

*Young children have social worries too:
validation of a brief parent report measure
of social worries in children aged 4–8
years*

Article

Published Version

Creative Commons: Attribution 4.0 (CC-BY)

Open Access

Stuijfzand, S. and Dodd, H. F. (2017) Young children have social worries too: validation of a brief parent report measure of social worries in children aged 4–8 years. *Journal of Anxiety Disorders*, 50. pp. 87-93. ISSN 0887-6185 doi: <https://doi.org/10.1016/j.janxdis.2017.05.008> Available at <https://centaur.reading.ac.uk/71836/>

It is advisable to refer to the publisher's version if you intend to cite from the work. See [Guidance on citing](#).

Published version at: <http://dx.doi.org/10.1016/j.janxdis.2017.05.008>

To link to this article DOI: <http://dx.doi.org/10.1016/j.janxdis.2017.05.008>

Publisher: Elsevier

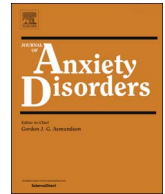
All outputs in CentAUR are protected by Intellectual Property Rights law, including copyright law. Copyright and IPR is retained by the creators or other copyright holders. Terms and conditions for use of this material are defined in the [End User Agreement](#).

www.reading.ac.uk/centaur

CentAUR

Central Archive at the University of Reading

Reading's research outputs online



Young children have social worries too: Validation of a brief parent report measure of social worries in children aged 4–8 years



Suzannah Stuijzand, Helen F. Dodd*

School of Psychology and Clinical Language Sciences, University of Reading, Harry Pitt Building, Earley Gate, RG6 7BE, UK

ARTICLE INFO

Keywords:

Children
Social anxiety
Psychometric properties
Rating scales
Parent report

ABSTRACT

This study investigated the psychometric properties of the Social Worries Anxiety Index for Young children (SWAIY), adapted from the Social Worries Questionnaire—Parent version (SWQ-P; Spence, 1995), as a measure of social anxiety in young children. 169 parents of children aged four to eight years from a community sample completed the SWAIY and a standardized measure of anxiety; the SWAIY was completed again two weeks later. Parents deemed the items appropriate and relevant to children of this age. The SWAIY demonstrated excellent (> 0.80) internal consistency and a one-factor model. Test-retest reliability was strong ($r = 0.87$) and evidence of convergent validity ($r > .50$) was found. The study provides initial evidence for the validation of SWAIY as a measure of social anxiety in children aged four to eight years old. This questionnaire is ideal for investigating social anxiety over early childhood and the relationship between early social worries and later anxiety disorders.

1. Introduction

Social anxiety disorder often begins in early adolescence (Kessler et al., 2005) yet symptoms of social anxiety have been identified much earlier in childhood. Between 2.1% to 4.6% of pre-schoolers in non-psychiatric samples meet criteria for social anxiety disorder (Egger & Angold, 2006). Although social anxiety affects the wellbeing and achievements of children in the short term and in later life (Copeland, Angold, Shanahan, & Costello, 2014; Ginsburg, Silverman, & La Greca, 1998), we currently know little about the specific manifestations of social anxiety in young children or about the stability and development of social anxiety over childhood (Spence et al., 2001). While several anxiety assessments for older children include a social anxiety subscale, to our knowledge there is currently no stand-alone measure of social anxiety for children younger than eight years. The present study therefore reports on the adaptation and validation of the Social Worries Questionnaire—Parent version (SWQ-P; Spence, 1995) into the Social Worries Anxiety Index for Young children (SWAIY), a brief parent-report measure of social anxiety that is appropriate for young children.

Social anxiety is characterised by an intense and irrational fear of embarrassment in social situations (Alkozei, Cooper, & Creswell, 2014). For a DSM-5 diagnosis of social anxiety, a child must respond to these situations with avoidance or distress that interferes significantly with day-to-day functioning (American Psychiatric Association, 2013). Social anxiety in childhood is associated with a range of negative correlates both

concurrently and prospectively. For example, children with social anxiety have difficulties with social competence (Ginsburg, Silverman, & La Greca, 1998; Spence, Donovan, & Brechman-Toussaint, 1999) and poorer functioning at school (Mychailyszyn, Mendez, & Kendall, 2010). In eight and nine year olds, social anxiety is negatively associated with friendship and positively associated with peer victimisation (Larkins, 2014; Slee, 1994), specifically overt victimisation (verbal or physical aggression; Storch, Zelman, Sweeney, Danner, & Dove, 2002). Furthermore, social anxiety during childhood is associated with poor mental health in adulthood (Copeland et al., 2014).

Social anxiety can be diagnosed as distinct from other anxiety disorders in children as young as 4–5 years (e.g. Ford, Goodman & Meltzer, 2017; Shamir-Essakow, Ungerer & Rapee, 2005;). Further, factor analysis of parent-report scales such as the Preschool Anxiety Scale (PAS; Spence, Rapee, McDonald, & Ingram, 2001) shows that items related to social anxiety can be differentiated from items related to other common anxiety problems in young children such as separation anxiety disorder. A recent population-based study found a prevalence rate of 10.7% for social anxiety disorder amongst 4–8 year olds (Paulus, Backes, Sander, Weber, & von Gontard, 2015). Despite the potential negative consequences and high prevalence, research investigating social anxiety in early childhood is rare (e.g. Kingery, Erdley, Marshall, Whitaker, & Reuter, 2010; Morris et al., 2004). It is known that the incidence of social anxiety increases with age (Hitchcock, Chavira, & Stein, 2009), yet we know little about the stability and development of social anxiety within individuals, from early childhood. Initial research suggests that early social anxiety may indicate risk

* Corresponding author at: University of Reading, Harry Pitt Building, Earley Gate, RG6 7BE, UK.

E-mail addresses: s.f.ravenscroft@pgr.reading.ac.uk (S. Stuijzand), h.f.dodd@reading.ac.uk (H.F. Dodd).

for emotional health problems across childhood. For example, Bufferd and colleagues found that a diagnosis of social anxiety at age 3 years predicted social anxiety disorder and specific phobia 3 years later (Bufferd, Dougherty, Carlson, Rose, & Klein, 2012). Furthermore, Carpenter et al. (2015) found that a history of preschool social anxiety predicted less functional connectivity between the amygdala and ventral frontal cortices when children viewed angry faces (Carpenter et al., 2015), indicating a potential difficulty with emotion regulation.

