Journal of Anxiety Disorders 115 (2025) 103072

Contents lists available at ScienceDirect

Journal of Anxiety Disorders

journal homepage: www.elsevier.com/locate/janxdis

The screen for child anxiety related emotional disorders scale: A longitudinal validation study based on Chinese children and adolescents

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ARTICLE INFO

Keywords:
Anxiety
Scale validation
Confirmatory factor analysis (CFA)
Measurement invariance
Chinese children and adolescents

ABSTRACT

As anxiety disorders are common and clinically significant psychiatric disorders in children and adolescents linked to a broad spectrum of psychiatric problems, we need valid assessment instruments of anxiety. The Screen for Child Anxiety Related Emotional Disorders (SCARED) is widely used to assess anxiety symptoms. However, its factor structure remains debated, and its psychometric properties are underexplored in China. This study examined the factor structure of the SCARED and its measurement invariance across gender, age, and time among Chinese students. Specifically, this study used a two-wave longitudinal design, with a six-month interval (Time 1: December 2019–January 2020; Time 2: June 2020–July 2020). Data included 6176 children and adolescents aged 8–19 years (51.6 % boys; mean age = 11.52, *SD* = 1.62) from Sichuan, China. Confirmatory factor analyses supported a five-factor model as the best fit. Measurement invariances across gender, age, and time were established at the configural, metric, scalar, error variance, factor variance, and factor covariance levels, as supported by changes in the comparative fit index (CFI $\leq$ 0.004) and root mean square error of approximation (RMSEA $\leq$ 0.002). Furthermore, structured means modeling analyses showed that girls experienced more anxiety than did boys. Children experienced higher separation anxiety but lower general anxiety and school phobia than did adolescents. Moreover, participants experienced fewer anxiety symptoms at Time 2. Overall, the SCARED was valid and reliable for measuring anxiety symptoms in Chinese children and adolescents, confirming its utility as an objective outcome measure.

1. Introduction

Anxiety refers to an emotion marked by feelings of tension, worrying thoughts, and physical symptoms, such as elevated blood pressure (American Psychological Association, 2023). Anxiety disorders are the most prevalent class of psychiatric disorders during childhood (Rapee et al., 2023). The World Health Organization (2024) reported that 4.4 % of 10–14-year-olds and 5.5 % of 15–19-year-olds suffered from anxiety globally. In mainland China, a recent nationwide epidemiological survey (N = 73,992 students aged 6–16 years) reported that 4.7 % of the participants had an anxiety disorder (Wang et al., 2024). It is important to note that anxiety disorders have a significantly earlier onset age than many other psychiatric disorders, such as depression (Solmi et al., 2022).

Due to the early onset of anxiety, children with anxiety disorders are at risk of poor academic performance, comorbid psychiatric disorders and challenges (e.g., depression, conduct disorder), suicidal behaviors, and substance abuse in adolescence and adulthood (e.g., Benjamin et al., 2013). Given the gravity of the consequences, it is imperative to identify, diagnose, and treat anxiety disorders in the early stages of an individual's life. The first step toward this is investigating the psychometric properties of existing anxiety measurement scales, including their reliability and validity. Further, it is necessary to test their usability among different population samples, including Chinese children and adolescents. Accordingly, this paper examines the psychometric properties of the Screen for Child Anxiety Related Emotional Disorders (SCARED), a tool to measure childhood anxiety developed by Birmaher et al. (1997).

1.1. The screen for child anxiety related emotional disorders (SCARED)

Several questionnaire-based measures have been developed and validated for the early recognition and measurement of anxiety in children, such as the Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1978) and the State-Trait Anxiety Inventory for Children (STAIC; Spielberger, 1973). However, these two

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https://doi.org/10.1016/j.janxdis.2025.103072
Received 3 December 2024; Received in revised form 27 August 2025; Accepted 17 September 2025
Available online 18 September 2025

measurements of childhood anxiety are unable to discriminate consistently between children who display anxiety and those who do not, nor can they discriminate accurately between varying levels of anxiety severity or between children with anxiety and those with other psychiatric disorders (Campbell & Rapee, 1996). In contrast, the SCARED (Birmaher et al., 1997) can reliably distinguish child anxiety disorders from depression or disruptive disorders (Birmaher et al., 1997; Monga et al., 2000). There is evidence supporting that SCARED is an objective tool assessing anxiety symptoms in children and adolescents aged 4–19 years across both self-report and parent-report versions (Crocetti et al., 2009; Runyon et al., 2018; Scoberg et al., 2024).

Developed by Birmaher et al. (1997), the original version of the SCARED consisted of 85 items. The SCARED maps onto anxiety disorder classifications from the Diagnostic and Statistical Manual of Mental Disorders (DSM), with four subscales directly corresponding to DSM-IV categories (American Psychiatric Association, 1994). These include (a) general anxiety: involving persistent and intense anxiety, along with signs of physical tension and heightened alertness; (b) separation anxiety: representing excessive worry and fear over separation; (c) panic/somatic anxiety, which involves intense fear or discomfort (Schmidt et al., 2013) with physical or mental symptoms (e.g., racing heart) and ongoing concerns about recurrences or their effects; and (d) social phobia involving persistent fear and avoidance of social situations. Additionally, Birmaher et al. (1997) included school phobia as an independent fifth dimension due to its clinical significance. Despite some changes in operational definitions of the anxiety disorders in the DSM-5 (American Psychiatric Association, 2013), researchers have still suggested that the SCARED can adequately capture the anxiety disorders in the manual (Chan & Leung, 2015), given the consistency in core diagnostic criteria between DSM-IV and DSM-5 (American Psychiatric Association, 2013). Items that overlapped with depressive symptoms were further removed to yield a 38-item version (Birmaher et al., 1997). However, to better differentiate social anxiety, Birmaher et al. (1999) later added three new items, creating the 41-item SCARED tool. This version uses a three-point rating scale to evaluate the severity of symptoms experienced in the preceding 3 months, with total scores ranging from 0 to 82. High scores reflect more severe levels of anxiety.

