Validation of the brief shame and guilt questionnaire for children and young adolescents in Persian

Ahandany, Z.S.; Tsou, Y.; Soltani, S.R.; Arya, A.M.; Rieffe, C.J.

Validation of the Brief Shame and Guilt Questionnaire for Children and young adolescents in Persian

Zahra Sheikhpour Ahandany, Yung-Ting Tsou, Reza Soltani Shal, Alireza Mohammadi Arya & Carolien Rieffe

Published online: 13 Feb 2024.

Submit your article to this journal ⤤

Article views: 52

View related articles ⤤

View Crossmark data ⤤

Routledge
Taylor & Francis Group

DEVELOPMETRICS

🔓 OPEN ACCESS | Check for updates

Validation of the Brief Shame and Guilt Questionnaire for Children and young adolescents in Persian

Zahra Sheikhpour Ahandany[a], Yung-Ting Tsou [ID][b], Reza Soltani Shal[c], Alireza Mohammadi Arya[d] and Carolien Rieffe [ID][b,e,f]

[a]School of Nursing, Midwifery and Paramedicine, Guilan University of Medical Sciences, Rasht, Iran; [b]Unit of Developmental and Educational Psychology, Institute of Psychology, Faculty of Social and Behavioral Sciences, Leiden University, Leiden, The Netherlands; [c]Department of Psychology, Faculty of Literature and Humanities, University of Guilan, Rasht, Iran; [d]Department of Psychology, University of Social Welfare & Rehabilitation Sciences, Tehran, Iran; [e]Department of Human Media Interaction, Faculty of Electrical Engineering, Mathematics and Computer Science, University of Twente, Enschede, The Netherlands; [f]Department of Psychology and Human Development, Institute of Education, University College London, London, UK

ABSTRACT

Social emotions such as shame and guilt are critical to social-emotional development in any culture because they help children and adolescents learn to adhere to the social rules and norms of their culture. However, most instruments that currently measure these emotions were validated only in samples from Western countries. This study aimed to translate and validate the *Brief Shame and Guilt Questionnaire for Children* (BSGQ-C) in children and adolescents living in Iran. A total of 453 children and adolescents aged 8 to 16 years filled out the BSGQ-C, consisting of 2 scales (Guilt: 6 items; Shame: 6 items) and questionnaires for social anxiety and worry. Factorial validity was confirmed by the intended two-factor structure, with an adequate test-score reliability for the scales. Concurrent validity was also confirmed: as expected, shame but not guilt was related to symptoms of social anxiety and worry.

The social emotions of guilt and shame perform different social functions. As defined by previous research, guilt involves acknowledgement of having caused harm to another person(s) and prompts attempts to restore the social bond, whereas shame provokes negative judgement

about oneself and prompts attempts to restore a damaged reputation (Tracy & Robins, 2004). Both guilt and shame fulfil important societal functions because they dictate how to behave within one's cultural or social group, and how to comply with the group's dominant norms and values (Cândea & Szentagotai-Tătar, 2018; Lewis & Haviland-Jones, 2000). Critically, anticipation of these social emotions should actually prevent violation of social rules (Blasi, 1999; Tangney et al. 2007). It is thus important that children learn about these emotions from an early age.

However, thus far most instruments that examine shame and guilt were created in the context of Western samples, and the very few studies that include both shame and guilt in Asian samples have rarely focused on children and adolescents. To extend the current knowledge about these social emotions, the aim of the present study was to examine a version of the Brief Shame and Guilt Questionnaire for Children (Novin & Rieffe, 2015) that was translated into Persian and tested in a sample of children living in Iran.

Notably, guilt and shame carry different implications for mental health. Although shame is important for adaptive social functioning and for strengthening social harmony, shame also seems to be a risk factor for more mental health problems (Levinson et al., 2016). Shame is strongly focused intra-personally, which explains why higher levels of shame are consistently related to more internalizing symptoms such as anxiety and worry. Although most of these studies are based on Western samples, a few studies do confirm the association between shame and internalizing symptoms in different Asian adults samples, for example in Japanese and Chinese samples (Swee et al., 2021).

