Spence Children's Anxiety Scale: An Overview of Psychometric Findings

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The Spence Children's Anxiety Scale (SCAS; Spence, 1998) is a 44 item (six positive filler items) self-report scale responded to using a 0 (never) to 3 (always) point scale. The scale consists of six subscales aimed at assessing specific anxiety disorders: Social Phobia (SP), Panic disorder (PD), agoraphobia (AP), Generalised Anxiety disorder (GAD), obsessive-compulsive disorder (OCD), Separation anxiety disorder (SAD), and specific phobias (PFI[fear of physical injury]). Subscales are scored separately to produce scores pertinent to the specific sub-construct, and also added together for an overall anxiety symptoms score. The parent version of the SCAS (*SCAS-P)* excludes the six positive filler items but otherwise contains the same 38 items and is scored in the same way. The scale has currently been translated into 20 languages such as Turkish, Polish, Swedish, Danish, Italian, and Malay. Since its creation, the scale has become a standard questionnaire and its psychometrics have been tested thoroughly in a multitude of studies across several countries. Results have been widely supportive, and there is now a large scientific base supporting the internal reliability, test-retest reliability, convergent/divergent validity, discriminant validity and construct validity of the SCAS/P.

Internal reliability SCAS

Internal consistency (reliability) for the SCAS has been tested across a wide range of studies and consistently shows a very high internal reliability (α=.87-.94). Internal reliability of the subscales ranges from satisfactory to high α = .48 - .81 (see Table 1 for a selection of studies).

Table 1.

SCAS Internal Reliability Coefficients for Total Scale and Subscales

SCAS reliability				Internal consistency						
Source (Year)	**N**	**Sample**	**Nationality**	**Full Scale**	**SAD**	**SP**	**OCD**	**PA**	**GAD**	**PIF**
Spence (1998)	2052	Community	Australia	.92	.70	.70	.73	.82	.73	.60
Spence, Barrett, and Turner (2003)	875	Community/Clinical	Australia	.92	.71	.72	.75	.80	.77	.60
Muris, Merckelbach, Ollendick, King, and Bogie (2002)	521	Community	Belgium	.90	.62	.75	.76	.83	.81	.54
Arendt, Hougaard, and Thastum (2014)	268	Clinical	Danish	.89	.70	.78	.74	.79	.74	.48
Arendt et al. (2014)	972	Community	Danish	.92	.73	.75	.73	.80	.74	.59
Delvecchio, Mabilia, Di Riso, Miconi, and Li (2015)	1687	Community	Chinese	.93	.71	.74	.72	.83	.77	.59
Delvecchio et al. (2015)	1729	Community	Italian	.90	.62	.67	.66	.81	.73	.50
Delvecchio, Di Siro, Chessa, and Lis (2010)	1397	Community	Italian	.91	.65	.56	.67	.77	.74	.72
Di Riso, Chessa, Bobbio, and Lis (2013)	1397	Community	Italian	.91	.70	.72	.65	.76	.74	.50
Brown-Jacobsen, Wallace, and Whiteside (2011)	88	Clinical	US	.87	.66	.70	.76	.75	.66	.47
Essau, Sasagawa, Anastassiou-Hadjicharalambous, Guzman, and Ollendick (2011)	2558	Community	Five European countries	.92	.71	.73	.69	.79	.75	.76
Olofsdotter, Sonnby, Vadlin, Furmark, and Nilsson (2016)	104	Clinical	Swedish	.94	.75	.78	.82	.86	.84	.65

Note: SAD=separation anxiety disorder; SP=social phobia; OCD=obsessive–compulsive disorder; PA=panic/agoraphobia; GAD=generalised anxiety disorder; PIF=physical injury fears.

Internal reliability SCAS-P

The Internal reliability of the SCAS-P has also been found consistently high with an internal consistency for the full scale ranging from α = .86 - .93, and subscales ranging between α = .50 - .87 (see table 2 for a selection of recent studies).

Table 2

Reliability of the SCAS-P across studies

				Internal consistency						
Source (Year)	**N**	**Sample**	**Nationality**	**Total**	**SAD**	**SP**	**OCD**	**PA**	**GAD**	**PIF**
Ishikawa et al. (2014)	568	Community	Japanese	.88	.65	.65	.66	.75	.58	.61
Li, Delvecchio, Di Riso, Nie, and Lis (2016)	456	Community	Chinese	.93	.72	.75	.76	.85	.78	.63
	452	Community	Italian	.86	.55	.67	.61	.72	.63	.55
Nauta et al. (2004)	484	Clinical	Dutch	.89	.76	.77	.78	.81	.75	.61
Nauta et al. (2004)	261	Community	Dutch	.89	.74	.74	.74	.61	.67	.58
Olofsdotter et al. (2016)	104	Clinical	Swedish	.91	.75	.83	.80	.73	.79	.56
Brown-Jacobsen et al. (2011)	88	Clinical	US	.90	.71	.78	.87	.76	.65	.62

Note: SAD=separation anxiety disorder; SP=social phobia; OCD=obsessive–compulsive disorder; PA=panic/agoraphobia; GAD=generalised anxiety disorder; PIF=physical injury fears.

Construct Validity - Factor structure

The originally proposed six subscale solution of the SCAS has been evaluated in over 30 studies across a wide range of countries (e.g., Australia, China, Belgium, Bulgaria, Cyprus, England, Germany, Greece, and Italy). Results have generally been supportive of the originally proposed structure and indicated a good fit (Table 3 for an overview of study outcomes), with some alterations, suggested in certain cross-cultural contexts. Indeed, a recent systematic review concluded that the SCAS was a reliable instrument suitable for cross-cultural use (Orgiles, Fernandez-Martinez, Guillen-Riquelme, Espada, & Essau, 2016).