First developed in English for use in clinical settings, the SCARED has been translated into various languages, such as Chinese (Su et al., 2008), German (Essau et al., 2002), and Italian (Crocetti et al., 2009), with the translated versions showing robust reliability and validity for evaluating anxiety indicators (Chan & Leung, 2015; Crocetti et al., 2009). Furthermore, the scale has shown high reliability when tested both with typically developing youth and with young people with special educational needs, such as those on the autistic spectrum and those who have intellectual disabilities (Robles-Bello et al., 2020). A meta-analysis showed that the internal consistency of the SCARED subscales was good and varied: 0.71–0.78 for general anxiety, 0.54–0.86 for separation anxiety, 0.70–0.92 for panic/somatic symptoms, 0.69–0.89 for social phobia, and 0.43–0.76 for school phobia (Hale et al., 2011). The Cronbach's α coefficients of these subscales ranged from 0.72 to 0.88 in a study on Hong Kong adolescents (Chan & Leung, 2015). Besides, Su et al. (2008) reported that the test-retest reliability coefficients of the SCARED over a 2-week and a 12-week interval were 0.61 and 0.57, respectively. They also confirmed that the SCARED showed good discriminant and convergent validity (Su et al., 2008). The tool has also shown robust associations with various conduct-related problems among children (Ang, 2020; Su et al., 2008), and its use for identifying school children with anxiety disorders and those with attention difficulties has been deemed appropriate (Su et al., 2008).

However, the factor structure of the SCARED remains a point of debate. On the one hand, the original five-factor structure of the tool (i.e., general anxiety, separation anxiety, panic/somatic anxiety, social phobia, and school phobia) has been validated widely across different countries, such as Brazil (Isolan et al., 2011), Korea (Shin et al., 2020), Saudi Arabia (Arab et al., 2016), and Romania (Robe et al., 2023). Moreover, Su et al. (2008) reported that the five-factor structure of the SCARED was well supported in a study involving mainland Chinese school-aged children. On the other hand, some studies have employed different factor structures. For example, Chan and Leung (2015) used a high-order factor model involving a second-order factor of anxiety and seven first-order factors (i.e., general anxiety, panic/somatic syndromes, social anxiety, school phobia, and three new factors representing different aspects of separation anxiety) among Hong Kong Chinese adolescents. Ang (2020) found that a four-factor structure, which excluded school phobia, outperformed the original five-factor model among Malaysian children and adolescents. In an Italian sample, Scaini et al. (2017) reported a six-factor solution. The use of different factor structures for the SCARED may be linked to cultural differences (Shin et al., 2020). Chinese youths, for instance, reported higher levels of social anxiety than their counterparts in the United States and Spain (Zhou et al., 2008), possibly because social shyness and anxiety are accepted and appreciated in Asian societies (Tang et al., 2022) but viewed differently elsewhere. In collectivistic cultures, which are commonly seen in Asian countries, individuals care about how others think of them; consequently, they may be more likely to experience embarrassment and anxiety in social situations (Koydemir & Essau, 2018). Specifically, within the setting of mainland China, although the reliability and validity of the SCARED's factor structure have been verified (Su et al., 2008), its measurement invariance (MI) has not been examined.

Multiple studies have called for examining the factor validity of the SCARED in a non-Western context using a large and longitudinal sample (e.g., Chan & Leung, 2015; Su et al., 2008). To further support the validity of the instrument among children and adolescents from mainland China, we performed a series of confirmatory factor analyses (CFA), which is a rigorous technique for testing hypothesized measurement structures and establishing construct validity (Brown, 2015). Notably, this method also allows scholars to examine whether a construct is consistently measured across populations and time points, in addition to facilitating comparative analyses between groups without measurement error (e.g., Steenkamp & Baumgartner, 1998; Steenkamp & Maydeu-Olivares, 2015).

1.2. Measurement invariance (MI) of the SCARED

MI examines a psychometric inventory's interpretability by assessing whether different groups interpret the same questionnaire items similarly (van de Schoot et al., 2012). Strong MI aids in the objective assessment of an underlying construct across informants and groups. Most prior studies have tested the replicability of the SCARED between parent and child informants and have reported that the tool exhibited strict MI (e.g., Behrens et al., 2019). However, barring one study (Robe et al., 2023), few investigations have examined MI across gender and age groups. In addition, longitudinal measurement invariance (LMI) can assess the extent to which the same constructs can be captured consistently by an inventory over time (Widaman et al., 2010). Olino et al. (2018) and Rabner et al. (2024) found robust LMIs for most of the SCARED subscales, but the LMI of the overall five-factor structure is less understood. Because evaluating MI is a crucial step that warrants replication in various groups, we find it necessary to assess the stability of the SCARED across changes in gender, age, and time, especially in the context of Chinese culture.

1.3. Gender and age differences in anxiety

According to SCARED-based assessments of gender differences in anxiety symptoms, girls generally tend to display more anxiety than boys (e.g., Bucur et al., 2022; Hale et al., 2011; Isolan et al., 2011). A meta-analysis by Hale and colleagues (2011) reported that girls had higher anxiety levels than boys in four of the SCARED's five main factors (i.e., general anxiety, somatic/panic anxiety, separation phobia, and school phobia), with social anxiety being the only exception. Contrarily,

other studies found that girls also experienced more social anxiety than boys (e.g., Bucur et al., 2022; Chan & Leung, 2015). Similarly, inconsistent findings have been reported in Chinese settings: Chan and Leung (2015) found that girls in Hong Kong scored significantly higher on total anxiety and on all five factors of the SCARED subscales than boys. However, more recent findings based on a large sample of children and adolescents in mainland China have shown that panic disorder, generalized anxiety disorder and agoraphobia are higher among girls than boys (Wang et al., 2024).

In terms of age differences, previous studies have found that SCARED scores decreased with an increase in age (e.g., Bucur et al., 2022; Hale et al., 2011; Isolan et al., 2011; Su et al., 2008). Besides, children were found to have a higher total score on the SCARED measure than adolescents (Bucur et al., 2022; Isolan et al., 2011). Specifically, Wang and colleagues (2024) reported that separation anxiety and specific phobias were observed more commonly in Chinese children than in Chinese adolescents. Similarly, Hale et al. (2011) and Isolan et al. (2011) observed that younger age groups experienced more panic issues and somatic effects than the older age groups. They also noted a decrease in school phobia with an increase in age (Hale et al., 2011; Isolan et al., 2011), suggesting that adolescents are less likely to experience school phobia. However, evidence on social phobia has been mixed. For instance, Isolan and colleagues (2011) indicated that children scored higher on social phobia than adolescents, whereas Bucur et al. (2022) found the reverse to be true. Some studies also found an increase in general anxiety disorder with an increase in age (Hale et al., 2011; Sequeira et al., 2020), with adolescents more likely to experience general anxiety disorder than children. Taking the above information into account, we find that assessing gender and age differences in anxiety disorders can enhance our understanding of not only how anxiety disorders manifest but also how they affect boys versus girls and children versus adolescents.

1.4. The current study

Although the SCARED has been widely used across countries, findings in the Asian context are inconsistent, with some studies supporting the original five-factor model (Su et al., 2008) and others proposing a seven-factor model (Chan & Leung, 2015). More importantly, no previous study has tested the MI of the SCARED across genders, age groups, and multiple time points in the Chinese context. Considering the potential cultural variations in the manifestations of anxiety, it is important to ensure the SCARED measures the same latent constructs in the same way across diverse demographic groups and developmental stages.