Guilt, on the other hand, is elicited when a person attributes the negative event to a specific wrongdoing, driving one to take reparative actions. This reflects an inter-personally focused emotion. Consequently, guilt appears to be unrelated to the development of internalizing symptoms in healthy community samples of Western adolescents and adults (Fergus et al., 2010; Muris & Meesters, 2014; Novin & Rieffe, 2015), as well as in the very few studies that are available that involved Asian adults (Gao et al., 2013).

Present study

Social emotions like shame and guilt serve important social functions that are shaped by culture (Malti & Keller, 2010). It is necessary to measure

these emotions in samples also from non-WEIRD countries, and to have a reliable instrument that seems suitable for children and adolescents across cultures. Hence, this study aimed to validate a Persian version of the *Brief Shame and Guilt Questionnaire for Children* (BSGQ-C) (Novin & Rieffe, 2015) in a large sample of children living in Iran. We examined the factorial validity by testing the intended two-factor structure of the translated questionnaire and the reliability of the scales. We also examined the concurrent validity by examining the extent to which the shame scale and guilt scale were related to symptoms of social anxiety and worry. Based on previous studies, we expected that shame would be related to higher levels of worry and social anxiety, whereas guilt would be related to neither.

Methods

Participants and procedure

A total of 453 children and adolescents aged 8 to 16 years participated in this study ($M_{age} = 11.70$ years, $SD = 2.30$; 239 girls and 214 boys). Participants were recruited using a stratified random sampling method for the selection of the classes in elementary (aged 8 to 12 years) and junior high schools (aged 13 to 16 years) in Lahijan, Iran. From a total of 17 schools in the area, ten schools were chosen randomly, including two girls' elementary schools, two boys' elementary schools, three girls' junior high schools, and three boys' junior high schools. Approximately 6% of the students were randomly selected from each grade, and in total 36 classes participated. To account for possible missing data, 10 more students (5 girls and 5 boys) were randomly sampled from each grade, resulting in a total of 543 students selected. Among them, 54 students (26 girls, 28 boys) gave no responses. From the 489 participants who did largely complete the questionnaires, we randomly selected 453 participants according to the predetermined proportions per grade, and conducted further analyses based on this final sample.

The study was part of a larger project on moral emotions in students. Ethical approval was obtained before the test procedures from the Lahijan Department of Education, Ministry of Education, Iran. Prior to children's participation, informed consent was obtained from parents, while parents and children were instructed explicitly that they can

withdraw from the study anytime without providing any reasons. Participants filled out the questionnaires in small groups during school, in pen-and-paper format. Data collection was conducted by the first author.

Materials

The Brief Shame and Guilt Questionnaire for Children (BSGQ-C)

The *BSGQ-C* (Novin & Rieffe, 2015) is a self-report designed for children and adolescents aged 8 to 16 years. It consists of six shame-eliciting scenarios (Shame scale) and six guilt-eliciting scenarios (Guilt scale). Children and adolescents were instructed to read the stories and imagine how they would feel in each described scenario. They had to rate how much shame or guilt they would feel on a 3-point scale (1 = not at all; 2 a little; 3 = a lot). The shame-eliciting scenarios describe so-called 'shame only' behaviours that can be perceived as inept in others' eyes, but do not cause any harm to other people (e.g., 'You fall from your bike onto the pavement. People stop to watch. You leave quickly.'). The guilt-eliciting scenarios describe behaviours that are harmful to others (e.g., 'You are riding your bike on the pavement. You are going really fast. Suddenly a little girl is standing there and you bump into her'). Its validity and reliability have been also confirmed in a deaf or hard-of-hearing sample (Broekhof et al., 2020) and longitudinally (Broekhof et al., 2021).

The BSGQ-C was translated from English to Persian by an expert who has a doctorate degree in English teaching, and back-translated into English by two translators with an MA degree in English. The English version and the back-translated version were reviewed and compared by a researcher from Psychology proficient in English. Language inconsistencies were resolved after discussions within the research team. Before the formal testing stage, the Persian *BSGQ-C* was piloted with two children aged eight years, and there was no problem for them to understand the items.