Table 3

Overview of Studies Testing the Factor structure of the SCAS

Source(year)	Sample	Country of study	Sample Size	Age range	Method	Number of factors
Spence (1997)						
Study 1	Community	Australia	698	8-12	CFA	6[a,b]
Study 2	Community	Australia	698	8-12	CFA	6[a,b]
Spence (1998)	Community	Australia	584	9-12	CFA/EFA	CFA: 6 [a,b] / EFA:6[c]
Muris, Schmidt, and Merckelbach (2000)	Community	Netherlands	1011	7-19	CFA	6
Muris et al (2002b)	Community	South Africa	591	N/A	EFA	4
Muris et al. (2002a)	Community	Belgium	521	12-18	N/A	N/A
Essau, Muris, and Ederer (2002)	Community	Germany	556	8-12	EFA	5
Spence et al. (2003)	Community	Australia	875	13-14	CFA/EFA	CFA:6[a,b] / EFA:6[c]
Essau et al. (2004)						XX
Study 1	Community	Germany	862	8-12	CFA	5
Study 2	Community	Japan	975	8-12	CFA	5
Nauta (2005)	Clinical	Netherlands and Australia	543	7-16	CFA	6[a]
Tortella-Feliu et al. (2005)	Community	Spain	692	10-17	EFA	6
Mellon & Moutavelis (2007)	Community	Greece	1520	9-12	EFA	6[c]
Essau et al. (2008)						XX
Study 1	Community	China	428	12-17	CFA/EFA	5
Study 2	Community	Germany	594	12-17	CFA/EFA	6
Whiteside & Brown (2008)	Community/Clinical	U.S	170	9-18	N/A	N/A
Ishikawa et al. (2009)	Community	Japan	2225	9-15	CFA/EFA	CFA: 6[b] / EFA: 5
Crane & Campbell (2010)						XX
Study 1	Community	Australia	253	8-12	CFA	6[a]
Study 2	Community	Colombia	263	8-12	CFA	6[a]
Hernández-Guzmán et al (2010)	Community	Mexico	554	8-12	CFA	6[a]
Essau et al. (2011b)	Community	Germany, Cyprus, England, Sweden, Italy	2558	12-17	CFA	6[a]
Essau et al. (2011a)	Community	Cyprus	1072	12-17	CFA	6[a]
Li et al. (2011)	Community	China	207	6-11	CFA	6[a]/5
Godoy et al. (2011)	Community	Spain	1671	10-17	CFA	6[a]
Essau et al. (2012)	Community	Iran	1984	12-17	CFA	6[a]
Orgilés et al. (2012)	Community	Spain	1708	8-12	CFA	6[a]
Whiteside et al. (2012)	Community/Clinical	U.S	CL:196, C:421	Cl: 7-18, c:8-13	N/A	N/A

Carillo et al. (2012)	Community	Spain	1636	9-17	N/A	N/A
Zhao et al. (2012)	Community	China	1878	8-15	CFA	6[a]
Di Riso et al. (2013)	Community	Italy	1397	8-10	CFA	6[a]
Orgilés et al (2013)	Community	Spain	1374	13-17	CFA	6[a]
Tsocheva et al. (2013)	Community	Bulgaria	700	13-17	CFA	6[a]
DeSousa et al. (2014)	Community	Brazil	712	7-17	CFA	6[a]
Delvecchio et al. (2015)	Community	China/Italy	3416	13-18	CFA	6

[a] The study examined and found support for the original six-correlated factor model (Spence, 1997, 1998; Spence etal.,2003).

[b] The study examined and found support for the original six-factor, higher-order model proposed (Spence, 1997, 1998; Spence etal.,2003).

[c] Six-factor solution corresponding to the SCAS subscales (Spence, 1997, 1998; Spence etal.,2003): PA, SAD, OCD, SP, GAD, and PIF; C=community sample; CL=clinical sample; CFA=confirmatory factor analysis; EFA=exploratory factor analysis; N/A=not available.

Convergent Validity – Agreement with Gold Standard Interviews

The agreement between SCAS/P and clinician golden standard interviews such as the ADIS-C and K-SADS has been examined and found satisfactory in several studies. For instance, Brown-Jacobsen et al. (2011) examined agreement between the SCAS/SCA-P and the ADIS-C. Parent-Child agreement correlations were all significant and ranged between .41-.74 with GAD resulting in the lowest agreement. Importantly corresponding subscales, except GAD-P, correlated the strongest with the corresponding diagnostic symptoms. The corresponding subscale correlations were also found to be significantly greater than the next largest correlations. Thus, SCAS and SCAS-P are significantly related to ADIS-C.

Similarly, Whiteside, Gryczkowski, Biggs, Fagen, and Owusu (2012) tested the SCAS C/P OCD subscale against the ADIS-C and Children Yale-Brown Obsessive Compulsive Scale and found a high level of agreement between the total scales, as well as the number of obsessions and compulsions.

Table 4

Convergent Validity as Compared to Gold Standard Interviews

Whiteside et al. (2012)	**SCAS OCD**	**SCAS-P OCD**
Children Yale-Brown Obsessive Compulsive Scale (CY-BOCS)		
CY-BOCS – Total	.44*	.36*
CY-BOCS – Obsessions	.45*	.35*
CY-BOCS – Compulsions	.39*	.31*
Anxiety Disorder Interview Schedule for Children	**SCAS OCD**	**SCAS-P OCD**
number of obsessions endorsed on	.52*	.47*
maximum distress rating associated with obsessions	.28*	.28*
Number of compulsions endorsed	.39*	.28*
Maximum distress rating associated with compulsions on	.27*	.43*
Interference	.26*	.23

Olofsdotter et al. (2016)	**SCAS**							**SCAS-P**						
K-SADS	**Total**	**SAD**	**SP**	**OCD**	**PA**	**GAD**	**PIF**	**Total**	**SAD**	**SP**	**OCD**	**PA**	**GAD**	**PIF**
Anxiety Screening Scores	.74	.60	.62	.37	.54	.63	.48	.63	.38	.57	.22	.45	.52	.49

Note: Scores of anxious adolescents were significantly higher on the SCAS/SCAS-P total scores and all subscales, with mostly large effect sizes compared to SCAS/SCAS-P scores of non-anxious adolescents ($p < .001$). Thus, the SCAS/P can differentiate adolescents with an anxiety disorder from those without within a general psychiatric outpatient clinical sample.

Brown-Jacobsen et al. (2011)	**SCAS**					**SCAS-P**				
Anxiety Disorder Interview Schedule for Children	**SAD**	**SP**	**OCD**	**GAD**	**PIF**	**SAD**	**SP**	**OCD**	**GAD**	**PIF**
Separation Anxiety Disorder	.68	21	.12	.43*	.21	.65*	.34*	.00	.47*	.34*
Specific Phobia	.32*	.41*	-.08	.11	41*	.36*	.54*	-.15	.31*	.54*
Social Phobia	.10	.10	.08	.37*	.10	.22*	.20	.05	.33*	.20
Obsessive Compulsive Disorder	-.03	-.15	.58*	.16	-.15	.00	-.13	.67*	.17	-.13
General Anxiety Disorder	.21	.05	.22	.46*	.05	.25	.15	.09	.39*	.15

Note: *p<.05

Convergent Validity SCAS – Questionnaire Intercorrelations

The convergent validity of the SCAS has been tested through comparisons with other established scales aimed at measuring child anxiety (e.g., SDQ, SCARED, RCMAS). Results have been supportive of the convergent validity of the SCAS with very strong correlations between the total SCAS score and the SCARED (r= .85-.89), the RCMAS (r = .71), the MASC (r = .71), and the FSSC-R(r = .76). Intercorrelations between the SCAS and the SDQ-emotional symptoms has ranged from moderate to strong across studies (r= .46-.74), as has the STAI-C (r = .44-.79). For an overview of specific intercorrelations across studies see Table XX.
To test the divergent validity of the SCAS, the intercorrelations between anxiety measures have been compared to intercorrelations found between SCAS and measures of other constructs such as BYI-depression and SDQ hyperactivity/attention problems. Results have been consistently supportive with significance tests indicating that the correlations between SCAS and other anxiety measures is significantly larger than the correlation between the SCAS and measures of other constructs. For example, the SCAS loaded significantly higher on the BYI-Anxiety (r=.73) than on BYI-Depression (r=.58). Similarly, the SCAS loaded significantly higher on the SDQ emotional problems scales than on SDQ conduct or hyperactivity/inattention problems. Comparisons have been made between the SCAS and the SCARED, RCMAS, STAI-C, CHIP-CE, YSR, CIS, MASC, BIY and more. For a full overview see Table 5.