To address these gaps, the present study examined the psychometric properties of the SCARED in a large population of Chinese children and adolescents. In particular, we investigated the factor structure using CFA and MI across gender, age, and time and examined the differences between subgroups using structured means modeling (SMM). Specifically, we tested the following hypotheses:

Hypothesis 1. The present findings will support the five-factor structure of the original SCARED and the previous findings in Chinese settings (Su et al., 2008).

Hypothesis 2. The SCARED tool will demonstrate measurement invariance across gender (Hypothesis 2a), age (Hypothesis 2b), and time (Hypothesis 2c).

Hypothesis 3. Girls will report a higher level of anxiety than boys, given the previous findings (Bucur et al., 2022; Chan & Leung, 2015).

Hypothesis 4. Compared to children, adolescents might show lower levels of separation anxiety (Hypothesis 4a) but higher levels of other anxiety disorders (Hypothesis 4b) (Hale et al., 2011; Isolan et al., 2011).

Hypothesis 5. With the resumption of school and general adaptation to COVID-19, anxiety may decline from Time 1 to Time 2.

2. Methods

2.1. Participants

This study was based on data obtained from the Chengdu Positive Child Development (CPCD) panel study, supported by The Hong Kong Polytechnic University and Sichuan University, which assessed positive development and psychosocial and behavioral problems of Chinese youth (Zhao et al., 2022). Ethical approval was obtained from Sichuan University (K2020025). Participants in this study were recruited from five public primary and secondary schools through cluster sampling in Sichuan province, China. This study used the first and second waves of the data collection for the panel study. The first round of data collection was from December 2019 to January 2020, and the second round was from June to July 2020. Given existing empirical evidence (e.g., Moehring et al., 2021; Su et al., 2008) and the restrictions of the COVID-19 pandemic, the six-month interval can be considered neither too short to observe changes in the measured traits nor too long to initiate significant developmental changes, which may happen over longer periods.

Students in Grades 4–9 without any diagnosed mental disorders completed the questionnaires. Students who did not participate at Time 2 and an entire Grade 9 cohort from one school who were absent at follow-up were excluded from the study. Thus, the final sample consisted of 6176 participants (51.6 % boys; mean age = 11.52, $SD = 1.62$) at Time 1, which consisted of 1133 Grade 4 students; 1181 Grade 5 students; 1252 Grade 6 students; 1129 Grade 7 students; 1097 Grade 8 students; and 384 Grade 9 students. At Time 2, 6062 students completed the survey. The attrition rate was less than 3 %. About 99.2 % of participants were Han Chinese ($N = 6098$), while only 50 participants (0.8 %) belonged to other ethnic groups.

2.2. Procedures

All participants completed the surveys voluntarily, and responses were kept confidential and anonymous. Participants were informed about the purpose and content of this study and about the fact that they could withdraw from the study at any time. Additionally, they were told that there were no right or wrong answers and that their responses would not affect their academic grades. Before the start of data collection, we obtained ethical approval from the institutional review board of the university and the participating schools, and we secured parental permission. Signed informed consent was also obtained from all participants. Under the supervision of trained research assistants, the participants completed a paper-and-pencil self-report questionnaire in their own classrooms. All the information provided by the participants was treated with strict confidentiality. On average, the participants spent approximately 30 min completing the questionnaire.

2.3. Measurements

The CPCD panel study covered multiple measures, including the SCARED. The SCARED is a self-report measure with 41 items developed to identify anxiety disorders among children aged 9–18 years (Birmaher et al., 1999; Su et al., 2008). The SCARED was translated into Chinese by researchers proficient in both English and Chinese. The 41 items are distributed unevenly across five subscales: (1) panic/somatic anxiety (13 items, e.g., “When I get frightened, I feel like passing out”), (2) general anxiety (nine items, e.g., “People tell me that I worry too much”), (3) separation anxiety (eight items, e.g., “I have nightmares about something bad happening to my parents”), (4) social phobia (seven items, e.g., “I feel nervous with people I don’t know well”), and (5) school phobia (four items, e.g., “I get headaches when I am at school”). The participants evaluated the severity of their anxiety symptoms on a three-point Likert scale, ranging from 0 (*not true* or *hardly ever true*) to 2 (*true* or *often true*), based on their experiences in the

preceding three months.

In the current study, the SCARED scale showed good internal consistency, with acceptable Cronbach's αs for all subscales at Time 1 (0.885 for panic/somatic anxiety, 0.862 for general anxiety, 0.764 for separation anxiety, 0.837 for social phobia, and 0.685 for school phobia) and Time 2 (0.907 for panic/somatic anxiety, 0.887 for general anxiety, 0.784 for separation anxiety, 0.866 for social phobia, and 0.731 for school phobia).

2.4. Data analysis plan

Descriptive analyses, including mean values and standard deviations (SDs) for the total scale and the five subscales, were calculated using SPSS 29.0. Internal associations of the five subscales in the two waves were examined using Pearson's correlation analysis. To investigate the factor structure of the SCARED, confirmatory factor analyses (CFAs) were performed using Mplus 8.8 (Muthén & Muthén, 1998–2017). Weighted least squares mean and variance-adjusted (WLSMV) estimation was used. Given that multiple competing factor models have been tested in Asian settings previously (Ang, 2020; Chan & Leung, 2015; Su et al., 2008), this study aimed to test the following models: (a) a null model, (b) a one-factor model, (c) a hypothesized five-factor model in which the factors were correlated, and (d) a second-order general factor model with seven first-order factors proposed by Chan and Leung (2015). As recommended by Enders and Bandalos (2001), we adopted an unbiased method—full information maximum likelihood estimate procedure—to handle missing data. Multiple fit indices, including the comparative fit index (CFI), the Tucker–Lewis index (TLI), and the root mean square error of approximation (RMSEA), were used to evaluate the goodness-of-fit of the models. In line with the recommendations of Hair et al. (2019), we used the following benchmarks for acceptable model fit when the number of samples is more than 250 and the observed variables are more than 30: CFI $>$ 0.92, TLI $>$ 0.92, and RMSEA $<$ 0.07.

After identifying the best-fit factor model, we investigated the MI of the SCARED across gender (i.e., boys and girls), two age groups (i.e., children and adolescents), and two time points (Times 1 and 2) using weighted least squares (WLS) when the items of the survey were ordered categorically. We also conducted polychoric correlations, with the results performing well even when the sample size was larger than 1000 (Flora & Curran, 2004). In line with the recommendations of Vandenberg and Lance (2000), we carried out multiple-group confirmatory factor analyses (MGCFAs) to examine invariance at the configural, metric, scalar, error variance, factor variance, and factor covariance levels. Instead of using the change in chi-square (Δx^2), due to its sensitivity to sample size, we used absolute changes in CFI (ΔCFI $<$ 0.01) (Cheung & Rensvold, 2002) and RMSEA (ΔRMSEA $<$ 0.015) (Chen, 2007) as acceptable indicators of invariance.