A full list of the BSGQ-C items (in English) can be found in Table 1.

Concurrent measures

The Penn State Worry Questionnaire for Children (PSWQ-C; Chorpita et al., 1997) consists of 14 items that assesses children's and adolescents' worries in daily life (e.g., 'I am always worried about something'). Participants were asked to rate the extent to which they agree with each item about

Table 1. Items of the BSGQ and the standardized factor loadings (standard error).

	Shame	Guilt
2. You are walking in the middle of a busy shopping street. You trip. All your books and pens fall out of your bag on the street.	0.46 (-)[a]	
4. You get a very bad grade at school.	0.41 (0.14)	
6. You are going to school. You have cut your own hair. You feel stupid.	0.48 (0.17)	
8. You fall from your bike onto the pavement. People stop to watch. You leave quickly.	0.54 (0.16)	
10. You are standing in front of the class. You have to give a talk. Everyone is looking at you. You forget what you wanted to say.	0.49 (0.16)	
12. You are at your classmate's house for the first time. You get a glass with chocolate milk. You trip on the carpet. The chocolate milk falls out of your hands.	0.57 (0.15)	
1. Your classmate is using the red pen the whole time. You also need the pen. You snatch away the pen.		0.38 (-)
3. You are riding your bike on the pavement. You are going really fast. Suddenly a little girl is standing there and you bump into her.		0.56 (0.21)
5. You want to go home quickly. The little girl from next door drops her marbles. You don't help, because you're in a hurry.		0.51 (0.21)
7. Your classmate worked a long time on a painting. But you don't watch out. You knock over a glass of water on his drawing. Everything spills over the painting. The painting is totally ruined.		0.49 (0.16)
9. Your classmate hasn't finished her essay on time. She asks you for help. You don't help her, because you don't feel like it.		0.55 (0.23)
11. There is only one cookie left in the cookie jar. You quickly put it in your mouth. Now your friend doesn't have a cookie.		0.58 (0.22)

[a]Standardized factor coefficients and standard errors of the coefficients. The standard errors marked with '-' were those which constrained at a raw factor coefficient of 1.0, so no standard error estimates were produced.

their worries on a 5-point scale (5 = always; 4 = often; 3 = sometimes; 2 = very little; 1 = never). This questionnaire has been used in an Iranian sample aged 8 to 14 years (Mofrad et al., 2002). In this study, the reliability of the PSWQ-C was also acceptable (α = .79; ω = .82).

The *Liebowitz Social Anxiety Scale for Children and Adolescents* (LSAS-CA; Masia-Warner et al., 2003) is an empirically-tested measure for social anxiety. It includes 12 social interaction situations (e.g., talking to teacher; going to a party) and 12 performance situations (e.g., speaking in public; doing homework in front of others). For each situation the participants had to rate the extent to which they would feel fear and anxiety, and the extent to which they wanted to avoid the situation, on a 4-point scale (0 = never; 1 = seldom; 2 = mostly; 3 = usually). Its validity and reliability have been confirmed in an Iranian sample aged 10 to 11 years (Dadsetan et al., 2008). In this study, we used only the ratings on feelings of fear and anxiety. The reliability was excellent (α = .91; ω = .91).

Statistical analyses

Overall, 450 students had complete data; one student did not respond to item 11 from the BSGQ-C, while two students did not return the PSWQ-C that measures Worry. For these cases with missing values, listwise deletion was used.

To assess the factorial validity of the 12-item Persian-version *BSGQ-C*, a confirmatory factor analysis (CFA) was first conducted. Given that BSGQ-C scores were based on a three-point scale and thus with an ordinal nature, WLSMV (weighted least square mean and variance adjusted) was used as the estimator in the CFA models. A set of absolute and relative goodness of fit indices were used to evaluate the model, including the Tucker Lewis index (TLI > .95); the comparative fit index (CFI > .95); the root mean square error of approximation (RMSEA < .06); and the standardized root mean square residual (SRMR < .08) (Hu & Bentler, 1999; Little, 2013). In addition, modification indices (MI), standardized expected parameter changes (SEPC), and inter-factor correlations were inspected to evaluate the model. When MI > 10 and SEPC > .30, an item was seen as loaded on unexpected scales (Whittaker, 2012).