Table 5

Overview of Convergent and Divergent Validity Outcomes

Source (Year)	Comparison scale	SCAS						
Essau, Sasagawa, et al. (2011)	**Strengths and Difficulties Questionnaire**	**Total**	**SAD**	**SP**	**OCD**	**PA**	**GAD**	**PIF**
	SDQ - Total	.24 - .71	.16 - .68	.15 - .62	.12 - .63	.23 - .62	.28 - .63	.19 - .58
	SDQ - Emotional symptoms	.46 - .74	.29 - .70	.33 - .68	.26 - .67	.38 - .61	.45 - .69	.32 - .60
	Conduct problems	-.03 - .33	.08 - .27	-.09 - .22	.06 - .35	-.01 - .37	.01 - .28	-.21 - .25
	Hyperactivity/inattention	.03 - .60	-.12 - .58	-.04 - .49	-.02 - .56	.03 - .52	.06 - .53	-.09 - .53

Note: 69 out of 70 comparisons indicated that the relationship between SCAS and SDQ emotional problems was significantly larger than the relationship between SCAS and SDQ conduct or hyperactivity/inattention problems (all Z≥2.58, p < .01), except for the SCAS anxiety separation in Sweden, which was largely correlated with SDQ conduct problems)

Source (Year)	Comparison scale	SCAS						
Muris et al. (2000)	**Screen for Child Anxiety Related Emotional Disorders**	**Total**	**SAD**	**SP**	**OCD**	**PA**	**GAD**	**PIF**
	SCARED - Total	.89	.76	.66	.66	.73	.76	.67
	SCARED - GAD	.72	.51	.70	.55	.70	.71	.44
	SCARED - SAD	.73	.79	.51	.53	.61	.57	.49
	SCARED - SoP	.50	.41	.49	.28	.37	.44	.47
	SCARED - PD	.77	.60	.54	.56	.72	.69	.50
	SCARED - OCD	.69	.57	.48	.67	.53	.59	.43
	SCARED - Animal Phobia	.47	.33	.34	.31	.34	.37	.60
	SCARED - Blood-injection-injury phobia	.57	.52	.39	.35	.43	.43	.63
	SCARED - Situational-environmental phobia	.65	.60	.38	.42	.60	.46	.68
	SCARED - Traumatic stress disorder	.60	.51	.36	.52	.54	.53	.35

Note: There was a strong correlation between the total anxiety scores of both scales. Furthermore, the correlations between SCARED subscales and their SCAS counterparts were generally substantial. Thus, SCARED generalised anxiety disorder was strongly associated with SCAS generalised anxiety disorder, SCARED separation anxiety disorder with SCAS separation anxiety disorder, and so on. Note also that the correlations between corresponding SCARED and SCAS subscales were greater than the correlations between non-corresponding subscales. There was one exception to this pattern. The correlation between SCARED social phobia and its SCAS counterpart was rather modest (r =0.49, P<0.001).

Source (Year)	Comparison scale	SCAS						
Spence (1998)	**Revised children's manifest anxiety scale**	**Total**	**SAD**	**SP**	**OCD**	**PA**	**GAD**	**PIF**
	RCMAS-Total	.71	.56	.58	.52	.56	.61	.50
	Child Depression Inventory							
	CDI-Total	.48	.38	.41	.37	.44	.32	.33

Note: The correlation between the SCAS total score and the CDI was significantly lower than the correlation between the SCAS total score and the RCMAS anxiety score Z= 4.77, p<.001.

Source (Year)	Comparison scale	SCAS						
Orgiles, Mendez, Spence, Huedo-Medina, and Espada (2012)	**State and Trait Anxiety Inventory - Child**	**Total**	**SAD**	**SP**	**OCD**	**PA**	**GAD**	**PIF**
	STAI-C Total	.41	.36	.45	.44	.37	.50	.33
	CHIP-CE							
	CHIP-CE(welfare dimensions)	-.65	-.45	-.44	-.47	-.63	-.53	-.44
	Child Depression Inventory							
	CDI - Total	-.01	-.05	-.02	-.05	-.05	-.02	-.03

Note: The correlations between the SCAS and the STAI-C and CHIP-CE were higher than the correlation between the SCAS and the CDI. Results show moderate but significant correlations between the trait-anxiety scale and the total score of the SCAS (r = 0.41) and its subscales, all higher than 0.30. Similar results were found between the SCAS and the welfare dimension of the CHIP-CE (r = -.65) with a negative correlation indicating that anxiety tended to increase as emotional wellbeing decreased. The SCAS and the CDI were weakly correlated (r = -.004), supporting discriminant validity of the SCAS.

Source (Year)	Comparison scales	SCAS						
Essau, Anastassiou-Hadjicharalambous, and Munoz (2011)	**Youth Self Report**	**Total**	**SAD**	**SP**	**OCD**	**PA**	**GAD**	**PIF**
	YSR-Total	.44**	.27**	.25**	.33**	.39**	.42**	.23**
	YSR-Anxiety/depression	.54**	.34**	.48**	.39**	.47**	.52**	.28**
	YSR-Aggressive behaviour	.18**	.09*	.13**	.15**	.17**	.22**	.05

Note: The correlation between SCAS and the anxiety/depression subscale of the YSR was significantly larger than between the SCAS and the aggressive behaviour subscale of the YSR, supporting the convergent and divergent validity of the SCAS.

	CIS	**Total**	**SAD**	**SP**	**OCD**	**PA**	**GAD**	**PIF**
	CIS-Total	.40**	.25**	.30**	.31**	.40**	.35**	.18**
	CIS-Interpersonal relationship	.28**	.19**	.20**	.21**	.27**	.23**	.13**
	CIS-Psychopathology	.41**	.25**	.30**	.32**	.38**	.40**	.21**

Source (Year)	Comparison scales	SCAS						
Essau et al. (2002)	**Screen for Child Anxiety Related Emotional Disorders**	**Total**	**SAD**	**SP**	**OCD**	**PA**	**GAD**	**PIF**
	SCARED-Full scale	.85	.68	.73	.66	.71	.76	.53
	SCARED-GAD	.73	.48	.71	.66	.52	.67	.45
	SCARED-SAD	.62	.72	.45	.40	.51	.51	.38
	SCARED-SP	.65	.49	.59	.51	.53	.54	.47
	SCARED-PA	.72	.52	.56	.56	.68	.41	.71
	SCARED-School phobia	.50	.39	.48	.32	.46	.43	.27

Note: The correlation between SCAS social phobia and SCARED social phobia was significantly higher than the correlation between SCAS social phobia and SCARED separation anxiety (z = 4:1; p<.001). The correlation of SCAS social phobia and SCARED social phobia, and the correlation of SCAS social phobia and SCARED generalised anxiety (z = 0:4; p = 0:69) failed to reach a significant level. No statistical significant level could be found between the correlation of SCAS social phobia and SCARED social phobia, and between SCAS social phobia and SCARED panic.

