T. H., & Ishikawa, S. (2012). *Interpersonal and social factors in childhood anxiety disorders*. In C. A. Essau & T. H. Ollendick [Eds.], *Treatment of Childhood and Adolescent Anxiety Disorders*. London: Wiley-Blackwell.
- Pavuluri, M., & Birmaher, B. (2004). A practical guide to using ratings of depression and anxiety in child psychiatric practice. *Current Psychiatry Reports*, *6*(2), 108–116.
- Perrin, S., & Last, C. G. (1992). Do childhood anxiety measures measure anxiety? *Journal of Abnormal Child Psychology*, *20*(6), 567–578.
- Puliafico, A.C., Comer, J.S., & Albano, A.M. (2013). Coaching Approach Behavior and Leading by Modeling: Rationale, Principles, and a Session-by-Session Description of the CALM Program for Early Childhood Anxiety. *Cognitive and Behavioral Practice*, *20*(4), 517–528.
- Rabie, M., Khoramdel, K., Zerehpash, A., Palahang, A., & Hojatkah, M. (2014). Validity of the Questionnaire for the Revised Version of the Screen for Child Anxiety Related Emotional Disorders (SCARED-41). *Zahedan Journal of Research in Medical Sciences*, *16* (5), 63-67.
- Reynolds, C. R., & Richmond, B. O. (1978). What I think and feel: a revised measure of children's manifest anxiety. *Journal of Abnormal Child Psychology*, *6*, 271–280.
- Seligman, L. D., Ollendick, T. H., Langley, A. K., & Baldacci, H. B. (2004). The utility of measures of child and adolescent anxiety: A meta-analytic review of the revised children's manifest anxiety scale, the state-trait anxiety inventory for children, and the child behavior checklist. *Journal of Clinical Child Psychology*, *33*(3), 557–565.
- Silverman, W. K., & Ollendick, T. H. (2005). Evidence-based assessment of anxiety and its disorders in children and adolescents. *Journal of Clinical Child and Adolescent Psychology*, *34*(3), 380–411.
- Spence, S. H. (1997). Structure of anxiety symptoms among children: a confirmatory factor-analytic study. *Journal of Abnormal Psychology*, *106*(2), 280–297.
- Spence, S. H. (1998). A measure of anxiety symptoms among children. *Behavior Research and Therapy*, *36*(5), 545–566.
- Spence, S. H. (1999). *Spence Children's Anxiety Scale [parent version]*. Brisbane: University of Queensland.
- Spence, S. H., Rapee, R., McDonald, C., & Ingram, M. (2001). The structure of anxiety symptoms among preschoolers. *Behavior Research and Therapy*, *39*(11), 1293–1316.
- Spielberger, C. D. (1973). *Manual for the State-Trait Anxiety Inventory for Children*. Palo Alto, CA: Consulting Psychologist.
- Storch, E.A., Ledley, D.R., Lewin, A.B., Murphy, T, K., Johns, N.B., Goodman, W.K., & Geffken, G.R. (2006). Peer victimization in children with obsessive-compulsive disorder: Relations with symptoms of psychopathology. *Journal of Clinical Child and Adolescent Psychology*, *35*(3), 446–455.
- Weiss, D. D., & Last, C. G. (2001). *Developmental variations in the prevalence and manifestations of anxiety disorders*. In M. W. Vasey, & M. R. Dadds [Eds.], *The developmental psychopathology of anxiety* [pp. 27–42]. London: Oxford University Press.
- Whiteside, S. P., & Brown, A. M. (2008). Exploring the Utility of the Spence Children's Anxiety Scales Parent-and Child-Report Forms in a North American Sample. *Journal of Anxiety Disorders*, *22*(8), 1440–1446. doi:10.1016/j.janxdis.2008.02.006
- Zhao, J., Xing, X., & Wang, M. (2012). Psychometric properties of the Spence Children's Anxiety Scale (SCAS) in Mainland Chinese children and adolescents. *Journal of Anxiety Disorder*, *26*(7), 728–36. doi: 10.1016/j.janxdis.2012.05.006