



Measuring shame across five countries: dimensionality and measurement invariance of the external and internal shame scale

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Accepted: 17 June 2021 / Published online: 7 July 2021

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Abstract

Shame is a universal emotion, albeit having a bewildering constellation of causes, valuations, and behavioural consequences that differ across social ecologies. This transdiagnostic emotion may be categorized into two distinct components: external and internal shame. The External and Internal Shame Scale (EISS) has proven to be a brief and reliable instrument to assess external and internal shame, as well as a global sense of shame. The current study aims to corroborate the validity of the EISS and expand its utility, by investigating its dimensionality and testing its measurement invariance in samples from five eclectic countries from Europe, East and Southeast Asia and Australia. Differences in EISS scores across the five countries were also explored. This cross-national study included 1405 participants recruited in community samples of adults from Portuguese, French, Australian, Singaporean and Japanese populations, who completed the EISS in four different languages. An hierarchical model with two factors (external and internal shame) loading on one global factor (global shame) revealed good fit to the data in the total sample and in each of the five countries' samples, and the instrument showed good reliability across countries. The EISS factorial structure also proved to be invariant across countries. Differences in global shame, external and internal shame scores were found between the countries. By supporting the factorial structure, reliability and measurement invariance of the EISS across countries, this study contributes to expand the use of the EISS across nations and in different languages, both in research and clinical settings.

Keywords Shame · External shame · Internal shame · Factorial structure · Cross-national

Introduction

Shame is a universal human emotion, existing at individual, interpersonal, social and cultural levels. Many theorists regard shame as vital to our sense of self as a social agent, and to our social interactions and moral behaviour (Dearing & Tangney,

2011; Gilbert, 2007; Gilbert & Andrews, 1998; Tracy & Robins, 2004). In spite of its adaptive value in human psychosocial development and functioning, shame can be an overpowering, painful and incapacitating emotion. A robust body of research has ascertained that shame can be an incapacitating and pathogenic emotion associated with a whole

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host of mental health problems, such as depression, anxiety disorders, eating disorders, post-traumatic stress, psychosis amongst others (e.g., Kim et al., 2011; Matos et al., 2013, 2015a; Pinto-Gouveia & Matos, 2011; Saraiya & Lopez-Castro, 2016). So, even though shame can correspond to a transient normal and adaptive emotional experience, it can also be related to a more pervasive proneness to perceive the self as globally worthless and defective (i.e. shame proneness), and underlie and underpin a range of psychopathologies. People vary in their shame proneness and this variation can, in part, be regulated by features of a person's social ecology (Sznycer et al., 2012). In fact, cultural and social ecologies can shape the sources, valuations, and behavioural consequences of shame experiences (Gilbert & Andrews, 1998; Wong & Tsai, 2007).

Despite various conceptualizations of shame, there is a consensus that it commonly involves feelings of being defective, inferior, disgraced, humiliated, scorned, alone and/or disconnected from others, along with strong urges not to be seen, to hide, conceal deficiencies, avoid exposure and/or run away (Gilbert, 1998, 2007; Kaufman, 1989; Lewis, 2000; Tangney & Dearing, 2002). In fact, from the existing definitions of shame, four core domains of the experience of shame seem to emerge encompassing: feelings of inferiority/inadequacy, a sense of isolation/exclusion, feelings of uselessness/emptiness, and criticism/judgment (steaming either from others or from oneself and directed at the self) (Ferreira et al., 2020).

Shame is acknowledged as one of the most aversive self-conscious emotions, emerging from, or with, primary emotions through their interactions with self-conscious cognitive abilities (Gilbert, 1998; Kaufman, 1989; Tangney & Dearing, 2002; Tracy et al., 2007). Moreover, shame is a socially-focused emotion, often triggered by threats to one's social self and status, such as put-downs, criticisms and rejections. Shame is considered to emerge from detrimental changes and losses in one's social status, and being demeaned or diminished in the eyes of others (Gilbert, 1998, 2007). According to the evolutionary biopsychosocial model of shame (Gilbert, 2003, 2007), shame evolved as a damage limitation strategy to keep the self safe from disengagement, rejection, exclusion, or attacks from others. By raising awareness of one's social attractiveness and of threats to group belonging and social rank, shame safeguards the individual's survival and welfare.