Source (Year)	Comparison scale	SCAS						
Muris et al. (2002)	**Multidimensional Anxiety Scale for Children**	**Total**	**SAD**	**SP**	**OCD**	**PA**	**GAD**	**PIF**

MASC-Total	.71	.53	.61	.52	.59	.59	.49
MASC-Physical	.68	.45	.49	.52	.67	.59	.39
MASC-Harm avoidance	.37	.30	.31	.31	.25	.31	.30
MASC-Social anxiety	.62	.41	.70	.43	.45	.51	.39
MASC-Separation anxiety	.52	.55	.33	.35	.42	.38	.49
Screen for Child Anxiety Related Emotional Disorders	**Total**	**SAD**	**SP**	**OCD**	**PA**	**GAD**	**PIF**
SCARED-Total	.84	.66	.70	.61	.73	.72	.51
SCARED-Panic/somatic	.78	.59	.52	.58	.80	.68	.46
SCARED-Generalised anxiety	.74	.53	.67	.57	.58	.69	.41
SCARED-Separation anxiety	.57	.69	.38	.34	.48	.46	.38
SCARED-Social Phobia	.54	.36	.58	.34	.39	.46	.38
State and Trait Anxiety Inventory-Child	**Total**	**SAD**	**SP**	**OCD**	**PA**	**GAD**	**PIF**
STAI-C-total	.79	.58	.67	.60	.67	.70	.48
Revised Children's Manifest Anxiety Scale							
RCMAS-Total	.76	.53	.64	.61	.66	.64	.47
RCMAS-Physiological anxiety	.59	.40	.43	.49	.57	.49	.37
RCMAS-Worry/oversensitivity	.73	.53	.61	.58	.59	.64	.45
RCMAS-Concentration	.67	.44	.62	.52	.57	.53	.40
Fear Survey Schedule for Children-R	**Total**	**SAD**	**SP**	**OCD**	**PA**	**GAD**	**PIF**
FSSC-R-Total	.76	.64	.62	.55	.59	.58	.63
FSSC-R-Fear of failure and criticism	.71	.53	.77	.52	.54	.58	.38
FSSC-R-Fear of the unknown	.67	.64	.43	.46	.60	.47	.64
FSSC-R-Fear of animals/minor injuries	.54	.45	.38	.39	.40	.39	.61
FSSC-R-Fear of danger and death	.55	.51	.36	.41	.44	.44	.49
FSSC-R-Medical fears	.45	.37	.35	.35	.29	.32	.53
Child Depression Inventory							
CDI-Total	.72	.51	.60	.57	.66	60	.39

Note: The SCAS total score was strongly connected to STAIC, RCMAS, and FSSC-R total scores. Furthermore, the most substantial correlations were found between subscales that intend to measure the same type of anxiety symptoms (e.g., MASC social anxiety and SCAS social phobia r=.70). The connection among anxiety questionnaires was, with the exception of the connection between the SCAS and MASC, significantly larger than that between the anxiety questionnaire and the depression scales. Thus, the SCAS was more substantially connected to the majority of the anxiety scales than to an index of depression, supporting the divergent validity of the SCAS.

Source (Year)	**Comparison scale**	**SCAS**						
Zhao, Xing, and Wang (2012)	**Screen for Child Anxiety Related Emotional Disorders**	**Total**	**SAD**	**SP**	**OCD**	**PA**	**GAD**	**PIF**
SCARED	**SCARED-Total anxiety score**	.82	.63	.65	.52	.72	.71	.46
	SCARED-Separation anxiety score	.66	.71	.45	.41	.49	.48	.44
	SCARED-Social phobia	.56	.40	.52	.35	.44	.46	35
	SCARED-Somatic/panic disorder	.72	.48	.51	.44	.73	.67	.37
	SCARED-School phobia	.46	.31	.40	.28	.44	.42	.22
	SCARED-GAD	.71	.48	.61	.48	.60	.65	.34
	Child Depression Inventory							
	CDI-Total	.53	.33	.48	.30	.53	.49	.26

Note: The correlations between the SCAS and SCARED total score were significantly greater than the correlations with between the SCAS and CDI total score for the total scale and each subscale of the SCAS (all Z > 2.58, p < .01). These findings support the convergent and divergent validity of the SCAS.

Note: SDQ=Strengths and Difficulties questionnaire, CDI= Children's depression inventory, RCMAS= Revised children's manifest anxiety scale, STAI-C=State and trait anxiety inventory for children, CHIP-CE = Child Health and Illness Profile Children Edition; SCARED= Screen for Child Anxiety Related Emotional Disorders; CY-Bocs =; ADIS-C=;MASC = ;FSSC-R = Fear survey schedule for children

Convergent validity SCAS-P

The SCAS-P has been compared to other parent report measures of child anxiety and shown to have good convergent and divergent validity. For example, intercorrelations between total SCAS-P scores and SDQ-internalizing difficulties (r = .50, p < .001) was found to be significantly greater when compared to intercorrelations between the SCAS-P and SDQ-externalizing difficulties (r = .14, p = .024; Z = 6.71, N =268, p < .001).
Similarly Di Riso et al. (2013) found that correlation effect sizes between the SDQ internalisation problems and the SCAS-it (r=.55) supported the convergent validity of the SCAS. Weak connections between the SCAS and SDQ-externalisation (.18) and SDQ-prosocial behaviours (.15) supported the discriminant validity of the SCAS. For an overview see Table 6.

Table 6

Convergent and Divergent Validity Outcomes for the SCAS-P

Source (Year)	**Sample**	**Comparison Scale**				**SCAS-P**			
		Child Behaviour Checklist	**Total**	**SAD**	**SP**	**OCD**	**PA**	**GAD**	**PIF**
Ishikawa et al. (2014)	Community	CBCL-anxiety/ depression	.51	.38	.44	.38	.33	.48	.27
N=568	Note: In support of the convergent validity of the SCAS-P results showed significant correlation (p<.001) between the CBCL and all scales of the SCAS-P.								
						SCAS-P			
		Strength and Difficulties Questionnaire - Parent	**Total**	**SAD**	**SP**	**OCD**	**PA**	**GAD**	**PIF**
Li et al. (2016)	Community Chinese	SDQ-P-Internalising	.57	.47	.49	.47	.51	.49	.29
N=456 (Chinese)									
N= 452(Italian)		SDQ-P-Externalising	.30	.25	.27	.24	.28	.27	.13
	Community Italian	SDQ-P-Internalising	.50	.34	.50	.31	.33	.40	.23
		SDQ-P-Externalising	.23	.59	.18	.23	.19	.10	.12
Note: With the exception of the OCD SCAS-P subscale for Italian parents, all correlation coefficients between the SCAS-P scales and SDQ internalising problems were significantly stronger than the ones between the SCAS-P scales and SDQ externalizing problems (Z $\geq$ 2.00, p<.001).									
						SCAS-P			
			Total	**SAD**	**SP**	**OCD**	**PA**	**GAD**	**PIF**
Nauta et al. (2004)	Clinical	CBCL Internalising	.55	-	-	-	-	-	-
		Externalising	.34	-	-	-	-	-	-
	Community	Internalising	.59	-	-	-	-	-	-
		Externalising	.34	-	-	-	-	-	-
Note: As predicted, the correlation with the CBCL-internalizing subscale was significantly higher than the correlation with the CBCL-externalizing subscale in both groups (anxious group: Z = 387:7, P < 0:001; control group: Z = 49:8, P < 0:001) thus providing evidence for convergent and divergent validity respectively.									