These examples highlight the potential that research examining social anxiety in young children holds for furthering our understanding of the development of anxiety across childhood. However, to conduct this type of work with young children it is imperative that we have valid and reliable measures of social anxiety for this age group that can be administered quickly and easily. Whilst diagnostic assessments such as the Preschool Age Psychiatric Assessment (PAPA; Egger & Angold, 2004) used by Bufferd et al., 2012; and the Anxiety Disorders Interview Schedule (ADIS; Silverman & Nelles, 1988) are the gold standard, they are not always practical given the time and resources required to train assessors and carry out the interviews. Currently, the only available questionnaire measure of social anxiety in early childhood is a subscale of the PAS; other subscales include generalized anxiety, separation anxiety, obsessive compulsive disorder and physical injury fears. The PAS was developed as a parallel measure of the Spence Children's Anxiety Scale (SCAS; Spence, 1998), which measures anxiety symptoms in children aged 7–18 years. The PAS is not ideal for capturing social anxiety for two reasons. First, the social anxiety scale, which consists of six items, is not designed as a stand-alone measure so many additional items (a further 22 items) must be completed unnecessarily. Second, the PAS includes many cognitive items i.e. "Worries that he/she will do something to look stupid in front of other people". Due to the 'hidden' nature of cognitions and the broad context of the questions, it may be difficult for parents to accurately respond to these items (Comer & Kendall, 2004).

In contrast, the SWQ-P is a brief (10-item) parent-report measure of social anxiety in 8–17 year olds. All items load onto a single 'social worries' factor. The items focus on specific situations and observable behaviours e.g. "Avoids or gets worried about entering a room full of people". As avoidance is more easily observed than cognitive symptoms and specific situations are given, parents should be able to provide more accurate report than on the PAS. Given this advantage of the SWQ-P as a parent-report measure, it is an attractive candidate for adaptation into a measure of social anxiety for a younger age group (children aged 4–8 years) for whom no specific measure of social anxiety currently exists. Such a measure will provide a valuable new tool for gathering information about social anxiety within this age group. The original SWQ-P has been acknowledged as a useful prescreening tool for social anxiety in children (Hitchcock et al., 2009) and the adapted version may also assist researchers and clinicians in this way. Beyond this, the adapted measure would be useful, as discussed, for addressing questions regarding the stability of social worries over childhood and the role of early social worries in the development of anxiety disorders later in life. This research may then, in turn, have implications for the prevention and early treatment of social anxiety in children.

In the present study, we describe the adaptation of the SWQ-P into the Social Worries Anxiety Index for Young children (SWAIY) and assess the content validity, test-retest reliability, convergent validity and internal reliability of the new measure as well as examining the internal structure through factor analysis. These investigations contribute to assessment of the questionnaire's construct validity.

2. Materials and method

2.1. Participants

Data was collected via online questionnaires. To be included as a

study participant at either time 1 or time 2, full data was required for the SWAIY and basic demographics. This resulted in a sample of 169 parents (166 female) at time 1 and 106 (105 female) at time 2. An additional eight parents at time 1 and six parents at time 2 only partially completed the online questionnaires and were therefore excluded.

Parents completed questions about their child. At time 1, 99% considered themselves the child's primary caregiver. Children's ages ranged from 3.92 to 8.92 years old ($M = 6.25$, $SD = 1.29$, 4 year olds = 38, 5 year olds = 35, 6 year olds = 41, 7 year olds = 36, 8 year olds = 23), 81 of the children were female. No differences in age were found between male and female children ($t(167) = 0.711$, $p = 0.75$). No children were reported as having a diagnosis of Autistic Spectrum Disorders (ASD) or learning difficulties but two were reported as having ADHD. These children did not appear as outliers on any of the variables of interest and analyses were consistent when these children were excluded thus their data is included in the analyses reported. Note that details regarding ASD and learning difficulties were collected due to the potential social difficulties that these children might experience which could affect parents' responses on the questionnaires of interest (Kreiser & White, 2014).

At Time 2, 106 of the original 169 parents completed the online questionnaire for a second time. The same parent answered the questionnaire at both time points. At this point, 98% of parents stated they were the child's primary caregiver. Children's ages ranged from 3.92 to 8.92 years old ($M = 6.20$, $SD = 1.32$, 4 year olds = 23, 5 year olds = 22, 6 year olds = 28, 7 year olds = 22, 8 year olds = 14) and 52 were female. No differences in age were found between genders of the children ($t(104) = 1.03$, $p = 0.305$). No children were reported as having a diagnosis of ADHD, ASD or learning difficulties.

2.2. Measures

2.2.1. Spence Child Anxiety Scale—Parent version (SCAS-P) and Preschool Anxiety Scale (PAS)

Both scales are parent report questionnaires assessing child anxiety symptoms in specific anxiety domains, for example social anxiety and separation anxiety. The PAS is a 28 item questionnaire validated for use with 4.5–6.5 year olds. Items are answered on a five point Likert scale (0 = Not true at all; 4 = Very often true). Two scores were computed: total anxiety score being a sum of responses from all 28 items (min = 0, max = 112) and the social anxiety subscale (6 items; min = 0, max = 24). Higher scores indicate more anxiety. The PAS has strong psychometrics; scores align with DSM-IV diagnoses, and the internalising scale of the Child Behaviour Check List (CBCL; Achenbach, 1991; Spence et al., 2001). The PAS has also shown good internal consistency both in terms of the full scale ($\alpha = 0.86$) and social phobia subscale ($\alpha = .81$) (Broeren & Muris, 2008). In the present sample $\alpha = 0.88$ for total score and $\alpha = 0.82$ for the social anxiety subscale.