Further, we used SMM to investigate the differences among the subgroups by fixing the latent factor mean of the reference group to zero and freely estimating the factor values for the additional groups (Müller & Schäfer, 2017). Boys, primary school students (children) and the Time 1 group were chosen as the reference groups. The latent means comparison was based on the critical ratio (CR) index (i.e., the parameter estimate divided by its standard error), a z-statistic that tests whether the estimate is statistically different from zero. The null hypothesis that the estimate is equal to zero can only be rejected if the test statistic exceeds $\pm$ 1.96. Further, positive CR values imply that the underlying mean of the group being compared is higher than that of the reference group (Tsaousis & Kazi, 2013).

3. Results

Table 1 shows the means, SDs, and Pearson correlations for the SCARED subscales. As can be seen in Table 1, all the subscales were significantly correlated ($p < .001$).

3.1. Factor structure of the SCARED

Of the goodness-of-model fit statistics presented in Table 2, the hypothesized five-factor model showed the best fit at Time 1 ($x^2(769) = 11{,}867$, CFI = 0.936, TLI = 0.932, RMSEA = 0.048, 90 % *CI* [0.048, 0.049]) and at Time 2 ($x^2(769) = 12{,}467$, CFI = 0.945, TLI = 0.941, RMSEA = 0.050, 90 % *CI* [0.049, 0.051]). The factor loadings of the best-fit five-factor models are given in the Appendix. The factor loadings for the panic/somatic anxiety dimension ranged from 0.63 to 0.82 at Time 1 and from 0.69 to 0.86 at Time 2. For the general anxiety dimension, the loadings ranged from 0.68 to 0.82 at Time 1 and from 0.74 to 0.84 at Time 2. For the separation anxiety dimension, the loadings ranged from 0.55 to 0.79 at Time 1 and from 0.57 to 0.85 at Time 2. For the social phobia dimension, the loadings ranged from 0.64 to 0.82 at Time 1 and from 0.69 to 0.86 at Time 2. For the school phobia dimension, the loadings ranged from 0.69 to 0.83 at Time 1 and from 0.73 to 0.87 at Time 2. These findings supported Hypothesis 1.

3.2. Gender invariance

Before conducting the tests of gender invariance, we analyzed the five-factor model separately among boys and girls and at Times 1 and 2 (see Table 3). For the male group, the baseline model showed good model fit at Time 1 ($x^2(769) = 5600$, CFI = 0.933, TLI = 0.929, RMSEA = 0.044, 90 % *CI* [0.043, 0.045]) and at Time 2 ($x^2(769) = 5734$, CFI = 0.945, TLI = 0.941, RMSEA = 0.045, 90 % *CI* [0.044, 0.047]). Similarly, for the female group, a good model fit was also obtained at Time 1 ($x^2(769) = 6395$, CFI = 0.942, TLI = 0.939, RMSEA = 0.049, 90 % *CI* [0.048, 0.051]) as well as at Time 2 ($x^2(769) = 6785$, CFI = 0.948, TLI = 0.945, RMSEA = 0.052, 90 % *CI* [0.050, 0.053]). Thus, both gender

Table 1
Means, *SD*s, and Pearson correlations for the SCARED subscale.

	1	2	3	4	5	6	7	8	9	10	11	12
1. SOM_T1	1											
2. GEN_T1	.80*	1										
3. SEP_T1	.70*	.69*	1									
4. SOC_T1	.55*	.63*	.55*	1								
5. SCH_T1	.62*	.61*	.51*	.42*	1							
6.Total_T1	.91*	.91*	.83*	.77*	.70*	1						
7.SOM_T2	.50*	.46*	.39*	.31*	.36*	.49*	1					
8. GEN T2	.46*	.54*	.40*	.37*	.37*	.52*	.82*	1				
9. SEP T2	.42*	.41*	.48*	.32*	.30*	.47*	.73*	.72*	1			
10. SOC T2	.32*	.39*	.31*	.53*	.24*	.44*	.57*	.65*	.57*	1		
11. SCH T2	.36*	.38*	.29*	.24*	.45*	.40*	.65*	.64*	.57*	.44*	1	
12.Total_T2	.50*	.52*	.44*	.43*	.39*	.55*	.92*	.92*	.85*	.78*	.72*	1
Mean	0.34	0.43	0.44	0.63	0.32	0.43	0.31	0.40	0.37	0.60	0.29	0.39
SD	0.39	0.45	0.41	0.52	0.40	0.36	0.40	0.46	0.40	0.54	0.41	0.38

Note. SOM = Panic/somatic; GEN = General anxiety; SEP = Separation anxiety; SOC = Social phobia; SCH = School phobia; T1 = Time 1; T2 = Time 2. *$p < .001$

Table 2
Confirmatory factor analysis (CFA) of the SCARED Scale at Time 1 and Time 2.

	Models	*χ2*	*df*	CFI	TLI	RMSEA (90 % CI)	SRMR
Time 1	Null	173822*	820	0.000	0.000	0.185 (0.184–0.186)	0.422
	One-factor	23217*	779	0.870	0.863	0.068 (0.068–0.069)	0.065
	Five-factor	11867*	769	0.936	0.932	0.048 (0.048–0.049)	0.047
	A second-order general factor with seven first-order factors	41128*	773	0.767	0.753	0.092(0.091–0.093)	0.091
Time 2	Null	211890*	820	0.000	0.000	0.206 (0.205–0.207)	0.480
	One-factor	25855*	779	0.881	0.875	0.073 (0.072–0.074)	0.067
	Five-factor	12467*	769	0.945	0.941	0.050 (0.049–0.051)	0.047
	A second-order general factor with seven first-order factors	53228*	773	0.751	0.736	0.106 (0.105–0.107)	0.102

Note. CFI = comparative fit index; TLI = Tucker–Lewis index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual. *$p < .001$.

Table 3
Testing for gender invariance: Results of the five-factor model of SCARED Scale at Time 1 and Time 2.