Discriminant validity – separating clinical from non-clinical

The ability of the SCAS to distinguish between clinical and non-clinical populations was tested by Spence (1998) who compared clinically anxious children to a non-clinical age-matched controls and found that children with comorbid social phobia and separation anxiety scored significantly higher across all factors of the SCAS as compared to a non-clinical group. Further, children with only social phobia also scored significantly higher than the control, but only on the social phobia factor and the physical injury fear factor. Similar results are found in tests of the SCAS-P. For instance, Nauta et al. (2004) compared parents of anxiety disordered children to a community control sample on the SCAS-P and found that the anxiety-disordered group had significantly higher scores on all subscales than the normal control group (Table 7).

Table 7

Comparison SCAS/P Scores of Clinically Anxious Children and Non-Clinically Anxious Children

Source (Year)	Measure	Population	Total	PA	SP	SAD	GAD	OCD	PIF
			Mean(SD)	Mean(SD)	Mean(SD)	Mean(SD)	Mean(SD)	Mean(SD)	Mean(SD)
Spence (1998)	**SCAS**	**Clinical**	48.75 (17.66)*	7.10 (5.28)*	8.80 (4.20)***	10.40 (3.78)*	9.45 (3.44)*	6.90 (3.45)*	6.10 (2.75)*
		Non Clinical	18.80 (9.72)	1.55 (1.85)	3.25 (2.57)	3.15 (2.01)	4.95 (2.96)	3.70 (3.05)	2.20 (2.33)
Arendt et al. (2014)	**SCAS**	**Clinical**	36.85 (15.60)*	5.13 (4.37)*	5.55 (3.98)***	7.73 (4.02)*	8.39 (3.55)*	5.30 (3.57)*	4.75 (2.86)*
		Community	21.96 (14.30)	2.60 (3.30)	4.39 (3.20)	3.02 (2.84	5.03 (2.94)	3.54 (3.02)	3.37 (2.73)
	SCAS-P	**Clinical**	37.59(14.28)*	5.06(4.60)*	6.71 (3.95)***	8.87 (4.12)*	8.26 (3.05)*	4.28 (3.54)*	4.43 (2.88)*
		Community	14.37 (10.31)	0.99 (1.94)	3.89 (2.86)	2.79 (2.69)	3.21 (2.26)	1.05 (1.80)	2.44 (2.07)
Nauta et al. (2004)	**SCAS-P**	**Clinical**	31.8(14.1)*	3.6(3.9)*	7.7(3.8)***	6.9(4.1)*	6.6(3.1)*	3.0(3.1)*	4.1(2.8)*
		Community	14.2(9.7)	1.0(1.6)	4.2(2.8)	2.6(2.8)	2.7(2.0)	1.1(1.7)	2.6(2.3)
Olofsdotter et al. (2016)	**SCAS**	**Clinical Anxious**	40.56(17.55)*	8.01(5.37)*	9.50(3.95)*	4.60(3.45)*	8.75(3.81)*	5.11(4.00) *	4.60(3.20) *
		Clinical Non-Anxious	17.05(9.35)	2.04(2.47)	4.66(2.89)	1.47(1.59)	4.11(2.47)	2.21(2.98)	2.56(2.36)
	SCAS-P	**Clinical Anxious**	31.03(14.09)*	4.99(3.30)*	8.87(4.39)*	4.12(3.50) *	6.35(3.10)*	2.95(3.14) *	3.75(2.71)*
		Clinical Non-Anxious	14.81(8.55)	1.72(2.52)	5.06(3.38)	1.68(1.78)	3.30(2.18)	1.19(2.00)	1.86(1.96)
				Pre-treatment	**Post-treatment**				
Whiteside et al. (2012)	**SCAS**	**Clinical OCD**	9.64(4.6)*	10.12(4.8)*	4.00(3.0)				
		Clinical non-OCD	5.09(4.1)						
		Community	3.40(2.9)						
	SCAS-P	**Clinical OCD**	10.14(4.7)*	10.14(5.3)*	4.29(3.7)				
		Clinical non-OCD	3.18(3.2)						
		Community	74(1.4)						

*=p<.05

Discriminant Validity - Predictive Validity

Although neither the SCAS nor other similar youth and parent anxiety scales were intended as diagnostic instrument per se, they can be used to identify those for whom a more in-depth clinical assessment is warranted using a standardised structured clinical diagnostic interview (Spence, 2017). For this reason the predictive validity of the SCAS and SCAS-P as compared to diagnoses reached via gold standard diagnostic interviews has been examined through calculations of sensitivity (i.e., ability to identify an individual with a given disorder), specificity (i.e., ability to identify individuals without the diagnosis), PPV (i.e., percentage of individuals identified as having the diagnosis that are true positives), and NPV (i.e., percentage of individuals identified as being diagnosis free that actually are true negatives). Three key studies have provided tests of the specificity and sensitivity of the SCAS/P (Table 8-10).

Nauta et al. (2004) tested whether scores on the SCAS-P could reliably predict children's diagnostic status concerning anxiety disorders. Overall, 80.5% of the children were correctly classified (86% of the anxiety disordered and 71% of the normal controls) supporting the predictive validity of the SCAS-P. To further examine the ability of the SCAS-P to classify children into the group of their original primary diagnosis (ADIS C/P), discriminant analyses were conducted within the unspecified anxiety-disordered group. The SCAS-P correctly classified 51.7% of children in total, being quite accurate in classifying separation anxiety (70%), social phobia (60%), panic/agoraphobia (68%) and obsessive–compulsive disorder (72%). However, the SCAS-P had more difficulty in discriminating children with generalised anxiety disorder: only 31% of children who were diagnosed with generalised anxiety disorder were correctly classified, whereas 20% of them were classified as socially phobic, and 14% as separation anxious (Nauta et al., 2004).

Olofsdotter et al. (2016) examined the diagnostic accuracy of the SCAS/P as compared to K-SADS in a sample of 104 adolescents and their parents presenting at two general psychiatric outpatient units in Sweden. Results demonstrated that SCAS/P could distinguish between adolescents with and without an anxiety disorder in a non-anxiety-specific clinical setting, and it was concluded that the SCAS/P are valid clinical tools for assessing anxiety disorders in adolescents.