Second, to evaluate whether the measurement properties were invariant across gender and age groups (i.e., primary school students at 8–12 years vs. secondary school students at 13–16 years), a series of multigroup CFAs were performed. Three levels of measurement invariance were tested sequentially: configural, metric, and scalar. To test configural invariance, the model structure in both gender groups was examined without constraints. Configural invariance indicates that the overall two-factor structure is similar in the two gender/age groups. Next, all the factor loadings were constrained to be equal across gender/age groups to test metric invariance, which indicates that the constructs have the same meaning across gender/age. In the third step, scalar invariance was tested by also constraining the item intercepts to be equal across gender/age groups. When scalar invariance can be assumed, girls vs. boys and primary-school vs. secondary school students with the same actual level of shame and guilt would rate themselves similarly. When the more constrained model showed a decrease in CFI (ΔCFI) < .01, in combination of an increase in RMSEA (ΔRMSEA) < .015 or an increase in SRMR (ΔSRMR) < .01, the equivalence between the gender/age groups was assumed (Chen, 2007). When partial invariance analyses were needed, items to be freed were chosen based on univariate modification indices; and the *Lagrange*

multiplier test, which shows the effect of releasing an equality constraint simultaneously between groups (Martín-Puga et al., 2020; Rosseel, 2012). Gender/age group differences were examined if > 50% of the items on each factor were considered invariant (Steenkamp & Baumgartner, 1998; Vandenberg & Lance, 2000).

Third, the test-score reliability of the BSGQ scales was estimated using Cronbach's alpha (α), McDonald's omega (ω), and interitem correlations. A value of .70 or higher for Cronbach's alpha (Ponterotto & Ruckdeschel, 2007) and for McDonald's omega (Dunn et al., 2014; Flora, 2020) was considered adequate. The average interitem correlations should be in the range of .15 to .50 (Clark & Watson, 1995).

Lastly, to assess concurrent validity, linear regression analyses were conducted to evaluate the association of the Shame and Guilt scales of the *BSGQ-C* with Worry (assessed by the *PSWQ-C*) and Social Anxiety (assessed by the *LSAS-CA*). Two models were built respectively with Worry and Social Anxiety as the dependent variable. Shame, Guilt, along with age and gender, were entered as independent variables in Step 1. Interaction terms of Shame/Guilt x age/gender were also entered in the models in Step 2, but they did not improve the model fit and thus were not reported here.

The CFAs were conducted using the *lavaan* package version 0.6–7 (Rosseel, 2012) in R version 3.6.3 (R Core Team, 2020). The other analyses were performed using SPSS 25.0 (IBM Corp., Armonk, NY).

Results

Factorial validity of the BSGQ-C in Persian

The 12-item BSGQ-C was fitted with the hypothesized two-factor structure, and yielded a good model fit, confirming the appropriateness of the model: χ^2(53, $N = 453$) = 92.68, $p = .001$; CFI = .97, TLI = .96, RMSEA = .04, SRMR = .05. The latent inter-factor correlation was .56 (standard error = 0.01, $p < .001$). Item 4 (on Shame) was shown to also correlate with Guilt, but the absolute SEPC value (=.28) did not exceed .30. Table 1 shows the standardized factor loadings and standard errors of the items. Table 2 shows an overview of fit indices.

Next, multigroup CFA was performed to test measurement invariance across gender. The configural (baseline) model showed a good fit: χ^2 (106, $N = 453$) = 126.64, $p = .084$; CFI = .98, TLI = .98, RMSEA = .03, SRMR = .06. Further testing on metric invariance yielded a significant change in the

Table 2. Fit indices of the two-factor model of the Persian-version BSGQ.