Importantly, regardless of the universal nature and evolutionary function of shame, the focus of what is shaming is greatly influenced by social norms and cultural values (Fessler, 2007; Leeming & Boyle, 2004). In fact, as a multifaceted experience, shame has an important cultural component, in that social and cultural contexts influence the way reputations are made or lost, what is considered acceptable, attractive and esteemed, and what is undesirable, shameful and worthy of stigma in social groups according to what is perceived as threats to the social order (Fessler, 2007; Gilbert, 2003; Kaufman,

1989; Leeming & Boyle, 2004). In anthropological writings, shame is generally related to narratives of (dis)honour (Lindisfarne, 1998). Shame and honour systems significantly vary among cultures (e.g., gender identity, sexuality, body shape-size) and are key to social regulation and control. Therefore, social threat and shaming, and responses to being socially shamed, are textured and choreographed by a variety of cultural, social and political domains (Gilbert, 2003, 2007).

The evolutionary biopsychosocial model of shame (Gilbert, 1998, 2007), in particular, argues that social and cultural processes affect personal experiences of shame, which in turn influences behavioural responding and ultimately shapes personal identities. Cultural groups, emerging from different ecologies vary in what is deemed acceptable and valued or what is rendered shameful and unattractive. Moreover, the cultural dynamics of groups determine what should be stigmatized, chosen or rejected on the basis of ethnicity, gender, social position, physical attributes, desires and talents. The societal values are transmitted through specific groups that elevate some individuals and stigmatize others (e.g., body weight and shape in young women) (Gilbert, 2007, 2010). This model outlines that reflected shame, related to the shame one can bring to others (or others can bring to the self), can become prominent in cultures where shame and honor systems are intimately linked to the behaviours of one's associates; and then the defense and repair of shame can be related to the power dynamic of the relationship, and to cultural scripts for honor and the repair of honor (Gilbert, 2002, 2007, 2010).

In light of Gilbert's model, shame experiences involve a social and externally focused component, related to the experience of the self as seen and judged by others; and an internal self-evaluative component focused on the 'experience of the self as seen and judged by the self' (Gilbert, 1998, 2003). *External shame* pertains to the experience of the self as existing negatively in the minds of others, as having deficits or flaws exposed (Gilbert, 1998, 2002). It is associated with perceptions that others see the self as inferior, bad, inadequate, different, flawed; that is, others are looking down on the self with a contemptuous or condemning view and may criticize, disengage, reject, exclude or even harm the self. One's attention and cognitive processing are attuned outwardly, to the social world and to what is going on in the mind of the other, and one's behaviour is orientated towards trying to positively influence one's image in the mind of other (e.g., by submitting, appeasing or displaying desirable qualities; Gilbert, 1998, 2002, 2007). Hence, shame is typically triggered in social contexts and begin with an experience of a perceived self in the mind of 'the other'.

Internal shame is linked to how one judges oneself and refers to the global negative self-evaluations of oneself as inferior, defective, bad, inadequate, different, unwanted, empty, weak, or alone (Gilbert, 2003; Tracy & Robins, 2007). One's attention and processing are inwardly orientated, to

one's emotions, personal characteristics, or behaviour, focusing on one's flaws and shortcomings (Gilbert, 2003, 2007; Gilbert & Irons, 2009; Tangney & Dearing, 2002). Internal shame can be understood as an internalizing defensive response to external shame, in that one may engage in self-devaluations and self-criticism, identifying with the mind of the other and, with the purpose of restoring one's standing or status and protecting oneself against criticism, rejection or attacks from others (Gilbert, 2003, 2007; Gilbert et al., 2004; Gilbert & Irons, 2009).

Shame experiences typically involve the interaction of both externally and internally focused shame, which fuel one another and encompass the same core domains. Nevertheless, the focus of shame that is experienced as most salient can vary in shame experiences, and some individuals may be more prone to experience one more than the other (Gilbert, 2002, 2007; Kim et al., 2011).