Discriminant Validity - Diagnostic accuracy

Olofsdotter et al. (2016) tested the SCAS/P diagnostic accuracy in a sample of adolescents and their parents presenting at two general psychiatric outpatient units. Results showed the predictive power of both self- and parent report (as measured by AUC) to be significant for the total score and all subscales, thus, affirming that the SCAS/P adequately screen for anxiety symptoms in children and adolescents (Table 8). Olofsdotter et al. (2016) also tested different cutoff scores for sensitivity/specificity and concluded that general implementation and utilisation of the SCAS could improve detection rates of anxiety disorders and help direct adolescents to mental health care services for further assessment.

Table 8. The overall ability of the SCAS to predict diagnoses as assessed by the K-SADS. The predictive power, measured as AUC, was significant for both the total score and all subscales and fell in the fair to good range, except for the separation anxiety subscale, which showed excellent predictive ability.

Total Score and Subscales for Screening, Diagnostic, and *T60* Cutoff Scores as per Olofsdotter et al. (2016)

Scale	Base rate, %	AUC [95% CI]	Cut-off	Sensitivity, %	Specificity, %	Efficiency %	PPV, %	NPV, %	LR+[95% CI]	LR-[95% CI]
SCAS										
Total	52.9	0.89***[0.83, 0.96]	Screening[b] ≥22	90.91	73.47	82.69	79.37	87.80	3.43 [2.13, 5.50]	0.12 [0.05, 0.29]
			Diagnostic[b] ≥33	63.64	93.88	77.88	92.11	69.70	10.39 [3.41, 31.68]	0.39 [0.27, 0.55]
			T60b	49.09	95.92	71.15	93.10	62.67	10.39 [3.41, 31.68]	0.53 [0.41, 0.69]
SP	28.8	0.87***[0.80, 0.94]	Screening[b] ≥7	96.67	60.81	71.15	50.00	97.83	2.47 [1.84, 3.30]	0.05 [0.01, 0.38]
			Diagnostic[b] ≥11	56.67	90.54	80.77	70.83	83.75	5.99 [2.77, 12.95]	0.48 [0.32, 0.73]
			T60	73.33	77.03	75.96	56.41	87.69	3.19 [2.00, 5.11]	0.35 [0.19, 0.63]
GAD	19.2	0.79***[0.68, 0.89]	Screening[b] ≥5	95.00	41.67	51.92	27.94	97.22	1.63 [1.32, 2.00]	0.12 [0.02, 0.82]
			Diagnostic[b] ≥11	55.00	90.48	83.65	57.89	89.41	5.78 [2.68, 12.46]	0.50 [0.30, 0.81]
			T60	65.00	75.00	73.08	38.24	90.00	2.60 [1.59, 4.25]	0.47 [0.25, 0.86]
PIF	18.3	0.77***[0.65, 0.89]	Screening[b] ≥2	94.74	36.47	47.12	25.00	96.88	1.49 [1.23, 1.81]	0.14 [0.02, 0.99]
			Diagnostic[b] ≥8	36.84	92.94	82.69	53.85	86.81	5.22 [1.98, 13.77]	0.68 [0.48, 0.96]
			T60	52.63	77.65	73.02	34.48	88.00	2.35 [1.32, 4.21]	0.61 [0.37, 0.99]
PA	12.5	0.90***[0.79, 1.00]	Screening[b] ≥4	92.31	54.95	59.62	22.64	98.04	2.05 [1.55, 2.70]	0.14 [0.02, 0.93]
			Diagnostic[b] ≥11	84.62	91.21	90.38	57.89	97.65	9.62 [4.77, 19.41]	0.17 [0.05, 0.60]
			T60	84.62	74.73	75.96	32.35	97.14	3.35 [2.19, 5.11]	0.21 [0.06, 0.74]
OCD	6.7	0.79*[0.60, 0.98]	Screening[b] ≥1	100	24.74	29.81	8.75	100	1.33 [1.19, 1.49]	0.00
			Diagnostic[b] ≥11	57.14	95.88	93.27	80.00	96.88	13.86 [4.37, 43.95]	0.45 [0.19, 1.05]
			T60	57.14	96.60	64.62	23.53	96.55	4.26 [1.88, 9.65]	0.49 [0.21, 1.17]
SAD	4.8	0.92**[0.85, 1.00]	Screening[b] ≥5	100	75.76	76.92	17.24	100	4.12 [2.91, 5.84]	0.00
			Diagnostic[b] ≥9	60.00	93.94	92.31	42.86	97.94	9.90 [3.45, 28.44]	0.43 [0.15, 1.25]
			T60	80.00	80.81	80.77	17.39	98.77	4.17 [2.30, 7.57]	0.25 [0.04, 1.43]
SCAS-P										
Total	52.9	0.86***[0.79, 0.93]	Screening[b] ≥15	90.91	53.06	73.08	68.49	83.87	1.94 [1.42, 2.64]	0.17 [0.07, 0.41]
			Diagnostic[b] ≥27	61.82	93.75	75.96	91.89	68.18	9.89 [3.24, 30.17]	0.41 [0.29, 0.57]
SP	28.8	0.81***[0.72, 0.90]	Screening[b] ≥6	90.00	50.00	61.54	42.19	92.50	1.80 [1.39, 2.33]	0.20 [0.07, 0.60]
			Diagnostic[b] ≥12	46.67	90.54	77.88	66.67	80.72	4.93 [2.21, 11.00]	0.59 [0.42, 0.83]
GAD	19.2	0.70**[0.58, 0.82]	Screening[b] ≥4	90.00	46.43	54.81	28.57	95.12	1.68 [1.31, 2.15]	0.22 [0.06, 0.82]
			Diagnostic[b] ≥10	15.00	90.48	75.96	27.27	81.72	1.57 [0.46, 5.41]	0.94 [0.77, 1.14]
PIF	18.3	0.73**[0.61, 0.85]	Screening[b] ≥1	94.74	22.35	35.58	21.43	98.00	1.22 [1.04, 1.43]	0.24 [0.03, 1.65]
			Diagnostic[b] ≥7	26.32	92.94	80.77	45.45	84.95	3.73 [1.27, 10.95]	0.79 [0.60, 1.04]
PA	12.5	0.81***[0.70, 0.93]	Screening[b] ≥3	92.31	64.95	59.62	22.64	98.04	2.05 [1.55, 2.70]	0.14 [0.02, 0.93]
			Diagnostic[b] ≥8	38.46	91.21	84.62	38.46	91.21	4.37 [1.68, 11.36]	0.67 [0.44, 1.04]
OCD	6.7	0.82**[0.60, 1.00]	Screening[b] ≥1	85.71	37.11	40.38	8.96	97.30	1.36 [0.97, 1.91]	0.38 [0.06, 2.41]
			Diagnostic[b] ≥6	71.43	91.75	90.38	38.46	97.80	8.66 [3.84, 19.52]	0.31 [0.10, 1.01]
SAD	4.8	0.94**[0.85, 1.00]	Screening[b] ≥4	100	70.71	72.14	14.71	100	3.41 [2.51, 4.64]	0.00
			Diagnostic[b] ≥7	80.00	93.94	93.27	40.00	98.94	13.20 [5.42, 32.17]	0.21 [0.04, 1.23]

Note: for all subscales, the diagnostic cutoff was superior for overall correct classification (efficiency), and scores above this threshold yielded the highest increase in the probability of an anxiety disorder. For the total score, the screening cutoff yielded the highest efficiency and the *T60* the highest increase in probability of anxiety. For both the total score and the subscales, scores under the screening cutoff yielded the highest decrease in the probability of anxiety.