Model	x^2	df	CFI	TLI	RMSEA	SRMR	ΔCFI	ΔRMSEA	ΔSRMR
			Model fit indices				Indices for model fit differences		
One-group model	92.68**	53	.967	.959	.041	.052	-	-	-
Invariance across gender									
Configural	126.64	106	.983	.979	.029	.056	-	-	-
Metric	154.22*	116	.969	.965	.038	.062	.014	.009	.006
Metric partial[a]	138.99	115	.980	.978	.030	.059	.003	.001	.003
Scalar	172.45**	125	.961	.959	.041	.065	.019	.011	.006
Scalar partial[ab]	152.71*	124	.977	.975	.032	.061	.003	.002	.002
Invariance across age groups									
Configural	139.91*	106	.967	.959	.038	.059	-	-	-
Metric	146.21*	116	.971	.967	.034	.060	.004	.008	.004
Scalar	153.54*	126	.973	.972	.031	.062	.002	.005	.003

Note: x^2: chi square; df: degrees of freedom; CFI: comparative fit index; RMSEA: root mean square error of approximation; SRMR: standardized root mean square residual.
[a]Equality constraints on the factor loadings of item 12 were freed.
[b]Equality constraints on the intercepts of items 6 were freed.
* $p < .05$; ** $p < .01$; *** $p < .001$.

model fit (ΔCFI = .014, ΔRMSEA = .009, ΔSRMR = .006). Partial metric invariance was then tested, and could be assumed after freeing the equivalent factor loading constraint on item 12 (ΔCFI = .003, ΔRMSEA = .001, ΔSRMR = .003). For scalar invariance, the cut-off criteria for assuming equivalent intercepts were again only partially met (ΔCFI = .019, ΔRMSEA = .011, ΔSRMR = .006). After freeing the constraint on items 6, the model fit improved and partial scalar invariance could be assumed (ΔCFI = .003,

Table 3. Reliability of the Persian-version BSGQ scales and concurrent relations.

	Shame	Guilt
Reliability		
N items	6	6
Cronbach's alpha	.65	.68
- Girls/boys	.70/.61	.69/.66
- 8–12 years/13–16 years	.65/.62	.70/.56
McDonald's omega	.66	.68
- Girls/boys	.71/.61	.69/.66
- 8–12 years/13–16 years	.66/.62	.70/.55
Average interitem correlation	.24	.26
Mean score (SD)	2.23 (.46)	2.19 (.46)
- Girls/boys	2.23 (.48)/2.23 (.43)	2.24 (.45)/2.13 (.47)*
- 8–12 years/13–16 years	2.32 (.44)/2.10 (.45)***	2.30 (.46)/2.02 (.40)***
	Worry	**Social Anxiety**
Regression coefficient		
Age	.05***	.02*
Gender	.10	.11*
Shame	.48***	.38***
Guilt	−.01	.04

* $p < .05$; ** $p < .01$; *** $p < .001$.

ΔRMSEA = .002, ΔSRMR = .002). This allows the means of girls and boys to be compared. As Table 3 shows, girls showed somewhat higher levels of Guilt than boys, $t(451) = -2.34$, $p = .020$, while no gender difference was noted for Shame. The same pattern was found in an additional inspection on the latent means (Guilt: $E_{(boys-girls)} = -.09$, $p = .017$; Shame: $E_{(boys-girls)} = -.07$, $p = .110$).

Testing measurement invariance across age groups (primary vs. secondary school students), the configural model showed a good fit: $\chi2$ (106, $N = 453$) = 139.91, $p = .015$; CFI= .97, TLI = .96, RMSEA = .04, SRMR= .06. Next, the assumption of metric invariance was also proven tenable, given the nonsignificant change in the model fit (ΔCFI = .004, ΔRMSEA = .008, ΔSRMR = .004). Lastly, testing on scalar invariance also yielded a nonsignificant change in the model fit (ΔCFI = .002, ΔRMSEA = .005, ΔSRMR = .003), suggesting that full scalar invariance can be assumed across the age groups. Independent t-tests showed higher levels of Shame and Guilt in primary-school students than in secondary-school students ($ts > 5.07$, $ps < .001$); so as the additional inspection on the latent means ($Es_{(primary-secondary)} > 0.20$, $ps < .001$).