Recently, a novel self-report instrument, the *External and Internal Shame Scale* (EISS) was developed to allow not only the measurement of a global sense of shame, but also the assessment of external and internal shame (Ferreira et al., 2020). The 8-items of the EISS were designed to assess external and internal shame considering the above-mentioned four core domains (Inferiority/Inadequacy, Exclusion, Emptiness and Criticism). The EISS, originally tested in a Portuguese community sample of 665 participants, was found to be a valid, reliable and brief measure of external and internal shame, as well as global shame, thus representing a useful addition to existing measures. Furthermore, external and internal shame were found to be strongly correlated with each other, albeit having distinct effects on depressive symptoms. More research is needed to test the structure of the EISS, as well as its reliability, in other languages and in samples from different cultural backgrounds, as this would help corroborate the validity of this measure and expand its utility and use.

Previous research has established the pancultural nature of shame. For example, two studies, one conducted in three Western(ized) countries (Sznycer et al., 2016) and another comprising participants from 15 small-scale communities scattered around the world (Sznycer et al., 2018), found evidence in support of the claim that shame is an expression of a neurocognitive system that evolved to defend against social threat and devaluation and not a product of cultural contact or convergent cultural evolution. These findings suggest that, regardless of diverse languages, cultures, and subsistence modes, shame is a universal system, part of our species' cooperative biology, rather than a product of cultural evolution. Nevertheless, despite this universality, people vary on how easily they feel ashamed (i.e., shame proneness), and this seems to be tailored to respond to relevant features of one's social ecology (Sznycer et al., 2012). In fact, shame has a bewildering constellation of valuations, elicitors and behavioural consequences that differ across cultural contexts (see

Wong & Tsai, 2007 for a review). However, there is still a lack of research exploring the role culture may play in one's proneness to experience external and internal shame, and whether differences between these two dimensions of shame may emerge between different cultures. Moreover, it is important to note that research on shame relies on the assumption that shame-related words are translation equivalents in different languages. Yet, a plethora of studies has suggested that the shame-related words are not equivalent in meaning and valence in different languages (e.g., Kollareth et al., 2018), and hence these possible cultural differences in translation should be considered in the interpretation of findings.

The Current Study

The main aim of the current study was to test the dimensionality of the EISS in community samples of adults from Portuguese, French, Australian, Singaporean and Japanese populations. Given that the EISS is the first self-report instrument that assesses both the specific dimensions of external and internal shame, as well as a global sense of shame experience, this work will expand the use of the EISS in research and clinical settings in different languages by investigating its factor structure in these different countries. Based on the EISS original study with a Portuguese adult sample (Ferreira et al., 2020), we expect to find evidence for one higher-order factor (global shame) with two lower-order factors (external and internal shame) measurement model across five eclectic countries from Europe, East and Southeast Asia and Australia. Furthermore, the reliability of the EISS will also be examined.

The current study also builds upon this work by investigating the measurement invariance of the factor structure of the EISS across five countries and different languages. Measurement invariance across countries will assure that the instrument is assessing the same constructs in different countries and languages. This is the first cross-national study assessing the dimensionality of an external and internal shame measure in adult samples from five different countries in four different languages (Portuguese, English, French and Japanese). Therefore, it will help to avoid inference problems when comparing results from different countries with different languages, and will allow for more credible conclusions to be drawn (Dimitrov, 2010). Finally, the present study explored differences in global shame, external and internal shame scores across the five countries.

Materials and Methods

Measure

The External and Internal Shame Scale (EISS; Ferreira et al., 2020) is an 8-item self-report instrument aimed to assess

External Shame (ES, 4 items), Internal Shame (IS, 4 items) as well as a global sense of the shame experience (Global Shame, GS). Table 1 presents the items per subscale. Participants are asked to rate each item using a 5-point scale (0 = “Never” to 4 = “Always”) with higher scores representing higher levels of shame. In the original Portuguese version, the EISS presented a Cronbach alpha of .89 for the total score, .80 for the external shame subscale, and .82 for the internal shame subscale (EISS; Ferreira et al., 2020).