Note. AUC = area under the curve; PPV = positive predictive value; NPV = negative predictive value; LR+ = positive likelihood ratio; CI = confidence interval; LR– = negative likelihood ratio; SCAS = Spence Children's Anxiety Scale; SCAS-P = Spence Children's Anxiety Scale–Parent. Base rate: rate of adolescents receiving a diagnosis based on the Schedule for Affective Disorders and Schizophrenia for School-Age Children; Efficiency: correctly classified.

[a]Estimates for any of the diagnoses of social phobia, generalized anxiety, specific phobia, panic/agoraphobia, obsessive-compulsive disorder, separation anxiety, or anxiety NOS.

[b]Screening: cutoffs corresponding to a sensitivity ≥0.90; Diagnostic: cutoffs corresponding to a specificity ≥0.90; *T60*: cut-offs corresponding to *t*-score 60 in tables for adolescents 12 to 15 years published at www.scaswebsite.com.

*p < .05. **p < .01. ***p < .001.

Table 9

Clinical Utility of SCAS/P for Predicting ADIS-C Diagnoses - On average, the scales could identify approximately 70% of positive cases (sensitivity) and agreed with the clinician's decision approximately 60% of the time. Of identified cases, 40% were true positives. In subscales parents were very accurate for OCD (95% / 60% true positive), but very low for specific phobias (30%).

Brown-Jacobsen, Wallace, and Whiteside (2011)

Subscale	Sensitivity	Specificity	PPV	NPV	Correct[a]	Base rate[b]	Kappa
SAD-P	1.00	0.32	.26	1.00	.45	.18	.17*
SAD-C	.73	.56	.26	.91	.59	.19	.15*
SP-P	.32	.82	.42	.75	.67	.28	.15
SP-C	.33	.84	.44	.76	.69	.29	.18
SoP-P	.68	.70	.44	.86	.69	.26	.32*
SoP-C	.64	.62	.37	.83	.62	.26	.21*
OCD-P	.95	.54	.63	.93	.72	.44	.47*
OCD-C	.78	.65	.63	.79	.71	.45	.42*
GAD-P	.76	.36	.42	.70	.51	.39	.10
GAD-C	.73	.42	.44	.71	.54	.38	.14
Averages							
Total	.69	.58	.43	.82	.62	.31	.14
Parent	.74	.55	.43	.85	.61	.31	.13
Child	.64	.62	.43	.80	.63	.31	.16

Note: "Sensitivity" ability to identify an individual with a given disorder, "Specificity" = ability to identify individuals without the diagnosis PPV =positive predictive value (percentage of individuals identified as having the diagnosis that are true positives); NPV =negative predictive value (percentageof individuals identified as being diagnosis free that actually are true negatives); SAD =Separation Anxiety Disorder; SP =Specific Phobia; SP =Social Phobia; OCD =Obsessive Compulsive Disorder; GAD =Generalized Anxiety Disorder.

"P" and "C" after the instruments refer to parent and child versions, respectively.

[a]. Correct =informant and clinician agree.

[b]. Base rate =rate of patients receiving the diagnosis based on clinician impression.

*p <.05.

Discriminant Validity - Diagnostic accuracy

The ability of the SCAS and SCAS-P to screen for paediatric OCD in the community was examined by Whiteside et al. (2012) who found the SCAS to classify 82% of participants accurately, while the SCAS-P had a correct classification rate of 88% (Table 10).

Whiteside et al. (2012) also tested the ability of the SCAS/P to assist in the diagnosis of OCD by distinguishing children with an OCD diagnosis from those without OCD in a clinical sample (i.e., the community sample was excluded). Results revealed AUC estimates of .78 (95% confidence interval [CI] = .70–.85) fo the SCAS and .89 (95% confidence interval [CI] = .83–.94) for the SCAS-P. A cut-off score of 7 provided the best balance of sensitivity and specificity, the best balance of PPP and NPP, and the highest hit rate for both the SCAS (Sensitivity = .76, Specificity = .73, PPP = .71, NPP = .77, hit rate = 74%) and the SCAS-P.

Table 10. Diagnostic Accuracy of the SCAS and SCAS-P Obsessive Compulsive Disorder subscale as per Whiteside 2012

	Cut-off	Sensitivity	Specificity	PPV	NPV	Correct[a]	Base rate[b]
Identifying OCD within combined clinical and community sample							
OCD-P	3	.95	.87	.53	.99	.88	.14
OCD-C	7	.76	.83	.42	.96	.82	.14
Identifying OCD within estimated population with base rate of 2.5%							
OCD-P	3	.95	.87	.16	1.0	.87	.025
OCD-C	7	.76	.83	.10	.99	.83	.025
Identifying OCD within the clinical sample							
OCD-P	7	.76	.88	.85	.81	.83	.47
OCD-C	7	.76	.73	.71	.77	.74	.47

Note. PPV, Positive Predictive Value; NPV, Negative Predictive Value.

a Questionnaire and clinician agree.

b Rate of patients receiving the diagnosis.

Test-retest reliability

Test re-retest reliability was examined by Spence (1998) in a sample of 344 children aged 8-12 years. Children were assessed on two occasions over a 6-month period. The analyses showed a 6-month test-retest reliability co-efficient of .60 for the total score on the SCAS. This suggests reasonably high reliabilit over a 6-month period for the total score. The temporal stability of the subscale scores were lower for the individual subscales, being .57 for separation anxiety; .57 for social phobia; .53 for obsessive-compulsive problems; .45 for panic-agoraphobia; .54 for physical injury fears; and .56 for generalised anxiety. Similar test-retest results were found at three month retest in a sample of 362 children (12-14 year) by Spence et al. (2003). Specifically, at the 12-week mark a test-retest reliability co-efficient of .63 was found for the total score on the SCAS. The temporal stability of the sub-scale scores were .52 for separation anxiety; .75 for social phobia; .69 for obsessive-compulsive problems; .51 for panic-agoraphobia; .59 for physical injury fears; and .66 for generalised anxiety. Test-retest reliability of the SCAS has also been assessed at 2 weeks (Arendt et al., 2014; Ishikawa, Sato, & Sasagawa, 2009), 1 month (Zhao et al., 2012), and 2 months (Essau, Anastassiou-Hadjicharalambous, et al., 2011) with results indicating satisfactory test-retest reliability with coefficients ranging from .61-.82. For the SCAS-P test-retest were similar ranging from 0.53 to 0.88. For an overview of results see Table 11.