Table 3 shows the reliability indices, including Cronbach's alpha and McDonalds' omega, for Shame ($\alpha = .65$, $\omega = .66$) and Guilt ($\alpha = .68$, $\omega = .68$). These reliability indices could not be further improved by removing items. These indices were slightly below the suggested cut-off point (.70), due to the lower reliability among boys for Shame, and among older (secondary school) children for Guilt. The average inter-item correlations for Shame (.24) and for Guilt (.26) were both within the acceptable range.

Further inspection confirmed that there were no concerns for ceiling or floor effects in the data. Only 6.8% of the participants received the lowest (=6) or highest (=18) possible score for Shame, and 7.7% for Guilt, which were lower than the threshold of 15% as mentioned by Terwee et al. (2007).

Concurrent validity of the BSGQ-C in Persian

Table 3 presents the regression coefficients. After controlling for age, gender, and Guilt, Shame was found to positively associated with Worry ($b = .48$, $p < .001$) and Social Anxiety ($b = .38$, $p < .001$). Guilt was not related to Worry or Social Anxiety, while age, gender, and Shame were

controlled for. Adding the interaction terms of Shame/Guilt x age/gender did not improve the models, suggesting that these outcomes did not vary with gender or age.

Discussion

The results of the current study confirmed the validity of the 2-factor structure (Shame and Guilt) in the Persian version *BSGQ-C*. This aligned with the findings of the original Dutch version (Novin & Rieffe, 2015). The good model fit of the 12-item *BSGQ-C* in this study suggests that the items in the *BSGQ-C* are able to capture the action tendencies towards shame- and guilt-evoking situations in Iranian children and adolescents. Furthermore, factor loadings and intercepts were invariant for the majority of items between girls and boys, and between primary-school and secondary-school children, indicating that differences in the *BSGQ-C* scores between boys and girls and different age groups can be viewed as actual differences in shame- or guilt-proneness among participants.

However, despite the adequate factorial validity, our findings also suggest that some scenarios presented in the items may be more suitable for boys than for girls, or the other way around. For example, one item on Shame (i.e., 'cutting own hair and looking stupid') showed non-equivalent intercepts between girls and boys, with boys having higher intercepts. This suggests that when boys and girls have the same actual levels of shame, boys report higher levels of shame than girls on this item. In Iran, girls in the age range of the current study wear headscarves (e.g., a *hijab*), and a bad haircut could thus be less shame-provoking for girls than for boys. Moreover, the reliability of the Shame scale was lower in boys than in girls (Table 3), suggesting that there could be less correspondence among Iranian boys' reactions towards shame-provoking situations. Further studies are needed to look into the cultural and situational factors related to gender differences in the experience of social emotions.

Likewise, while we established measurement invariance across age groups, our findings showed a lower reliability of the Guilt scale among children in secondary schools than those in primary schools. Removing any item from this scale did not further improve the reliability. Previous research showed that younger children more often reported episodes of guilt related to damage/harm and rule-breaking, while adolescents more often reported episodes related to relational consequences, such as disappointing other people or betraying their trust (Gavazzi, 2011). Given

that the guilt-provoking items in the BSGQ-C are mostly related to causing damage and violating (social) rules, they may reflect younger children's guilt-proneness better than older children's. This might further explain our outcome that younger children overall reported higher levels of both shame and guilt than older children. Considering that Iran has a collectivistic-oriented culture (Hofstede, 1980), relational consequences could be central in the experience of guilt among older children, which should be taken into account in future studies.

Regarding the concurrent validity, outcomes were as expected. Shame was positively correlated with Worry and Social Anxiety when Guilt was controlled for, whereas Guilt was unrelated to both internalizing symptoms. In line with the literature, our findings again provide evidence, from an Iranian sample, that shame and guilt perform different social functions and carry differential associations with mental health. While a previous study on Iranian university students has shown a relation between shame-proneness and internalizing behaviours, the current study is among the first to examine and show this relation in Iranian children.