Translation

The EISS was originally developed in Portuguese and has been translated to English and French using the forward/backward procedure (Erkut, 2010). The Japanese version was translated from the English version using the same procedure. The translation of the original EISS items and instructions was independently completed by two of the authors who are bilingual psychologists and researchers. The translation from Portuguese to French was completed by C.B. and M.M., from Portuguese to English was made by M.M., C.F., A.G and M.M.R., and from English to Japanese by Y.H. and M.M.. A backward translation into Portuguese was then accomplished by two other independent researchers, Portuguese native speakers and one fluent in French and the other fluent in English. The two versions were then compared and differences between each pair of versions were minimal. Slight changes were made in order to match the original items as closely as possible. The French and English items were then inspected by individuals from the general population of France and Australia aiming to assess whether the items and instructions were clear and understandable (pre-testing and interview). No difficulties or inconsistencies were reported. Similar procedures were used in the adaptation of the Japanese version from the English version. These procedures were in accordance with the International Test Commission (2010) recommendations.

Participants

A total of 1405 participants were enrolled in this study. The sample included 333 (23.7%) men and 1070 (76.2%) women,

and two participants answered that they would rather not answer the question about sex. Participants’ age ranged from 17 to 73 years old ($M = 26.48$; $SD = 11.75$). The sample comprised general population participants from five different countries: Portugal, France, Australia, Singapore, and Japan.

The Portuguese sample included 398 subjects, 88 (22.1%) males and 310 (77.9%) females, with a mean age of 26.40 ($SD = 8.95$) and ages ranging from 18 to 62 years old.

The French sample encompassed 411 participants, 73 (17.8%) males and 338 (82.2%) females, with ages between 18 and 72 years old ($M = 28.15$; $SD = 13.00$).

The Australian sample was composed by 266 participants, 64 (24.1%) males and 202 (75.9%) females presenting a mean age of 25.35 ($SD = 13.26$) years old, with ages ranging from 17 to 73 years old.

The Singaporean sample comprised 130 participants, 55 (42.3%) males and 75 (57.7%) females, with ages ranging from 17 to 71 years old ($M = 33.61$; $SD = 15.04$).

The Japanese sample comprised 200 participants, 53 (26.5%) males, 145 (72.5%) females and two (1%) participants that preferred not to answer the question regarding sex. A mean age of 20.08 ($SD = 1.77$) years old and participants’ age ranged from 18 to 28 years old.

Procedures

The University of Queensland School of Psychology Ethics Committee approved the study (approval number 18-PSYCH-4-77-JMC). All procedures were in accordance with the 1964 Helsinki declaration and its later amendments. Recruitment procedures were similar in the different countries. Participants were electronically invited to participate in the study through e-mail (e.g. institutional mailing lists) and social media platforms (e.g., Facebook, Instagram). The invitation included information about the study aims, procedures and voluntary nature of the participation, as well as the link to access the research protocol. Confidentiality of the collected data was assured, and informed consent was requested before the completion of the study protocol.

Table 1 Shame domains and items of External and Internal Shame subscales

Shame Domains	External Shame (ES)	Internal Shame (IS)
Inferiority/Inadequacy	1. People around me see me as not being up to their standards.	4. I am different and inferior to others.
Isolation/Exclusion	3. Other people don’t understand me.	2. I am isolated.
Uselessness/Emptiness	6. Other people see me as uninteresting.	7. I am unworthy as a person
Criticism/Judgment	5. Others are judgmental and critical of me.	8. I am judgmental and critical of myself.