	Overall fit indices								
Models	*χ2*	*df*	CFI		TLI	RMSEA (90 % CI)			
T1 Male	5600*	769	0.933		0.929	0.044 (0.043–0.045)			
T1 Female	6395*	769	0.942		0.939	0.049 (0.048–0.051)			
T2 Male	5734*	769	0.945		0.941	0.045 (0.044–0.047)			
T2 Female	6785*	769	0.948		0.945	0.052 (0.050–0.053)			
	Overall fit indices					Comparative fit indices			
Models	*χ2*	*df*	CFI	TLI	RMSEA (90 % CI)	Comparison	ΔCFI	ΔTLI	Δ RMSEA
T1 Model 1	7189*	1538	0.941	0.937	0.034 (0.034–0.035)				
T1 Model 2	7505*	1574	0.938	0.936	0.035 (0.034–0.036)	M2 VS. M1	−0.003	−0.001	0.001
T1 Model 3	7831*	1610	0.935	0.934	0.035 (0.035–0.036)	M3 VS. M2	−0.003	−0.002	0.000
T1 Model 4	8210*	1651	0.932	0.932	0.036 (0.035–0.037)	M4 VS. M3	−0.003	−0.002	0.001
T1 Model 5	8381*	1656	0.930	0.931	0.036 (0.035–0.037)	M5 VS. M4	−0.002	−0.001	0.000
T1 Model 6	8489*	1666	0.929	0.930	0.036 (0.036–0.037)	M6 VS. M5	−0.001	−0.001	0.000
T2 Model 1	6298*	1538	0.968	0.966	0.032 (0.031–0.033)				
T2 Model 2	6709*	1574	0.966	0.965	0.033 (0.032–0.034)	M2 VS. M1	−0.002	−0.001	0.001
T2 Model 3	6960*	1610	0.965	0.964	0.033 (0.032–0.034)	M3 VS. M2	−0.001	−0.001	0.000
T2 Model 4	7314*	1651	0.963	0.963	0.034 (0.033–0.034)	M4 VS. M3	−0.002	−0.001	0.001
T2 Model 5	7438*	1656	0.962	0.962	0.034 (0.033–0.035)	M5 VS. M4	−0.001	−0.001	0.000
T2 Model 6	7476*	1666	0.962	0.962	0.034 (0.033–0.035)	M6 VS. M5	0.000	0.000	0.000

Note. T1: Time 1; T2: Time 2; Model 1: configural invariance; Model 2: metric invariance; Model 3: scalar invariance. Model 4: error variance invariance; Model 5: factor variance invariance; Model 6: factor covariance invariance; CFI = comparative fit index; TLI = Tucker–Lewis index; RMSEA = root mean square error of approximation. *$p < .001$.

subgroups showed good model fit for the baseline five-factor model at Times 1 and 2.

Table 3 presents the results of gender invariance at Times 1 and 2. The configural invariance model was established without any constraints at Time 1 ($x^2(1538) = 7189$, CFI = 0.941, TLI = 0.937, RMSEA = 0.034, 90 % *CI* [0.034, 0.035]) and at Time 2 ($x^2(1538) = 6298$, CFI

Table 4
Testing for age invariance: Results of the five-factor model of SCARED Scale at Time 1 and Time 2.

	Overall fit indices								
Models	*χ2*	*df*	CFI		TLI	RMSEA (90 % CI)			
T1 Children	6499*	769	0.936		0.932	0.046 (0.045–0.047)			
T1 Adolescents	5489*	769	0.945		0.941	0.048 (0.047–0.050)			
T2 Children	6499*	769	0.950		0.947	0.046 (0.045–0.047)			
T2 Adolescents	6224*	769	0.943		0.939	0.053 (0.052–0.054)			
	Overall fit indices					Comparative fit indices			
Models	*χ2*	*df*	CFI	TLI	RMSEA (90 % CI)	Comparison	ΔCFI	ΔTLI	Δ RMSEA
T1 Model 1	6846*	1538	0.948	0.945	0.033 (0.033–0.034)				
T1 Model 2	7197*	1574	0.945	0.943	0.034 (0.033–0.035)	M2 VS. M1	−0.003	−0.002	0.001
T1 Model 3	7449*	1610	0.943	0.942	0.034 (0.033–0.035)	M3 VS. M2	−0.002	−0.001	0.000
T1 Model 4	7963*	1651	0.939	0.939	0.035 (0.034–0.036)	M4 VS. M3	−0.004	−0.003	0.001
T1 Model 5	8295*	1656	0.935	0.936	0.036 (0.035–0.037)	M5 VS. M4	−0.004	−0.003	0.001
T1 Model 6	8315*	1666	0.935	0.936	0.036 (0.035–0.037)	M6 VS. M5	0.000	0.000	0.000
T2 Model 1	6487*	1538	0.969	0.967	0.033 (0.032–0.033)				
T2 Model 2	6759*	1574	0.968	0.967	0.033 (0.032–0.034)	M2 VS. M1	−0.001	0.000	0.000
T2 Model 3	6997*	1610	0.967	0.966	0.033 (0.032–0.034)	M3 VS. M2	−0.001	−0.001	0.000
T2 Model 4	7663*	1651	0.963	0.963	0.035 (0.034–0.035)	M4 VS. M3	−0.004	−0.003	0.002
T2 Model 5	7777*	1656	0.962	0.962	0.035 (0.034–0.036)	M5 VS. M4	−0.001	−0.001	0.000
T2 Model 6	7805*	1666	0.962	0.963	0.035 (0.034–0.036)	M6 VS. M5	0.000	0.001	0.000

Note. T1: Time 1; T2: Time 2; Model 1: configural invariance; Model 2: metric invariance; Model 3: scalar invariance. Model 4: error variance invariance; Model 5: factor variance invariance; Model 6: factor covariance invariance; CFI = comparative fit index; TLI = Tucker–Lewis index; RMSEA = root mean square error of approximation. *$p < .001$.

= 0.968, TLI = 0.966, RMSEA = 0.032, 90 % *CI* [0.031, 0.033]). As a result, the restrictive invariance models across genders were successively tested, with absolute changes in CFI ≤ 0.003 and RMSEA ≤ 0.001 in the two waves, indicating invariance of the SCARED based on the criteria of ΔCFI ≤ 0.01 and ΔRMSEA ≤ 0.015 (Chen, 2007; Cheung & Rensvold, 2002). The factor covariance invariance model showed a good model fit at Time 1 (x^2(1666) = 8489, CFI = 0.929, TLI = 0.930, RMSEA = 0.036, 90 % *CI* [0.036, 0.037]) and at Time 2 (x^2(1666) = 7476, CFI = 0.962, TLI = 0.962, RMSEA = 0.034, 90 % *CI* [0.033, 0.035]). These findings supported Hypothesis 2a.