This study is among the first to validate an instrument for evaluating shame- and guilt-proneness among children and adolescents in Iran. Our findings showed that the Persian BSGQ-C has adequate factorial validity, test-score reliability, and concurrent validity, thus can be used to assess shame- vs. guilt-proneness in youth. Also, the readability of the instrument was checked by piloting it among 8-year-old children. However, our study also presented limitations and indicated directions for future research, in light of the criteria proposed by Ashra et al. (2021), Morado et al. (2017), and Terwee et al. (2007) (see also Table A1). First, future studies are required to further examine age and gender appropriateness of the instrument when assessing shame and guilt among Iranian children and adolescents, to ensure that the *BSGQ-C* can also be used for cross-cultural investigations. Second, while this instrument can be useful for cross-sectional exploration, given that this study did not adopt a longitudinal design, the extent to which it is reliable across time (i.e., the level of agreement and test-retest reliability) and sensitive to changes over time (i.e., the level of responsiveness) are yet to be confirmed.

Disclosure statement

ORCID

Yung-Ting Tsou 🔟 http://orcid.org/0000-0001-6557-5153
Carolien Rieffe 🔟 http://orcid.org/0000-0002-7584-6698

References

Cândea, D.-M., & Szentagotai-Tătar, A. (2018). Shame-proneness, guilt-proneness and anxiety symptoms: A meta-analysis. *Journal of Anxiety Disorders*, *58*, 78–106. https://doi.org/10.1016/j.janxdis.2018.07.005

Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Structural Equation Modeling: A Multidisciplinary Journal*, *14*(3), 464–504. https://doi.org/10.1080/10705510701301834

Chorpita, B. F., Tracey, S. A., Brown, T. A., Collica, T. J., & Barlow, D. H. (1997). Assessment of worry in children and adolescents: An adaptation of the Penn State worry questionnaire. *Behaviour Research and Therapy*, *35*(6), 569–581. https://doi.org/10.1016/S0005-7967(96)00116-7

Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment*, *7*(3), 309–319. https://doi.org/10.1037/1040-3590.7.3.309

Dadsetan, P., Anari, A., & Sedghpour, B. S. (2008). Social anxiety disorders and drama-therapy. *Journal of Iranian Psychologists*, *4*(14), 115–123.

Dunn, T. J., Baguley, T., & Brunsden, V. (2014). From alpha to omega: A practical solution to the pervasive problem of internal consistency estimation. *British Journal of Psychology*, *105*(3), 399–412. https://doi.org/10.1111/bjop.12046

Fergus, T. A., Valentiner, D. P., McGrath, P. B., & Jencius, S. (2010). Shame- and guilt-proneness: Relationships with anxiety disorder symptoms in a clinical sample. *Journal of Anxiety Disorders*, *24*(8), 811–815. https://doi.org/10.1016/j.janxdis.2010.06.002

Flora, D. B. (2020). Your coefficient alpha is probably wrong, but which coefficient omega is right? A tutorial on using R to obtain better reliability estimates. *Advances in Methods and Practices in Psychological Science*, *3*(4), 484–501. https://doi.org/10.1177/2515245920951747

Gao, J., Qin, M., Qian, M., & Liu, X. (2013). Validation of the TOSCA-3 among Chinese young adults. *Social Behavior & Personality: An International Journal*, *41*(7), 1209–1218. https://doi.org/10.2224/sbp.2013.41.7.1209

Hu, L. T., & 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. https://doi.org/10.1080/10705519909540118

Levinson, C. A., Byrne, M., & Rodebaugh, T. L. (2016). Shame and guilt as shared vulnerability factors: Shame, but not guilt, prospectively predicts both social anxiety and bulimic symptoms. *Eating Behaviors*, *22*, 188–193. https://doi.org/10.1016/j.eatbeh.2016.06.016

Lewis, M., & Haviland-Jones, J. M. (2000). *Handbook of emotions* (2nd ed.). The Guilford Press.

Little, T. D. (2013). *Longitudinal structural equation modeling*. Guilford Press.