The SCAS-P is a parallel measure which includes 38 items answered on a four point Likert scale (0 = Never; 3 = Always) validated for use with six to 18 year olds. The SCAS-P can be split into six subscales assessing specific anxiety domains, i.e. social anxiety. Two scores were taken from this questionnaire: the total anxiety score (the sum of all 39 items (min = 0, max = 114)) and the social anxiety subscale (the sum score of 6 items (min = 0, max = 18)). Higher scores indicate greater anxiety. The SCAS-P has good psychometric properties. It has good internal consistency of the total score ($\alpha = 0.82$) and social phobia subscales in a community sample ($\alpha = 0.70$) (Spence, 1998). In the present sample $\alpha = 0.87$ for total score and $\alpha = 0.77$ for the social anxiety subscale. The total score is able to differentiate between anxiety-disordered children and normal controls and the social anxiety subscale can differentiate between children with primary social anxiety and those with another primary anxiety diagnosis. The SCAS has also shown convergent validity with the CBCL (Achenbach, 1991).

2.2.2. Social worries anxiety index for young children (SWAIY)

The SWAIY was developed based on the Social Worries Questionnaire (SWQ-P; Spence, 1995). The SWQ-P is a 10-item parent report questionnaire assessing symptoms of social anxiety, validated for 8–17 year olds. Parents are asked how much his or her child avoids or worries about particular social situations. For example “He or she avoids or gets worried about going to parties”. The original questionnaire has shown good internal consistency within the validated age group (Guttman split half reliability = 0.93, $\alpha = 0.94$; Spence, 1995). Factor analysis indicated a single factor accounting for 66% of variance. Children with social anxiety disorder score significantly higher on the SWQ-P than control children (Spence et al., 1999) and the scale can usefully discriminate between children with and without social anxiety disorder at least as well as the other major scales of child social anxiety (Bailey, Chavira, Stein & Stein, 2006). Thus the psychometrics available show the questionnaire to be a reliable and valid measure of social anxiety in children ages 8–17 years old.

For the present research, the SWQ-P was adapted to form the SWAIY. Seven questions of the 10 original SWQ-P items were edited to make them more applicable to children aged four to eight i.e. “Avoids or gets worried about presenting work to the class” was edited to “Avoids or gets worried about putting their hand up or speaking in front of the class (show and tell)”. Alterations to situations were made by first devising potential alternatives and then presenting these alternatives at a research meeting attended by clinical psychologists and researchers from the Child and Adolescent Mental Health Service (CAMHS) Anxiety and Depression in Young people research (ANDY) unit at University of Reading. The final items were selected based on the discussion and feedback that took place within this research meeting and were approved by Professor Sue Spence, author of the SWQ-P. In keeping with the SWQ-P, parents answered the 10 items on a three-point scale (0 = not true; 2 = mostly true). A total score is computed by summing all responses (min = 0, max = 20). Higher scores indicate more social worries. To investigate whether the adaptations successfully presented scenarios that a four to eight year old would encounter an additional question was added asking parents to indicate whether any of the items were not applicable to their child. See Table 3 for the full item list.

2.3. Procedure

Data for this study was collected online as part of the screening process for an experimental study investigating the relationship between cognitive biases and anxiety in a community sample of children ages four to eight years old. Families were recruited through advertisements in magazines and newsletters targeting families and distribution of leaflets and posters to libraries, museums, brownie and scout groups, holidays groups, sports clubs, leisure centres and schools throughout Berkshire. To answer the advert, parents followed a link to a website where they could read the study information sheet. Once they had given informed consent they completed the questionnaires online. Parents answered the SWAIY and, depending on age, the PAS (for parents of children aged four to six years) or the SCAS-P (for parents of children aged seven or eight years). Demographic and contact details were also collected at this stage. Parents had the option to enter a prize draw to win an i-pod when visiting the online questionnaire. Parents were also asked if they were willing to be contacted again. Those who consented (94%) were contacted via email and invited to complete the SWAIY online again up to two weeks later. No other questionnaires were completed at time 2.

2.4. Attrition and missing data

Time 1 data was collected over 11 months between 2014 and 2015.

All parents who completed the measure at Time 1 were invited to complete the questionnaire a second time. As stated, 106 participants completed the questionnaire for a second time. On average the two time points were 13.35 days apart ($SD = 0.01$), ranging from 5 to 31 days. There was a 37% drop out from Time 1 to Time 2; there were no differences between those who completed the questionnaire once or twice in parent gender ($X^2(1) = 0.937$, $p = 0.713$, $\phi = 0.01$), child gender ($X^2(1) = 0.988$, $p = 0.558$, $\phi = 0.01$) or child age ($t(167) = -0.151$, $p = 0.880$, $d = 0.02$). However, parents who answered the SWAIY at Time 1 and Time 2 ($n = 106$, $M = 6.12$, $SD = 4.78$) reported that their child was more anxious than parents who only answered the SWAIY at Time 1 ($n = 60$, $M = 4.60$, $SD = 4.42$), the difference was significant with a small effect (Mann-Whitney U independent t -test, $p = 0.035$, $d = 0.33$).

All participants included in the study (169 at time 1 and 106 at time 2) had full data on the SWAIY but data on additional questionnaires (e.g. PAS/SCAS-P) was missing for twelve of the 169 participants at time 1. The convergent validity analyses requiring these measures were therefore conducted with a reduced sample of 157 (47.8% female, $Mage = 6.27$, $SD = 1.28$).