Data Analysis

EISS Factorial Structure The EISS factor structure was examined through Confirmatory Factor Analysis (CFA), using the Maximum likelihood method, through AMOS software (v.21, Chicago, IL, USA). Based on the original factorial structure of the EISS (Ferreira et al., 2020), the hierarchical model with one higher-order factor (Global Shame, GS) and with two lower-order factors (External, ES, and Internal Shame, IS) was tested for each sample. Model fit was ascertained using the chi-square statistic and five goodness of fit indicators: the Comparative Fit Index (CFI), the Goodness of Fit Index (GFI), the Tucker and Lewis Index (TLI), the Root Mean Square Error of Approximation (RMSEA) and its 90% confidence interval (CI), and the Standardized Root Mean Square Residual (SRMR; Browne & Cudeck, 1993). The CFI is a comparative index that compares the fit of the proposed model with the fit of a baseline model. The GFI indicates the extent to which observed data matches the theory-driven values. The TLI is a relative incremental fit index. CFI, GFI and TLI values are indicative of a good fit when ranging from .90 to .95 and a very good fit when values are above .95 (Hu & Bentler, 1999). The RMSEA with a 90% confidence interval is indicative of acceptable when values are inferior to .10 (Hair et al., 2010). The SRMR, defined as the standardized difference between the observed correlation and the predicted correlation, points to good fit when values are below .08 (Hu & Bentler, 1998). The model fit for each sample was tested separately. Modification indices were inspected for model improvement when relevant.

Reliability Reliability of the EISS for each country was examined by estimating the Cronbach alpha and the Composite Reliability (CR) for each subscale and global score. For both indices, scores above .70 are indicative of good reliability (Hair et al., 2010).

Measurement Invariance Scale invariance was tested considering the EISS original model (Ferreira et al., 2020), the hierarchical model with one higher-order factor (GS) and with two lower-order factors (ES, IS). To examine measurement invariance across countries, we tested increasingly restrictive models. First, we examined *configural invariance*, where the same factor structure was tested simultaneously for the five samples, with no equality constraints imposed on any of the parameters (unconstrained model). The fit of this model was the baseline for more restrictive models. Second, we examined *measurement invariance*, assuming equal factor loadings across groups and then equal structural covariances. Due to the sensitivity of Chi-square to small deviations in the model (Vanderberg & Lance, 2000), invariance was considered in changes in the goodness of fit indices are not greater than .01, as recommended by Vanderber and Lance (2000).

Comparison between Shame Scores across Countries External and Internal shame and Global shame scores between countries were compared using ANOVA, with Bonferroni post hoc tests to explore differences between groups. Significance level was considered below 0.05.

Results

Examining Factorial Structure of the EISS across Five Countries

The hierarchical model, with two factors loading on one global factor was tested for the combined total sample ($N = 1405$). Model fit was good, with $\chi^2(19) = 342,70$; $p < .001$; CFI = .93; GFI = .94; TLI = .89; RMSEA = .11 [90% CI .10–.12; $p < .001$]; SRMR = .05. We further examined the model of the EISS hierarchical model for each sample. Results are presented in Table 2.

In general, all countries' samples reported good levels of fit to the data. Although chi-square values were all significant (all p 's $< .001$), the goodness of fit indices are indicative of good fit to the data in all samples, with the exception of the Japanese sample. The analysis of the modification indices for each sample suggested relevant modifications (larger than 30) in two samples: French and Japanese. In these two samples, the modification indices suggested allowing for the correlation between errors of the items 2 and 3. After this change in the model, the results (reported in Table 2 with the superscript *a*) showed an improvement of the model fit in both samples.

Reliability and Convergent Validity

Results on the EISS reliability are presented in Table 3. Reliability indicators confirmed the good reliability of the GS scale and of the ES and IS subscales in all countries/samples, except for the ES subscale of the French sample. In this specific case, both Cronbach' alpha and composite reliability were below the recommended scores (both of .65), suggesting questionable reliability of the ES subscale in the French sample. A further analysis (results not presented) showed that the item 6 could be somewhat problematic, as it decreased the alpha of that subscale.

Measurement Invariance Analysis

Measurement invariance analysis was performed based on the hierarchical model with the error covariance between item 2 and item 3. Results of the invariance testing are reported in Table 4. The configural model confirmed a well-fitting model, with $\chi^2(124) = 576.63$; $p < .001$; CFI = .90; GFI = .90; TLI = .89; RMSEA = .05 [90% CI .05–.06; $p < .001$]. We proceeded with estimating measurement invariance and the

Table 2 Model fit and Goodness-of-fit indices of the EISS hierarchical model across the five countries