Martín-Puga, M. E., Justicia-Galiano, M. J., Gómez-Pérez, M. M., & Pelegrina, S. (2020). Psychometric properties, factor structure, and gender and educational level invariance of the abbreviated math anxiety scale (AMAS) in Spanish children and adolescents. *Assessment*, *29*(3), 425–440. https://doi.org/10.1177/1073191120980064

Masia-Warner, C., Storch, E. A., Pincus, D. B., Klein, R. G., Heimberg, R. G., & Liebowitz, M. R. (2003). The Liebowitz social anxiety scale for children and adolescents: An initial psychometric investigation. *Journal of the American Academy of Child & Adolescent Psychiatry*, *42*(9), 1076–1084. https://doi.org/10.1097/01.CHI.0000070249.24125.89

Mofrad, S., Atefvahid, M., & Bayanzadeh, S. (2002). Comparison of the worries of anxious and normal children in the schools of Dashtestan. *Iranian Journal of Psychiatry & Clinical Psychology*, *8*(2), 65–72.

Muris, P., & Meesters, C. (2014). Small or big in the eyes of the other: On the developmental psychopathology of self-conscious emotions as shame, guilt, and pride. *Clinical Child and Family Psychology Review*, *17*(1), 19–40. https://doi.org/10.1007/s10567-013-0137-z

Novin, S., & Rieffe, C. (2015). Validation of the Brief Shame and Guilt Questionnaire for Children. *Personality and Individual Differences*, *85*, 56–59. https://doi.org/10.1016/j.paid.2015.04.028

Ponterotto, J. G., & Ruckdeschel, D. E. (2007). An overview of coefficient alpha and a reliability matrix for estimating adequacy of internal consistency coefficients with psychological research measures. *Perceptual and Motor Skills*, *105*(3), 997–1014. https://doi.org/10.2466/pms.105.3.997-1014

Rosseel, Y. (2012). Lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, *48*(2), 1–36 . https://doi.org/10.18637/jss.v048.i02

Steenkamp, J.-B. E. M., & Baumgartner, H. (1998). Assessing measurement invariance in cross-national consumer research. *Journal of Consumer Research*, *25*(1), 78–90. https://doi.org/10.1086/209528

Swee, M. B., Hudson, C. C., & Heimberg, R. G. (2021). Examining the relationship between shame and social anxiety disorder: A systematic review. *Clinical Psychology Review*, *90*, 102088. https://doi.org/10.1016/j.cpr.2021.102088

Vandenberg, R. J., & Lance, C. E. (2000). A review and synthesis of the measurement invariance literature: Suggestions, practices, and recommendations for organizational research. *Organizational Research Methods*, *3*(1), 4–70. https://doi.org/10.1177/109442810031002

Appendix 1

Table A1. Overview of the psychometric criteria met by the current study, using the scheme proposed by Ashra et al. (2021) and Terwee et al. (2007)

Criteria in Ashra et al. (2021)/ Terwee et al. (2007)	Current study
Content validity	N/A, as this study translated an existing instrument.
Internal consistency	Cronbach's alpha and McDonald's omega were reported. They are acceptable in the whole sample, but questionable for Guilt in the older sample (secondary school students).
Criterion validity	Widely used measures for Social Anxiety and Worry were used to examine the relation, yet the correlations did not reached .70.
Construct validity	The correlations between Shame/Guilt and the concurrent indices (Social Anxiety/Worry) followed the hypothesized direction.
Floor/ceiling effects	Less than 15% of the participants received a lowest or highest possible score for Shame/Guilt.
Readability	The instrument was piloted among 8-year-old children to check readability, and they had no problem understanding the items.
Interpretability	Means and SD of scores, as well as reliability values, of age and gender groups were explicitly reported. Also, measurement invariance was examined across age and gender groups.
Cross-cultural validity	The study validated an existing instrument previously available in Dutch and English. The translation process was clearly reported.
Agreement	N/A, due to the cross-sectional design.
Reproducibility	N/A, due to the cross-sectional design.
Responsiveness	N/A, due to the cross-sectional design.

N/A = not applicable/available.