3.3. Age invariance

Before we tested age invariance, we analyzed the five-factor model separately across primary (children) and secondary (adolescent) students at Times 1 and 2 (see Table 4). For the primary school student group, a good fit with the five-factor model was obtained at Time 1 (x^2(769) = 6499, CFI = 0.936, TLI = 0.932, RMSEA = 0.046, 90 % *CI* [0.045, 0.047]) and at Time 2 (x^2(769) = 6499, CFI = 0.950, TLI = 0.947, RMSEA = 0.046, 90 % *CI* [0.045, 0.047]). Similarly, for the secondary school student group, a good model fit with the five-factor model was obtained at Time 1 (x^2(769) = 5489, CFI = 0.945, TLI = 0.941, RMSEA = 0.048, 90 % *CI* [0.047, 0.050]) as well as at Time 2 (x^2(769) = 6224, CFI = 0.943, TLI = 0.939, RMSEA = 0.053, 90 % *CI* [0.052, 0.054]). Thus, both age-based subgroups showed good model fit for the baseline version of the five-factor model at Times 1 and 2.

Table 4 presents the results of age invariance at Times 1 and 2. The configural invariance model was established without any constraints at Time 1 (x^2(1538) = 6846, CFI = 0.948, TLI = 0.945, RMSEA = 0.033, 90 % *CI* [0.033, 0.034]) and at Time 2 (x^2(1538) = 6487, CFI = 0.969, TLI = 0.967, RMSEA = 0.033, 90 % *CI* [0.032, 0.033]). As a result, the restrictive invariance models across age groups were successively tested, with absolute changes in CFI ≤ 0.004 and RMSEA ≤ 0.002 across both waves. In line with the recommendations of Cheung and Rensvold (2002) and Chen (2007), values of ΔCFI ≤ 0.01 and ΔRMSEA ≤ 0.015 were considered acceptable. The factor covariance invariance model showed good model fit at Time 1 (x^2(1666) = 8315, CFI = 0.935, TLI = 0.936, RMSEA = 0.036, 90 % *CI* [0.035, 0.037]) and at Time 2 (x^2(1666) = 7805, CFI = 0.962, TLI = 0.963, RMSEA = 0.035, 90 % *CI* [0.034, 0.036]). The findings supported Hypothesis 2b.

3.4. Longitudinal measurement invariance (LMI)

Table 5 presents the results of the LMI for the SCARED. The configural invariance model was established without any constraints, and the results were as follows: x^2(3153) = 22,028, CFI = 0.961, TLI = 0.959, RMSEA = 0.031, 90 % *CI* [0.031, 0.032]. As a result, the restrictive invariance models across time were tested successively, with all changes in CFI ≤ 0.002 and RMSEA ≤ 0.001 across the two waves. Thus, the invariance of the SCARED satisfied the criteria of ΔCFI ≤ 0.01 and ΔRMSEA ≤ 0.015 (Chen, 2007; Cheung & Rensvold, 2002). The factor covariance invariance model showed good model fit (x^2(3281) = 24, 960, CFI = 0.956, TLI = 0.955, RMSEA = 0.033, 90 % *CI* [0.032, 0.033]). These findings supported Hypothesis 2c.

3.5. Gender differences

With the factor means of the boys group fixed at 0, the factor means in the girls group reflected the mean differences between the two groups. Girls experienced higher panic/somatic anxiety (CR = 7.919, $p < .001$), general anxiety (CR = 8.975, $p < .001$), separation anxiety (CR = 6.841, $p < .001$), social phobia (CR = 8.522, $p < .001$), and school phobia (CR = 2.903, $p = .004$) than boys at Time 1. Similarly, girls experienced higher panic/somatic anxiety (CR = 9.530, $p < .001$), general anxiety (CR = 10.620, $p < .001$), separation anxiety (CR = 11.288, $p < .001$), social phobia (CR = 14.013, $p < .001$), and school phobia (CR = 8.782, $p < .001$) than boys at Time 2. These findings supported Hypothesis 3.

3.6. Age differences

Results showed that primary school students experienced higher separation anxiety (Time 1: CR = −2.920, $p = .004$; Time 2: CR = −2.012, $p = .044$) and lower general anxiety (Time 1: CR = 4.205, $p < .001$; Time 2: CR = 3.287, $p = .001$) and school phobia (Time 1: CR = 6.658, $p < .001$; Time 2: CR = 6.160, $p < .001$) than secondary school students at Times 1 and 2. Although primary school students experienced lower social phobia (CR = 3.016, $p = .003$) than secondary school students at Time 1, no significant difference was found at Time 2 (CR = 1.632, $p = .103$). Further, no difference was found in panic/somatic anxiety between the two groups at Times 1 (CR = 1.321, $p = .186$) or 2 (CR = 0.991, $p = .322$). The findings offered partial support for Hypotheses 4a and 4b.

3.7. Time differences

Because the factor means of Time 1 were fixed at 0, the factor means in Time 2 indicated the mean differences between the two groups. At Time 2, students had lower scores for panic/somatic anxiety (CR = −11.016, $p < .001$), general anxiety (CR = −9.495, $p < .001$), separation anxiety (CR = −18.290, $p < .001$), social phobia (CR = −8.782, $p < .001$), and school phobia (CR = −7.063, $p < .001$) than they did in Time 1. The findings supported Hypothesis 5.

4. Discussion

With the rising prevalence of anxiety among Chinese children and adolescents (Chai et al., 2021; Dong et al., 2025), the need for valid and reliable anxiety assessment tools becomes more urgent, especially given the strong association between anxiety and negative outcomes, such as depression, conduct problems, and suicidal behaviors. The SCARED is a widely used assessment tool for measuring a range of anxiety disorders and their symptoms. Based on a relatively large sample of children and adolescents in mainland China, the current investigation supports the

Table 5
Testing for the longitudinal invariance of the SCARED scale.

	Overall fit indices					Comparative fit indices			
Models	*χ2*	*df*	CFI	TLI	RMSEA (90 % CI)	Comparison	ΔCFI	ΔTLI	Δ RMSEA
Model 1	22028*	3153	0.961	0.959	0.031 (0.031–0.032)				
Model 2	22819*	3189	0.960	0.958	0.032 (0.031–0.032)	M2 VS. M1	−0.001	−0.001	0.001
Model 3	23660*	3225	0.958	0.957	0.032 (0.032–0.032)	M3 VS. M2	−0.002	−0.001	0.000
Model 4	24629*	3266	0.956	0.955	0.033 (0.032–0.033)	M4 VS. M3	−0.002	−0.002	0.001
Model 5	24840*	3271	0.956	0.955	0.033 (0.032–0.033)	M5 VS. M4	0.000	0.000	0.000
Model 6	24960*	3281	0.956	0.955	0.033 (0.032–0.033)	M6 VS. M5	0.000	0.000	0.000

Note. Model 1: configural invariance; Model 2: metric invariance; Model 3: scalar invariance. Model 4: error variance invariance; Model 5: factor variance invariance; Model 6: factor covariance invariance; CFI = comparative fit index; TLI = Tucker–Lewis index; RMSEA = root mean square error of approximation. *$p < .001$.

psychometric properties of the SCARED. The findings reveal that the Chinese version of the SCARED used in this study exhibits a structure similar to that of the original and shows good MI across gender, age, and time. Overall, we find that the SCARED is a promising tool for assessing anxiety disorders in Chinese children and adolescents.