2.5. Data analysis

Distributions for each of the questionnaires were examined for normality via visual inspections of histograms and boxplots as well as assessment of skewness and kurtosis. If non-normal distributions were identified non-parametric assessments were carried out with these variables. All comments regarding effect sizes are based on Cohen (1988). Data from Time 1 and Time 2 were checked for age and gender differences. Items scored as “not applicable” at each time point were assessed to gather evidence for content validity and to establish whether items should be excluded. Internal consistency and test-retest reliability were investigated via correlation analysis using data from Time 1 and Time 2. To complement the internal consistency measures, data from Time 1 ($n = 169$) was used to examine the factor structure of the SWAIY using exploratory factor analysis (EFA), with confirmatory factor analysis (CFA) carried out on data from Time 2 ($n = 106$). Given the relatively small sample size available for the CFA, the results should be interpreted with some caution, as model fit indices may be liable to type two error when sample size is small (Jackson, 2001). EFA and CFA analyses and internal consistency analyses were carried out on item responses of the SWAIY using maximum likelihood estimation. Given that item responses were categorical, polychoric correlations were used to assess internal consistency as well as for factor analysis (Holgado-Tello, Chacón-Moscoso, Barbero-García, & Vila-Abad, 2009) using R (R Core Team, 2015) packages *n*factors (Raiche, 2010), *polycor* (Fox, 2010), *psych* (Revelle, 2015), *gdata* (Warnes et al., 2015), and *lavaan* (Rosseel, 2012). Polychoric correlations estimate the correlation between items had they been continuous and normally distributed (Holgado-Tello et al., 2009). These correlations can then be utilised within factor analysis with no further need to account for the categorical nature of the items.

Data from Time 1 were used to assess convergent validity with anxiety scores on the PAS or SCAS-P. As different measures were completed depending upon the age of the child, t -scores were calculated for total anxiety and social anxiety based on the published norm data (Nauta et al., 2004; Spence et al., 2001). Convergent validity was then examined by correlating these T -scores with the SWAIY total scores.

3. Results

The total score on the SWAIY at Time 1 was positively skewed ($skewness = 0.84$, $kurtosis = 0.13$, z score skewness = 4.56) and non-

parametric tests were therefore used for analyses including this variable. The other anxiety measures and SWAIY total score at Time 2 were normally distributed, though there was a slight positive skew for total anxiety (*skewness* = 0.649, *kurtosis* = -0.327) and the social anxiety subscale (*skewness* = 0.601, *kurtosis* = 0.371) of the SCAS.

Table 1 shows the descriptive statistics of the SWAIY at Time 1 and Time 2. At Time 1 there was no difference between boys and girls total scores on the SWAIY ($p = 0.121$, $d = 0.45$) at Time 1. At Time 2 there was a significant difference between female and male children ($t(104) = 2.24$, $p = 0.027$, $d = 0.44$) with females scoring higher than males. There were no significant correlations between age and total SWAIY score at Time 1 ($r = -0.102$, $p = 0.187$) or Time 2 ($r = -0.07$, $p = 0.486$).¹

3.1. Content validity

Frequencies of items identified by parents as not applicable to their child can be seen in Table 2. Given the low numbers of items identified and their respective frequencies, no formal analysis on this data was carried out. As Table 2 illustrates there was no consensus or consistency in the items identified as not applicable. Therefore, all items were deemed appropriate for the age group and none were removed. Items identified in Table 2 were considered when conducting the factor analysis in case this informed interpretation of factor loadings.

3.2. Internal consistency and factor analysis

Internal consistency of the SWAIY was excellent at both time points (Time 1 $\alpha = 0.92$, Time 2 $\alpha = 0.92$).

3.2.1. Exploratory factor analysis

Exploratory factor analysis was conducted using Time 1 data. Several tests were carried out to check that the data was appropriate for factor analysis and to ascertain how many factors should be explored. Firstly the Kaiser-Meyer-Olkin measure of sample adequacy (MSA) and Bartlett’s test was carried out to check factor analysis was appropriate. MSA assesses whether the sample for each variable and for the complete model is adequate for assessment by factor analysis by producing a figure between 1 and 0, values close to 1 indicate a good fit for factor analysis. Bartlett’s test assesses the correlation matrix to determine whether the items cluster into factors or represent individual factors. For factor analysis to be appropriate Bartlett’s test should be significant (Field, 2013). In the present case, factor analysis was deemed to be appropriate as the MSA was close to 1 and Bartlett’s test was significant ($MSA = 0.87$, Bartlett’s test $X^2(45) = 1123.669$, $p < 0.001$). The number of factors that should be explored was then determined. The number of factors after which eigenvalues levelled off was assessed via a scree plot. To complement this test Minimum Average Partial criterion (MAP) was used to assess how many common components were found in the data (Ledesma & Valero-mora, 2007). Finally a very simple structure analysis (VSS) was run to assess which number of factors maximises the goodness of fit (Revelle & Rocklin, 1979). The scree plot and MAP criterion were suggestive of a one-factor solution and the VSS analysis also indicated one factor would be optimal ($BIC = 148$, $RMSEA = 0.18$). However a two-factor model had lower RMSEA values and BIC values, indicating a better model fit ($BIC = 85$, $RMSEA = 0.16$) than the one factor model. Given these results both a one factor and two-factor model were explored using a promax rotation.

A one-factor solution accounted for 53% of the variance and factor loadings for all items were sufficient with loadings ranging from 0.63 to 0.81 (See Table 3). While the two factor solution accounted for 60% of

¹ No evidence of moderation by gender or age (4–6.5 yr. olds and 6.5–8 yr. olds) was found in subsequent analyses; therefore these are not reported here.

Table 1
Descriptive Statistics of the total scores on SWAIY at Time 1 and Time 2.

SWAIY	N	Mean	SD	Range
Total T1	169	5.44	4.66	0–20
4 yr. olds	35	5.63	5.10	0–18
5 yr. olds	35	5.91	5.15	0–20
6 yr. olds	42	6.43	4.73	0–17
7yr. olds	35	5.49	4.16	0–18
8 yr. olds	22	3.22	3.12	0–10
Total T2	106	6.58	4.60	0–17
4 yr. olds	22	5.95	4.58	0–16
5 yr. olds	22	7.32	3.98	0–16
6 yr. olds	28	7.25	5.03	0–17
7 yr. olds	22	6.95	4.99	0–17
8 yr. olds	12	4.17	3.56	0–10

Note: T1 = Time 1, T2 = Time 2.

Table 2
Frequencies of items identified as ‘Not Applicable’ at Time 1 and Time 2.