	<i>n</i>	χ^2	<i>df</i>	<i>p</i>	CFI	GFI	TLI	SRMR	RMSEA	RMSEA [90% CI]
Portugal	398	65.657	19	<.001	.97	.96	.95	.04	.08	[.06–10]
France	411	81.13	19	<.001	.93	.96	.90	.05	.09	[.07–.11]
France ^a	411	40.942	18	<.001	.98	.98	.96	.04	.06	[.07–.11]
Australia	266	93.99	19	<.001	.93	.92	.90	.06	.12	[.10–.15]
Singapore	130	51.30	19	<.001	.95	.89	.93	.05	.12	[.08–.15]
Japan	200	98.99	19	<.001	.87	.89	.80	.07	.14	[.12–.17]
Japan ^a	200	55.73	18	<.001	.94	.94	.90	.06	.10	[.07–.13]

Notes: *df*= degrees of freedom;; CFI = Comparative Fit Index; GFI = Goodness of Fit Index; TLI = Tucker–Lewis Index; SRMR = Standardized Root Mean Square Residual; RMSEA = Root Mean Square Error of Approximation; CI = confidence interval

^a Includes error correlation for items 2 and 3

results were suggestive of measurement invariance, with fit indices changes across restrictive models being not greater than .01.

Comparison of Shame across Five Countries

Finally, we aimed at comparing shame across the five different countries. Means, standard deviations and ANOVA results are presented in Table 5.

The results show that Portugal had the lower scores on ES and GS when compared to all other countries (all p 's < .01). Conversely, regarding ES and GS, Japan had the highest scores compared with all the other countries (all p 's ≤ .01), with the exception of Australia (no differences). Regarding IS, Portugal had lower scores of shame when compared to France ($p = .024$) and Australia ($p = .007$). Figure 1 displays these differences graphically.

Discussion

There has been growing interest in undertaking research across different cultures and/or nations between both the academic and the clinician communities. Still, conducting research across nations and cultures raises several challenges. The main challenge pertains to the measures being used, and more specifically to the lack of studies assessing the invariance of the construct measure across countries (Buil et al., 2012). Shame assessment and research is an area where this problematic is particularly relevant. Therefore, the main aim of the current study was to test the dimensionality and the measurement invariance of the External and Internal Shame Scale (EISS; Ferreira et al., 2020) in community samples of adults from the Portuguese, French, Australian, Singaporean and Japanese populations.

In line with the EISS original study in a Portuguese adult sample (Ferreira et al., 2020), an hierarchical model with two factors (external and internal shame) loading on one global

factor (global shame) was tested in the combined total sample and in each of the five countries' samples. The model showed a good fit to the data in the total sample. When the model was tested in each of the five countries' samples, results suggested the pertinence of correlating the errors of items 2 and 3 in the Japanese and French samples, with this alteration producing an improvement in the model fit in these two samples. The correlation between these two errors might be justified by the fact that both items belong to the same shame core domain of Isolation/Exclusion. Future studies should seek to replicate these findings, particularly in different Japanese and French samples to investigate the cultural specificity regarding the meaning of this shame core domain of Isolation/Exclusion. On the whole, these findings corroborate the hierarchical factorial structure of the EISS (Ferreira et al., 2020) and show that the two dimensions of external and internal shame, as well as a global sense of shame, emerge across different nations and languages.

Results pertaining to the reliability of the EISS confirm the good reliability of the GS scale and the ES and IS subscales across the samples, with the exception of the ES subscale in the French sample (which is on the threshold of acceptability). Further analysis revealed that item 6 might be contributing to the lower internal consistency of this subscale in the EISS French version. This might be related to the wording of item 6 in French, and not to the content of the item per se. Therefore, future research should try to improve this item and seek to replicate these findings. By supporting the factorial structure and reliability of the EISS in different countries, these results might contribute to expand the use of the EISS in different languages and across nations, both in research and in clinical settings.