Table 11. Test-Retest Reliability

	Spence (1998)	Spence et al. (2003)	Essau, Anastassiou-Hadjicharalambous & Munoz (2011)	Arendt et al. (2014)				Zhao et al. (2012)		Ishikawa et al. (2009)	
Measure	**SCAS**	**SCAS**	**SCAS**	**SCAS**	**SCAS**	**SCAS-P**	**SCAS-P**			**SCAS**	**SCAS**
N	344	362	108	93	87	21	35	330	319	308	283
Age range	8-12	13-14	12-17	7-17	7-17	N/A	N/A	8-12	13-15	**9-12**	13-15
Time interval	**6 months**	**3 months**	**2 months**	**2 weeks**	**3 months**	**2 weeks**	**3 months**	**1 month**	**1 month**	**2-4 weeks**	**2-4 weeks**
Subscale											
Panic/agoraphobia	.45	.51	≥.77	.61	.75	.74	.53	.63	.73	.67	.78
Social phobia	.57	.75	.77	.79	.68	.80	.82	.63	.73	.67	.79
Separation anxiety	.57	.52	≥.77	.77	.81	.87	.84	.65	.75	.69	.76
Generalised anxiety	.56	.66	≥.77	.82	.76	.83	.65	.67	.68	.69	.78
OCD	.53	.69	>.77	.69	.72	.60	.65	.59	.55	.64	.77
Fear of physical injury	.54	.59	.84	.82	.78	.82	.85	.73	.79	.72	.83
Total score	.60	.63	.88	.84	.83	.88	.81	.76	.81	.76	.86

References

Arendt, K., Hougaard, E., & Thastum, M. (2014). Psychometric properties of the child and parent versions of Spence children's anxiety scale in a Danish community and clinical sample. *J Anxiety Disord, 28*(8), 947-956. doi:10.1016/j.janxdis.2014.09.021

Brown-Jacobsen, A. M., Wallace, D. P., & Whiteside, S. P. (2011). Multimethod, multi-informant agreement, and positive predictive value in the identification of child anxiety disorders using the SCAS and ADIS-C. *Assessment, 18*(3), 382-392. doi:10.1177/1073191110375792

Delvecchio, E., Di Siro, D., Chessa, D., & Lis, A. (2010). The Spence Children's Anxiety Scale in Italian children aged 8-10. *BPA-Applied Psychology Bulletin (Bollettino di Psicologia Applicata)*.

Delvecchio, E., Mabilia, D., Di Riso, D., Miconi, D., & Li, J.-B. (2015). A comparison of anxiety symptoms in community-based Chinese and Italian adolescents. *Journal of Child and Family Studies, 24*(8), 2418-2431.

Di Riso, D., Chessa, D., Bobbio, A., & Lis, A. (2013). Factorial Structure of the SCAS and Its Relationship With the SDQ. *European Journal of Psychological Assessment, 29*(1), 28-35. doi:10.1027/1015-5759/a000117

Essau, C. A., Anastassiou-Hadjicharalambous, X., & Munoz, L. C. (2011). Psychometric properties of the Spence Children's Anxiety Scale (SCAS) in Cypriot children and adolescents. *Child Psychiatry Hum Dev, 42*(5), 557-568. doi:10.1007/s10578-011-0232-7

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 emotiona disorders in German children. *Journal of behavior therapy and experimental psychiatry, 33*(1), 1-18.

Essau, C. A., Sasagawa, S., Anastassiou-Hadjicharalambous, X., Guzman, B. O., & Ollendick, T. H. (2011). Psychometric properties of the Spence Child Anxiety Scale with adolescents from five European countries. *J Anxiety Disord, 25*(1), 19-27. doi:10.1016/j.janxdis.2010.07.001

Ishikawa, S.-i., Sato, H., & Sasagawa, S. (2009). Anxiety disorder symptoms in Japanese children and adolescents. *Journal of Anxiety Disorders, 23*(1), 104-111.

Ishikawa, S.-i., Shimotsu, S., Ono, T., Sasagawa, S., Kondo-Ikemura, K., Sakano, Y., & Spence, S. H. (2014). A parental report of children's anxiety symptoms in Japan. *Child Psychiatry & Human Development, 45*(3), 306-317.

Li, J. B., Delvecchio, E., Di Riso, D., Nie, Y. G., & Lis, A. (2016). The Parent-Version of the Spence Children's Anxiety Scale (SCAS-P) in Chinese and Italian Community Samples: Validation and Cross-Cultural Comparison. *Child Psychiatry Hum Dev, 47*(3), 369-383. doi:10.1007/s10578-015-0572-9

Muris, P., Merckelbach, 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. *Behaviour 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.

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. *Behaviour Research and Therapy, 42*(7), 813-839. doi:10.1016/s0005-7967(03)00200-6

Olofsdotter, S., Sonnby, K., Vadlin, S., Furmark, T., & Nilsson, K. W. (2016). Assessing Adolescent Anxiety in General Psychiatric Care: Diagnostic Accuracy of the Swedish Self-Report and Parent Versions of the Spence Children's Anxiety Scale. *Assessment, 23*(6), 744-757. doi:10.1177/1073191115583858

Orgiles, M., Fernandez-Martinez, I., Guillen-Riquelme, A., Espada, J. P., & Essau, C. A. (2016). A systematic review of the factor structure and reliability of the Spence Children's Anxiety Scale. *J Affect Disord, 190*, 333-340. doi:10.1016/j.jad.2015.09.055

Orgiles, M., Mendez, X., Spence, S. H., Huedo-Medina, T. B., & Espada, J. P. (2012). Spanish validation of the Spence Children's Anxiety Scale. *Child Psychiatry Hum Dev, 43*(2), 271-281. doi:10.1007/s10578-011-0265-y

Spence, S. H. (1998). A measure of anxiety symptoms among children. *Behaviour Research and Therapy, 36*(5), 545-566.

Spence, S. H. (2017). Review-Measurement Issues: Assessing anxiety disorders in children and adolescents. *Child and Adolescent Mental Health*.

Spence, S. H., Barrett, P. M., & Turner, C. M. (2003). Psychometric properties of the Spence Children's Anxiety Scale with young adolescents. *Journal of Anxiety Disorders, 17*(6), 605-625. doi:10.1016/s0887-6185(02)00236-0

Whiteside, S. P., Gryczkowski, M. R., Biggs, B. K., Fagen, R., & Owusu, D. (2012). Validation of the Spence Children's Anxiety Scale's obsessive compulsive subscale in a clinical and community sample. *J Anxiety Disord, 26*(1), 111-116. doi:10.1016/j.janxdis.2011.10.002

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 Disorders, 26*(7), 728-736.