Item	T1	T2
4. Avoids or gets worried about presenting work to the class/about putting their hand up or speaking in front of the class (show & tell)	4	1
5. Avoids or gets worried about attending groups, clubs or after school activities	–	1
7. Avoids or gets worried about talking in front of a group of adults	2	1
8. Avoids or gets worried about going into a shop alone or to buy something or telling staff in a café what they would like to eat/drink	3	4

Note: T1 = Time 1 (N = 169), T2 = Time 2 (N = 106).

the variance, analysis indicated that a Heywood case had occurred. This occurs when one item has a negative variance and a factor loading greater than one. The Heywood case related to item 8 “Avoids or gets worried about going into a shop alone or to buy something or telling staff in a café what they would like to eat/drink” within the first factor and item 1 “Avoids or gets worried about going to parties or play-dates” within the second factor of the two factor solution. This can indicate a number of things including that one item accounts for all the variance within a factor or that there too many factors being fitted to the data. Also, when considering the items contained within each of the two factors there appeared to be no theoretical/conceptual distinction between the two factors. Given this, a varimax rotation which assumes the factors correlated, was also checked however, this did not substantially alter the results. Therefore a one-factor model was investigated within the confirmatory factor analysis using Time 2 data.

3.2.2. Confirmatory factor analysis

To confirm the one-factor structure at Time 1, a confirmatory factor analysis using a structural equation modelling approach was conducted in R using Time 2 SWAIY data. For adequate model fit it has been suggested that CFI and TLI statistics should be close to 0.90 and that RMSEA values close to 0.06 demonstrate a good fit (Hu & Bentler, 1999), although model fit statistics should be taken together when assessing goodness of fit (Jackson, 2001). Confirmatory factor analysis indicated that model fit for a one-factor solution had a CFI and TLI approaching 0.90, but a RMSEA higher than 0.06 ($CFI = 0.87$, $TLI = 0.83$, $RMSEA = 0.12$). Taken together therefore, we judged that the one-factor solution showed reasonable model fit. Analyses indicated that all the items significantly contributed to one latent variable, loadings ranged from 0.53 to 0.76 (See Table 3). These results confirm

Table 3

Factor loading coefficients of items from exploratory and confirmatory factor analysis on 10 items of the SWAIY.

Item	EFA		CFA	
	1 Factor Model	2 Factor Model 1	2	1 Factor Model
1. Avoids or gets worried about going to parties or play-dates	0.63		1.05	0.54
2. Avoids or gets worries about using or speaking on the telephone	0.67	0.41		0.60
3. Avoids or gets worried about meeting new people	0.81		0.45	0.81
4. Avoids or gets worried about presenting work to the class/about putting their hand up or speaking in front of the class (show & tell)	0.70	0.76		0.53
5. Avoids or gets worried about attending groups, clubs or after school activities	0.78		0.78	0.57
6. Avoids or gets worried about approaching groups of kids to ask to join in/play	0.78	0.57		0.71
7. Avoids or gets worried about talking in front of a group of adults	0.80	0.89		0.76
8. Avoids or gets worried about going into a shop alone or to buy something or telling staff in a café what they would like to eat/drink	0.75	1.03		0.76
9. Avoids or gets worried about standing up for him/herself with other kids i.e. when someone takes their toy	0.63	0.50		0.59
10. Avoids or gets worried about entering a room full of people	0.72		0.40	0.66

Note: (EFA) Exploratory factor analysis, (CFA) Confirmatory Factor Analysis. Exploratory factor analysis was carried out with Time 1 data ($N = 169$), factor loadings represent pattern loadings. Confirmatory factor analysis was carried out with Time 2 data ($N = 106$), factor loadings represent standardised factor loadings.

the structure found at Time 1.

3.3. Test re-test reliability

Non-parametric correlations were conducted between SWAIY total scores at Time 1 and Time 2 for 106 children. The average length of time between Time 1 and Time 2 was 13.35 days ($SD = 0.01$). A large positive correlation ($Spearman Rho = 0.87$) was found between scores on the SWAIY at Time 1 and Time 2.

3.4. Convergent validity

Given non-normality of the SWAIY at Time 1 non-parametric correlations were used to assess convergent validity. Mean T-scores for total anxiety and for the social anxiety subscales suggest that, as a whole, the sample had an average level of anxiety ($M_{total} = 55.07$, $SD = 12.71$; $M_{social} = 54.72$, $SD = 13.36$). Total anxiety and social anxiety both showed robust correlations with SWAIY at Time 1 ($r = 0.63$; $r = 0.70$) and Time 2 ($r = 0.64$; $r = 0.87$) respectively, with large effect sizes.

4. Discussion

The aim of this research was to develop a brief parent report measure of social anxiety in young children and to conduct an initial psychometric evaluation of this questionnaire. The psychometric evaluation provides initial evidence that the SWAIY is a reliable and valid measure of social anxiety in children aged between four and eight years old. Very few parents identified any of the items as not applicable to their child, indicating that the ten items were appropriate and relevant to this age group and providing initial evidence of content validity. The internal reliability of the questionnaire was demonstrated through excellent internal consistency at Time 1 and Time 2. The internal structure of the questionnaire was scrutinised using factor analysis and a one-factor solution explaining 53% of the variance was suggested by the exploratory factor analysis using the data collected at Time 1. This one factor solution was confirmed using the data collected at Time 2 with adequate model fit. These results are consistent with the one-factor structure which explained 66% of the variance in the original SWQ-P (Spence, 1995). Findings therefore indicate that the items of the SWAIY

are collectively measuring the same construct, namely social worries and symptoms of social anxiety. The SWAIY showed excellent test-retest reliability when completed by parents two weeks apart. Convergent validity was also assessed and the SWAIY was correlated with the other standardised questionnaires of anxiety in children and their respective social anxiety subscales. As would be anticipated, correlations with the social anxiety subscales were slightly stronger than correlations with the total anxiety scales.