4.1. Factor structure

In agreement with previous studies (e.g., Robe et al., 2023; Shin et al., 2020; Su et al., 2008), this study supports the original five-factor structure of the SCARED within a large sample of Chinese children and adolescents (Hypothesis 1). However, earlier studies have found that although the five-factor structure was generally replicated in Asian samples, several items failed to remain consistent with those in the original version (Shin et al., 2020; Su et al., 2008). Su et al. (2008) explained that differences in communication methods, cultural factors, and sample compositions may contribute to the varied manifestations of anxiety disorders between Western and Asian cultures. Interestingly, in this study, all the items included under the five anxiety factors in Western settings were validated. The first possible explanation is that, owing to globalization, urbanization, and the shrinking of cultural disparities, young people in China now have more opportunities to assimilate Western culture, especially through social media and digital networks. Consequently, young people in China tend to express personal concerns and communicate with others in a more direct and open way, which aligns more closely with Western expressions of anxiety. The second explanation is that the enhanced generalizability of this study lends more support to the original five-factor model.

4.2. Gender invariance and gender differences in anxiety levels

After identifying the five-factor model of the SCARED, we conducted tests for MI through MGCFAs. The MI of the SCARED was tested among a large sample of Chinese boys and girls, and consistent with previous empirical findings (Robe et al., 2023), our results showed that the SCARED five-factor model was invariant across genders (i.e., supporting Hypothesis 2a). This suggests that the structure and/or meaning of the SCARED is highly similar for boys and girls in China.

A gender-based comparison of the latent factor means showed that girls experienced higher levels of panic/somatic anxiety, general anxiety, separation anxiety, social phobia, and school phobia than boys did, which echoes the findings of previous studies (Bucur et al., 2022; Robe et al., 2023; Su et al., 2008) and supports Hypothesis 3. Specifically, anxiety symptoms are found to be more prevalent and more severe in girls (e.g., Voltas et al., 2017), and girls are more likely to display more fear than boys across a range of objects and situations (Fredrikson et al., 1996). A plausible explanation for the higher prevalence of anxiety symptoms in girls could be the differences in temperament or personality traits between genders. Indeed, it has been shown that the personality trait of neuroticism is significantly associated with anxiety in girls (Derdikman-Eiron et al., 2011; Voltas et al., 2017). Moreover, the prevailing stereotypes of evolutionary sex differences in Asian cultural contexts dictate that girls should strive to be sensitive, emotional, and gentle, whereas boys should embody toughness and courage (Ang, 2020). Consequently, boys may not be inclined to openly express their vulnerable emotions and may feel compelled to uphold a facade of stoicism when responding to assessments. This gender pattern warrants targeted attention in clinical and educational settings. Professionals and educators should adopt gender-sensitive screening protocols and accordingly develop intervention programs. Apart from addressing the vulnerability to anxiety symptoms among girls, programs should be sensitive to the possibility that boys may report a lower level of anxiety because of gender stereotypes.

4.3. Age invariance and age differences in anxiety levels

This study offers added support to the finding that the SCARED produces full MI across different age groups, which indicates that the SCARED scores are not influenced by the age of the respondents (supporting Hypothesis 2b) and that the tool is applicable to both children (senior primary school students) and adolescents (junior secondary school students) in the Chinese context. This finding aligns with that of previous studies (Behrens et al., 2019; Robe et al., 2023). Further, we found that children tended to experience greater separation anxiety than adolescents, which is also consistent with previous findings (e.g., Cummings et al., 2014; Wang et al., 2024). A nationwide epidemiological survey of mental health conducted by Wang and colleagues (2024) reported that separation anxiety was more prevalent in younger children aged from 7 to 10 years. This may be because children in this age group are typically separated from their parents and begin to attend school.

Unlike the findings reported previously, we found that the prevalence of other anxiety disorders increased with age. Specifically, adolescents were more likely than children to encounter higher levels of social anxiety. Xin and colleagues (2022) reported in a cross-temporal meta-analysis study that Chinese juveniles tend to exhibit significantly increasing levels of social anxiety year on year. Increased self-consciousness and social cognition make adolescents focus more on social judgments from others, thus increasing their susceptibility to social anxiety (e.g., Westenberg et al., 2004). Besides, the rise of family economic pressure, the decline of support from the family, interpersonal pressures, and the impact of negative emotions directed at them by parents, teachers, and peers together expose Chinese youths to a high risk of reduced psychological security and poor mental health, thus leading to the development of social anxiety (Xin et al., 2022).

In line with previous studies (e.g., Isolan et al., 2011; Sequeira et al., 2020), this study found an increase in general anxiety among adolescents. Adolescents generally have increased emotional variability, which is related to generalized anxiety symptoms (Maciejewski et al., 2014). Prospective research indicates a late onset of general anxiety disorders in adolescence (Rhebergen et al., 2017). Yu et al. (2018) also found that older adolescents were more likely to be identified as cohorts characterized by predominant generalized and social anxiety or somatization anxiety. Additionally, schools can be a prime environment for triggering anxiety in students (Green et al., 2016). Considering the perceived pressure associated with more schoolwork and the expectations of high academic performance in higher grades, older students are more likely to experience school phobia than younger students. These findings support Hypothesis 4.

Moreover, they highlight the significance of age-appropriate interventions. For example, schools can consider formulating specialized curricula that help younger students positively cope with separation-related anxiety or fears, learn emotional regulation skills, and boost their independence. Adolescents, on the other hand, should be taught to enhance their social competence, foster a balanced mindset for dealing with academic success and setbacks, and adopt effective stress management techniques and problem-solving abilities.

4.4. Longitudinal measurement invariance and time difference in anxiety

Our study also adds to the evidence that a five-factor model of the SCARED is invariant over time in the Chinese context. In contrast to other studies on the LMI of the SCARED (Olino et al., 2018; Rabner et al., 2024), which often focused on a specific subscale, this study examined the overall structure of the scale. Our study provides more comprehensive insights into the temporal stability of the scale, contributing to the relatively limited literature on LMI in Chinese psychosocial assessments. These findings have important implications for the use of SCARED in long-term studies on anxiety among Chinese children and adolescents, which supports its utility as a stable measurement tool (Hypothesis 2c).