In addition, the present study tested the measurement invariance of the factor structure of the EISS across the five countries. Results confirmed the measurement invariance of the EISS factorial structure, which suggests that the EISS is assessing the same underlying constructs of global shame, external and internal shame cross-nationally. This is the first

Table 3 Cronbach’ alpha, Composite reliability and Average Variance extracted score of the EISS subscales and global score across the five countries

	External shame		Internal shame		Global score	
	α	CR	α	CR	α	CR
Portugal	.81	.83	.82	.84	.89	.91
France	.65	.67	.75	.77	.81	.84
Australia	.83	.83	.82	.84	.89	.91
Singapore	.84	.85	.87	.88	.91	.93
Japan	.77	.78	.74	.75	.85	.87

Notes: α = Cronbach alpha; CR = Composite Reliability

study to test the measurement invariance of a shame measure across countries, which may contribute to avoid inference problems when comparing results from different countries with different languages, and thus may allow for more rigorous and robust conclusions to be drawn in shame research. Of note, our findings support the validity of the EISS to evaluate global shame, external and internal shame, in adults from five different nations in four different languages.

Lastly, the current study explored differences in global shame, external and internal shame scores across the five countries. Two major patterns of results emerged from analyzing the differences between the countries. Firstly, Portugal, France, Australia and Singapore reveal a similar pattern with external shame scores being lower than internal shame scores. However, in Australia, the differences between these dimensions are less pronounced. In contrast, Japan presented an opposite pattern with external shame scores being higher than internal shame. Importantly, Japan presented significantly higher external shame levels than all other countries, and significantly higher global shame scores than Portugal, France and Singapore. Conversely, Portugal showed significantly lower levels of external shame than all other countries and significantly lower internal shame than France and Australia.

Because this is the first study to explore differences in external and internal shame between different countries and due to the lack of the representativeness of each country sample, conclusions drawn from these findings are tentative.

These differences can be seen as reflecting the influence of individualistic versus collectivist values of the nations. More specifically, the experience of shame be regulated and shaped by features of an individual’ social ecology (Gilbert, 1998, 2007; Wong & Tsai, 2007). Therefore, higher scores in the global shame and its external shame dimension in Japan might be related to its collectivist social ecology. In collectivistic countries individuals tend to view themselves in terms of their connections with others and thus external influences might more easily shape the experience of shame (Sznycer et al., 2012; Wong & Tsai, 2007). In fact, our results seem to be in line with a prior study that explored shame-focused attitudes towards mental health problems in Asian and Non-Asian student women from the UK (Gilbert et al., 2007). Gilbert et al. (2007) found that Asian students have higher external shame and reflected shame, but not internal shame focused beliefs about mental health problems. One may hypothesize that higher scores in external shame, found in our Japanese sample, may emerge as a protective strategy to prevent the experience of bringing shame to others, that is reflected shame. Reflected shame is defined as the shame one can bring to others (or others can bring to the self). Hence, one can feel ashamed and guilty for having brought shame to one’s family (Gilbert, 2002, 2007). This results are hence in line with the evolutionary biopsychosocial model of shame (Gilbert, 2002, 2007), which outlines that issues of reflected shame and honour can become prominent in cultures where shame and honour systems are intimately linked to the behaviours of one’s associates (which the case of collectivist social ecologies).

Contrarily to what one might expect, Singapore did not follow the same pattern of results as Japan, but instead revealing a similar patten to that of the Western countries. In fact, Singapore could be seen has having a more collectivist social ecology, however it is important to note that in the current study Singaporean participants completed the English version of the EISS. This might have contributed to a bias in this sample which may have been composed of more westernized participants. Future studies should seek to further clarify these findings by exploring this in the other Singapore official languages (Malay, Mandarin, Tamil), and also using samples from other Eastern countries.