To our knowledge, the SWAIY is the first measure to focus on child social anxiety that has been developed for use with parents of young children. Such a measure will facilitate investigation of the development and stability of social anxiety in younger children, as well as the relationship between social anxiety symptoms and later social and mental health outcomes. Given the strong correlation between the SWAIY and existing measures of child anxiety, one could question the utility of the SWAIY over these measures. The strong correlations confirm the construct validity of the SWAIY reflecting both the SWAIY and the subscales of the standardised measures as assessing the underlying construct of social worries or symptoms of social anxiety. What is crucial is that the SWAIY is a brief, stand-alone measure, requiring parents to complete only 10 items. As a comparison, the PAS is 22 items and its social anxiety subscale was not designed to be a stand-alone measure. Also the SWAIY focuses on observable behaviours in specific social situations whereas the social anxiety subscales of the SCAS-P and the PAS include cognitive symptoms, which might be difficult for parents assess. Given this distinct focus, the SWAIY could be used to complement a standardised measure of anxiety or by itself as a brief measure of social anxiety in young children.

Gender differences in the SWAIY were not found at Time 1 replicating the findings of Spence (1995) with 8–17 year olds using the SWQ-P. There was also little difference between the means of the SWAIY for males and females at Time 2, although this difference was statistically significant with female children reported as having higher social worries scores than male children. These gender differences are consistent with studies of older children (i.e. Spence, 1998) and adolescents (Davidson, Hughes, George, & Blazer, 1993; Garcia-Lopez, Ingles, & Garcia-Fernandez, 2008), though they are not typically found in young children (Spence et al., 2001). Further analyses indicated that reliability and validity were not moderated by gender and that the factor structure of the SWAIY was the same across genders. Having said

this, alongside the difference between genders found at time 2, previous work indicates that factor structure of other anxiety measures, such as the SCAS (Holly, Little, Pina, & Caterino, 2014), may be influenced by gender. Therefore, checking measurement invariance by gender for the SWAIY using a larger sample may be warranted in future research.

Overall, there is strong support for the psychometric properties of the SWAIY as a new brief measure of social anxiety in young children but this conclusion should be considered in light of some considerations. First, the scores for eight year old children were notably lower than the scores for younger children. Given the items were specifically adapted to be appropriate for a younger age group than the original measure (validated for 8–17 year olds) it may be that the SWAIY is a more valid and accurate measure of social worries in children aged 4–7 years than children aged 8 years. Unfortunately, there were not enough eight year olds in this sample to assess factor structure for the eight year olds specifically. With this in mind, it may be prudent to use the original SWQ to assess social worries in 8-year olds until further psychometric evaluation of the SWAIY for older children has been conducted. The second consideration is that the sample was recruited from Berkshire, UK, where approximately 80% of the population are white and a range of ethnic groups are represented in the remaining 20% of the population (Office of National Statistics, 2012), thus analysis of race effects was not feasible with the present data. Given this, we should be cautious about generalising the findings to other populations without further research assessing the psychometric properties of the measure in other samples. It is also noteworthy that the sample was self-selecting; participants were recruited via adverts asking for children to take part in a study on child anxiety and confidence. The description of the study may have attracted parents who were interested in child anxiety possibly because they were concerned about their own child’s anxiety. This may in part explain why those who answered twice reported higher anxiety scores for their children than those who answered once; parents with children with higher anxiety may have been motivated to continue with the study. Thirdly the small sample size available for the CFA may have influenced model fit indices, which approached the criteria for adequate fit. As model fit indices are affected by sample size (Jackson, 2001), future research may wish to reassess the one-factor structure using CFA with a larger sample. This would help to clarify whether the present findings are robust.

While this study provides initial evidence of the validity and reliability of the SWAIY, additional psychometric assessment with a clinical sample would be useful to assess divergent and discriminative validity

further. In particular it would be useful to assess the divergent validity of the SWAIY in relation to clinically diagnosed anxiety disorders to see if it is able to discriminate between social anxiety and other child anxiety disorders. This would be interesting and important given the comorbidity found in childhood anxiety (Waite & Creswell, 2014) and the reliance on parent report of anxiety in the present study. Similarly, evaluating the SWAIY in relation to other measures of anxiety such as teacher-report and observation measures will give further information regarding the utility and psychometric properties of the scale.

5. Conclusions

The results indicate that the SWAIY has robust reliability and validity, providing evidence of construct validity. Our findings replicate those from the validation of the original SWQ-P questionnaire and suggest that the questionnaire can be adapted to measure social worries or symptoms of social anxiety in children aged four to eight years old. Future research using a clinical sample to assess discriminative validity, for example by assessing whether scores on the SWAIY differentiate between a clinically socially anxious sample and a community/non-clinical sample, would provide a more complete investigation of the psychometric properties of the scale. The measure shows promise in providing information about the social worries that children experience in response to specific situations. Thus, the SWAIY may be useful for investigating the stability and development of social anxiety symptoms across early childhood and has the potential to be useful clinically as a screening tool for social anxiety.

Acknowledgements

The research was funded by a SEDTC ESRC studentship (ES/J500148/1) awarded to SR and an ESRC Future Research Leaders Grant (ES/L010119/1) awarded to HD. To comply with the ethical approval granted for this study (ref: 2014-025_HD), supporting data cannot be made openly available. Data was collected with the assistance of postgraduate student Laura Weight and undergraduate student Victoria Milner.

Appendix A

Table A1.

Table A1
Items and response scale of the Social Worries Anxiety Index for Young Children.

	Not True	Sometimes True	Very True	Not Applicable
Avoids or gets worried about going to parties or play-dates	0	1	2	n/a
Avoids or gets worries about using or speaking on the telephone	0	1	2	n/a
Avoids or gets worried about meeting new people	0	1	2	n/a
Avoids or gets worried about presenting work to the class/about putting their hand up or speaking in front of the class (show & tell)	0	1	2	n/a
Avoids or gets worried about attending groups, clubs or after school activities	0	1	2	n/a
Avoids or gets worried about approaching groups of kids to ask to join in/play	0	1	2	n/a
Avoids or gets worried about talking in front of a group of adults	0	1	2	n/a
Avoids or gets worried about going into a shop alone or to buy something or telling staff in a café what they would like to eat/drink	0	1	2	n/a
Avoids or gets worried about standing up for him/herself with other kids i.e. when someone takes their toy	0	1	2	n/a
Avoids or gets worried about entering a room full of people	0	1	2	n/a