The results of this study revealed a decline in anxiety levels across panic/somatic anxiety, general anxiety, separation anxiety, social phobia, and school phobia over time, which supports Hypothesis 5. Some previous studies (e.g., Liu et al., 2021) have also reported that anxiety levels decreased among children and adolescents after the COVID-19 pandemic lockdown. One possible explanation for this trend could be the psychological impacts of COVID-19. Data collected at Time 1 (December 2019 to January 2020) reflected a period when youths in China were adapting to the initial outbreak of the pandemic. This was marked by drastic lifestyle changes, including mask-wearing, suspension of school attendance, social distancing, and sudden lockdowns. Compared to other age groups, these disruptions imposed greater challenges on children and adolescents, including anxiety and panic, psychological suffering, and deprivation of school and family support (e.g., Liu et al., 2021). By Time 2 (June and July 2020), individuals may have adapted to these ongoing changes or challenges and developed resilience to the impacts of the pandemic (PeConga et al., 2020), which in turn reduced their anxiety levels. Even so, the psychological aftermath of the COVID-19 pandemic remains a severe public health concern that requires sustained attention (e.g., Li et al., 2023). Public awareness campaigns through media platforms and community support systems could provide people with psychological resources, help them establish adaptive coping strategies, and enhance their confidence in facing unprecedented events.

4.5. Limitations and implications

This study has several limitations, the first of which is the recruitment of the sample. Participants in this study were from a single province of China, and most of them belonged to the same ethnicity. The homogeneity of the sample limits its generalizability to other populations in China. Further, the data for this study were collected during the COVID-19 pandemic, which may have influenced the participants' anxiety levels. This is another reason for exercising caution when generalizing these findings to other periods or contexts. Another limitation is that our study only assessed the SCARED's reliability, factorial structural validity, and MI across gender, age, and time. Further analyses, including incremental validity and criterion-related validity, are needed, particularly in the clinical context. Finally, the present study employed self-reports from young adolescents. Although self-report measures are crucial for gathering information on adolescents' internal and subjective processes, multi-informant approaches (e.g., parent reports, peer reports) or behavioral and diagnostic evaluations in conjunction with self-report findings could be more efficient in testing anxiety symptoms in children and adolescents.

Despite the above limitations, this study contributes significantly to anxiety research in China and deepens our understanding of anxiety in childhood and adolescence. Our validation of the psychometric properties of the SCARED expands the available toolbox for detecting children/juveniles with anxiety disorders and thus assists professionals in their early intervention and prevention efforts. This work can be regarded as a valuable attempt at addressing the lack of validated Chinese psychosocial measures (Shek, 2014; Shek et al., 2022).

5. Conclusion

The present study examined the psychometric properties of the Chinese version of the SCARED, with a large sample of children and adolescents in China. Apart from confirming that the original five-factor model was the best-fit model, this study established that the scale showed configural, metric, scalar, error variance, factor variance, and factor covariance invariances across gender, age, and time. The girls in the study showed higher levels of anxiety than the boys at both assessed time points. Compared to adolescents, children reported more separation anxiety but less general anxiety and school phobia. Overall, anxiety symptoms among the participants decreased from the first to the second assessment. We conclude that the SCARED appears to be a reliable and valid measurement tool for assessing anxiety disorder symptoms among Chinese youths.

CRediT authorship contribution statement

Daniel T.L. Shek: Writing – review & editing, Supervision, Methodology, Investigation, Funding acquisition. **Xintong Zhang:** Writing – review & editing, Writing – original draft, Formal analysis. **Xiang Li:** Writing – review & editing, Writing – original draft, Formal analysis, Data curation.

Declaration of Competing Interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Acknowledgements

This research and preparation of this paper are financially supported by the Matching Fund from the Research Grants Council (ZH4Q and ZECL) and The Hong Kong Polytechnic University (ZZ4U, WZ8A and ZZUE).

Appendix

Table 1
Factor loadings of the five-factor model of the SCARED Scale in Wave 1 and Wave 2

SCARED Scale	Factor Loadings	
	Wave 1	Wave 2
Panic/somatic		
1. When I feel frightened, it is hard to breathe.	0.69	0.73
6. When I get frightened, I feel like passing out.	0.82	0.85
9. People tell me I look nervous.	0.68	0.69
12. When I get frightened, I feel like I am going crazy.	0.81	0.85
15. When I get frightened, I feel like things are not real.	0.81	0.86
18. When I get frightened, my heart beats fast.	0.70	0.75
19. I get shaky.	0.74	0.80
22. When I get frightened, I sweat a lot.	0.63	0.71
24. I get really frightened for no reason at all.	0.80	0.85

(*continued on next page*)

Table 1 (*continued*)

SCARED Scale	Factor Loadings	
	Wave 1	Wave 2
27. When I get frightened, I feel like I am choking.	0.77	0.83
30. I am afraid of having anxiety (or panic) attacks.	0.81	0.84
34. When I get frightened, I feel like throwing up.	0.72	0.79
38. When I get frightened, I feel dizzy.	0.77	0.82
General anxiety		
5. I worry about other people liking me.	0.68	0.74
7. I am nervous.	0.80	0.83
14. I worry about being as good as other kids.	0.74	0.77
21. I worry about things working out for me.	0.75	0.79
23. I am a worrier.	0.75	0.80
28. People tell me that I worry too much.	0.69	0.76
33. I worry about what is going to happen in the future.	0.77	0.84
35. I worry about how well I do thing.	0.77	0.81
37. I worry about things that have already happened.	0.82	0.84
Separation anxiety		
4. I get scared if I sleep away from home.	0.62	0.68
8. I follow my mother or father wherever they go.	0.55	0.57
13. I worry about sleeping alone.	0.66	0.70
16. I have nightmares about something bad happening to my parents.	0.71	0.75
20. I have nightmares about something bad happening to me.	0.79	0.85
25. I am afraid to be alone in the house.	0.66	0.71
29. I don't like to be away from my family.	0.57	0.57
31. I worry that something bad might happen to my parents.	0.68	0.73
Social phobia		
3. I don't like to be with people I don't know well.	0.64	0.69
10. I feel nervous with people I don't know well.	0.76	0.82
26. It is hard for me to talk with people I don't know well.	0.72	0.75
32. I feel shy with people I don't know well.	0.79	0.82
39. I feel nervous when I am with other children or adults and I have to do something while they watch me (for example: read aloud, speak, play a game, play a sport).	0.82	0.86
40. I feel nervous about going to parties, dances, or any place where there will be people that I don't know well.	0.80	0.85
41. I am shy.	0.72	0.76
School phobia		
2. I get headaches when I am at school.	0.74	0.81
11. I get stomachaches at school.	0.69	0.73
17. I worry about going to school.	0.82	0.85
36. I am scared to go to school.	0.83	0.87

Note. All factor loadings are statistically significant ($p < .001$).

Data availability

Data will be made available on request

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