References

- Alkozei, A., Cooper, P. J., & Creswell, C. (2014). Emotional reasoning and anxiety sensitivity: associations with social anxiety disorder in childhood. *Journal of Affective Disorders*, 152–154(1), 219–228. <http://dx.doi.org/10.1016/j.jad.2013.09.014>.
- American Psychiatric Association (2013). Diagnostic and statistical manual of mental disorders (5th ed.). Washington D.C. <http://doi.org/10.1176/appi.books.9780890423349>.
- Bailey, K. A., Chavira, D. A., Stein, M. T., & Stein, M. B. (2006). Brief Measures to Screen for Social Phobia in Primary Care Pediatrics. *Journal of Pediatric Psychology*, 31, 512–521. <http://dx.doi.org/10.1093/jpepsy/psj044>.
- Broeren, S., & Muris, P. (2008). Psychometric evaluation of two new parent-rating scales for measuring anxiety symptoms in young Dutch children. *Journal of Anxiety Disorders*, 22, 949–958. <http://dx.doi.org/10.1016/j.janxdis.2007.09.008>.
- Buffer, S. J., Dougherty, L. R., Carlson, G. A., Rose, S., & Klein, D. N. (2012). Psychiatric disorders in preschoolers: continuity from ages 3 to 6. *American Journal of Psychiatry*, 169(11), 1157–1164. <http://dx.doi.org/10.1176/appi.ajp.2012.12020268>.
- Carpenter, K. L. H., Angold, A., Chen, N. K., Copeland, W. E., Gaur, P., Pelphrey, K., & Egger, H. L. (2015). Preschool anxiety disorders predict different patterns of amygdala-prefrontal connectivity at school-age. *PLoS One*, 10(1), 1–24. <http://dx.doi.org/10.1371/journal.pone.0116854>.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences Statistical Power Analysis for the Behavioral Sciences*, 2ndRoutledge<http://dx.doi.org/10.1234/12345678>.
- Comer, J. S., & Kendall, P. C. (2004). A symptom-level examination of parent-child agreement in the diagnosis of anxious youths. *Journal of the American Academy of Child & Adolescent Psychiatry*, 43(7), 878–886. <http://dx.doi.org/10.1097/01.chi.0000125092.35109.c5>.
- Copeland, W. E., Angold, A., Shanahan, L., & Costello, E. J. (2014). Longitudinal patterns of anxiety from childhood to adulthood: the great smoky mountains study. *Journal of the American Academy of Child and Adolescent Psychiatry*, 53(1), 21–33. <http://dx.doi.org/10.1016/j.jaac.2013.09.017>.
- Davidson, J. R., Hughes, D. L., George, L. K., & Blazer, D. G. (1993). The epidemiology of social phobia: findings from the Duke Epidemiological Catchment Area Study. *Psychological Medicine*, 23(3), 709–718. <http://dx.doi.org/10.1017/S0033291700025484>.
- Egger, H. L., & Angold, A. (2006). Common emotional and behavioral disorders in preschool children: presentation, nosology, and epidemiology. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 47(3–4), 313–337. <http://dx.doi.org/10.1111/j.1469-7610.2006.01618.x>.
- Field, A. P. (2013). *Discovering statistics using IBM SPSS statistic*. SAGE Publications Ltd.
- Ford, T., Goodman, R., & Meltzer, H. (2017). The British Child and Adolescent Mental Health Survey 1999: The Prevalence of DSM-IV Disorders. *Journal of the American Academy of Child & Adolescent Psychiatry*, 42(10), 1203–1211. <http://dx.doi.org/10.1097/00004583-200310000-00011>.
- Fox, J. (2010). *Polycor: polychoric and polyserial correlations*.
- García-Lopez, L.-J., Ingles, C. J., & García-Fernández, J. M. (2008). Exploring the relevance of gender and age differences in the assessment of social fears in adolescence. *Social Behavior and Personality: An International Journal*, 36(3), 385–390. <http://dx.doi.org/10.2224/sbp.2008.36.3.385>.
- Ginsburg, G. S., Silverman, W. K., & La Greca, A. M. (1998). Social anxiety in children with anxiety disorders: Relation with social and emotional functioning. *Journal of Abnormal Child Psychology*, 26(3), 175–185. <http://dx.doi.org/10.1023/A:1022668101048>.
- Hitchcock, C. A., Chavira, D. A., & Stein, M. B. (2009). Recent findings in social phobia among children and adolescents. *The Israel Journal of Psychiatry and Related Sciences*, 46, 34–44. <http://doi.org/info:pmcid/PMC2925835>.
- Holgado-Tello, F. P., Chacón-Moscó, S., Barbero-García, I., & Vila-Abad, E. (2009). Polychoric versus Pearson correlations in exploratory and confirmatory factor analysis of ordinal variables. *Quality and Quantity*, 44(1), 153–166. <http://dx.doi.org/10.1007/s11135-008-9190-y>.
- Holly, L. E., Little, M., Pina, A. A., & Caterino, L. C. (2014). Assessment of anxiety symptoms in school children: A cross-sex and ethnic examination. *Journal of Abnormal Child Psychology*, 43(2), 297–309. <http://dx.doi.org/10.1007/s10802-014-9907-4>.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1–55. <http://dx.doi.org/10.1080/10705519909540118>.
- Jackson, D. L. (2001). Sample size and number of parameter estimates in maximum likelihood confirmatory factor analysis: A Monte Carlo investigation. *Structural Equation Modeling: A Multidisciplinary Journal*, 8(2), <http://dx.doi.org/10.1207/S15328007SEM0802>.
- Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry*, 62, 593–602. <http://dx.doi.org/10.1001/archpsyc.62.6.593>.
- Kingery, J. N., Erdley, C. A., Marshall, K. C., Whitaker, K. G., & Reuter, T. R. (2010). Peer experiences of anxious and socially withdrawn youth: An integrative review of the developmental and clinical literature. *Clinical Child and Family Psychology Review*, 13(1), 91–128. <http://dx.doi.org/10.1007/s10567-009-0063-2>.
- Kreiser, N. L., & White, S. W. (2014). Assessment of Social Anxiety in Children and Adolescents With Autism Spectrum Disorder. *Clinical Psychology: Science and Practice*, 21(1), 18–31. <http://dx.doi.org/10.1111/cpsp.12057>.
- Larkins, C. W. (2014). *Los Angeles friendship in children with anxiety disorders: A longitudinal examination*. Los Angeles: University of California.
- Ledesma, R. D., & Valero-mora, P. (2007). Determining the Number of Factors to Retain in EFA: an easy-to-use computer program for carrying out Parallel Analysis, 12(2). Retrieved from <http://pareonline.net/pdf/v12n2.pdf>.
- Morris, T. L., Hirshfeld-Becker, D. R., Henin, A., & Storch, E. A. (2004). Developmentally sensitive assessment of social anxiety. *Cognitive and Behavioral Practice*, 11(1), 13–28. [http://dx.doi.org/10.1016/S1077-7229\(04\)80004-X](http://dx.doi.org/10.1016/S1077-7229(04)80004-X).
- Mychailyszyn, M. P., Mendez, J. L., & Kendall, P. C. (2010). School functioning in youth with and without anxiety disorders: comparisons by diagnosis and comorbidity. *School Psychology Review*, 39(1), 106–121. [Retrieved from] <http://content.ebscohost.com.proxy.antioch.edu/ContentServer.asp?T=P&P=AN&K=50286591&S=R&D=a9h&EbscoContent=dGJyMNHr7ESep7M4v+bwOLCmr0qep7BSr6i4SLCWxWXS&ContentCustomer=dGJyMPGutk+3qbNQuePfgex44D6fIA%5Cnhnt://proxy.antioch.edu/login?url=http://search.ebs>.
- 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, 813–839. [http://dx.doi.org/10.1016/S0005-7967\(03\)00200-6](http://dx.doi.org/10.1016/S0005-7967(03)00200-6).
- Office of National Statistics (2012). Ethnicity and National Identity in England and Wales: 2011. London. Retrieved from <https://www.ons.gov.uk/peoplepopulationandcommunity/culturalidentity/ethnicity/articles/ethnicityandnationalidentityinenglandandwales/2012-12-11#differences-in-ethnicity-across-local-authorities>.
- Paulus, F. W., Backes, A., Sander, C. S., Weber, M., & von Gontard, A. (2015). Anxiety disorders and behavioral inhibition in preschool children: A population-based study. *Child Psychiatry and Human Development*, 46, 150–157. <http://dx.doi.org/10.1007/s10578-014-0460-8>.
- R Core Team (2015). *R: A language and environment for statistical computing*. Vienna, Austria: R Foundation for Statistical Computing.
- Raiche, G. (2010). *nFactors: an R package for parallel analysis and non graphical solutions to the Cattell scree test*.
- Revelle, W., & Rocklin, T. (1979). *Very simple structure: An alternative procedure for estimating the optimal number of interpretable factors*. 403–414.
- Revelle, W. (2015). *psych: Procedures for Personality and Psychological Research*.
- Rossee, Y. (2012). *lavaan: An R Package for Structural Equation Modeling*. *Journal of Statistical Software*, 48(2), 1–36.
- Shamir-Essakow, G., Ungerer, J. A., & Rapee, R. M. (2005). Attachment, Behavioral Inhibition, and Anxiety in Preschool Children. *Journal of Abnormal Child Psychology*, 33(2), 131–143. <http://dx.doi.org/10.1007/s10802-005-1822-2>.
- Silverman, W., & Nelles, M. (1988). The anxiety disorders interview schedule for children. *Journal of the American Academy of Child & Adolescent Psychiatry*, 27(6), 772–778. <http://dx.doi.org/10.1097/00004583-198811000-00019>.
- Slee, P. (1994). Situational and interpersonal correlates of peer victimisation. *Child Psychiatry & Human Development*, 25(2), 97–107. <http://dx.doi.org/10.1007/BF02253289>.
- Spence, S. H., Donovan, C., & Brechman-Toussaint, M. (1999). Social skills, social outcomes, and cognitive features of childhood social phobia. *Journal of Abnormal Psychology*, 108, 211–221. <http://dx.doi.org/10.1037/0021-843X.108.2.211>.
- Spence, S. H., Rapee, R., McDonald, C., & Ingram, M. (2001). The structure of anxiety symptoms among preschoolers. *Behaviour Research and Therapy*, 39(11), 1293–1316. [http://dx.doi.org/10.1016/S0005-7967\(00\)00098-x](http://dx.doi.org/10.1016/S0005-7967(00)00098-x).
- Spence, S. H. (1995). *Social skills training, enhancing social competence with children and adolescents: research and technical support*. Berkshire: NFER-Nelson.
- Spence, S. H. (1998). A measure of anxiety symptoms among children. *Behaviour Research and Therapy*, 36, 545–566. [pii] [http://doi.org/S0005-7967\(98\)00034-5](http://doi.org/S0005-7967(98)00034-5).
- Storch, E. A., Zelman, E., Sweeney, M., Danner, G., & Dove, S. (2002). Overt and relational victimization and psychosocial adjustment in minority preadolescents. *Child Study Journal*, 32(2), 73–80. [Retrieved from] <http://zpz2y2et6f.scholar.serialssolutions.com/?sid=google&unit=EA&aulast=Storch&atitle=Overt+and+relational+victimization+and+psychosocial+adjustment+in+minority+preadolescents&title=Child+study+journal&volume=32&issue=2&date=2002&spage=73&issn=0009-40>.
- Waite, P., & Creswell, C. (2014). Children and adolescents referred for treatment of anxiety disorders: Differences in clinical characteristics. *Journal of Affective Disorders*, 167, 326–332. <http://dx.doi.org/10.1016/j.jad.2014.06.028>.
- Warnes, G., Bolker, B., Gorjanc, G., Grothendieck, G., Korosec, A., Lumley, T., & Rogers, J. (2015). *gdata: Various R Programming Tools for Data Manipulation*.