Table 4 Goodness-of-Fit Statistics for Tests of Measurement Invariance of the EISS across the five countries databases

	χ^2	df	p	$\Delta \chi^2$	Δdf	Δp	CFI	ΔCFI	GFI	ΔGFI	TLI	ΔTLI	RMSEA	$\Delta RMSEA$	RMSEA [90% CI]
Unconstrained model	576.63	124	<.001	–	–	–	.90	–	.90	–	.89	–	.05	–	[.05–06]
Measurement model	634.73	136	<.001	58.11	12	<.001	.89	.01	.89	.01	.89	.00	.05	.00	[.05–06]
Structural covariances	648.25	138	<.001	13.52	2	<.001	.89	.00	.89	.00	.89	.00	.05	.00	[.05–06]

Notes: df= degrees of freedom; CFI = Comparative Fit Index; GFI = Goodness of Fit Index; TLI = Tucker–Lewis Index; SRMR = Standardized Root Mean Square Residual; RMSEA = Root Mean Square Error of Approximation; CI = confidence interval

Table 5 Comparison of External, Internal, and Global Shame across the five countries

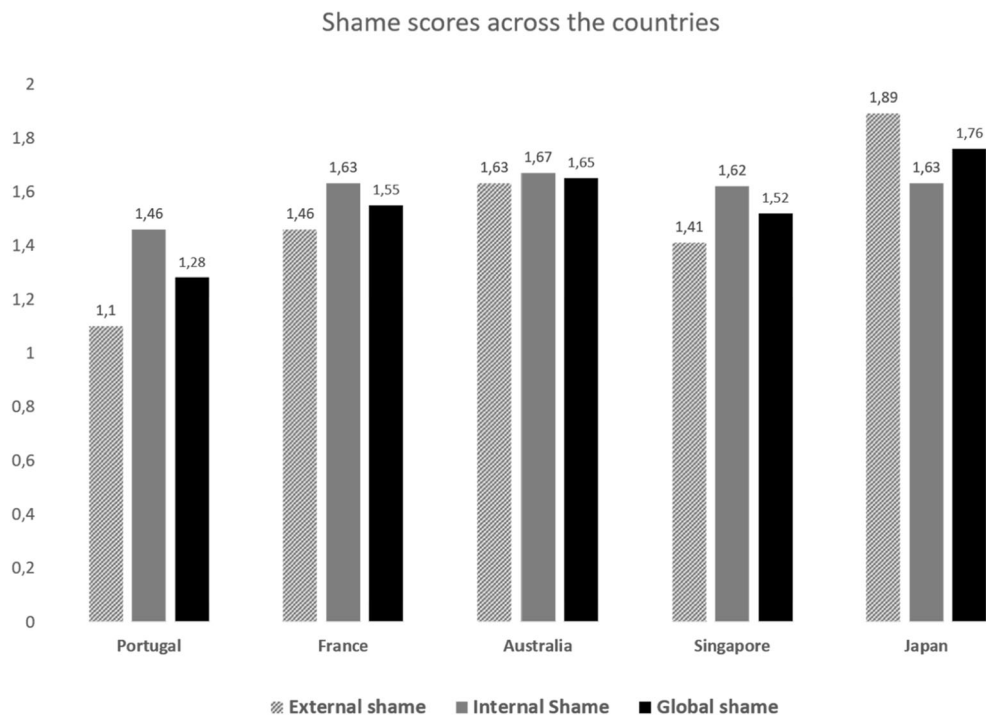
	Portugal (<i>n</i> =398)		France (<i>n</i> =411)		Australia (<i>n</i> =266)		Singapore (<i>n</i> =130)		Japan (<i>n</i> =200)		<i>F</i>	<i>p</i>	Post hoc
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
External shame	1.10	.79	1.46	.82	1.63	.95	1.41	1.00	1.89	.89	31.97	<.001	P<F, A, S, J J>P, F, A, S
Internal shame	1.46	.73	1.63	.68	1.67	.92	1.62	.88	1.63	.76	3.98	.004	P<F, A
Global shame	1.28	.71	1.55	.67	1.65	.87	1.52	.88	1.76	.76	17.07	<.001	P<F, A, S, J J>P, F, S

Notes: *M* = Mean; *SD* = Standard Deviation; P = Portugal; F = France; A = Australia, S = Singapore; J = Japan

With respect to the higher internal shame scores that were found in the western countries, a possible explanation might be related to the individualistic social ecologies that seem to characterize these nations. Individualistic social contexts emphasize independent concepts of the self, and tend to assume a self that is separate from others, and for whom transgressions and failures ought to be attributed to deficiencies of the self (Wong & Tsai, 2007). Therefore this could be reflected in a more inwardly focus of the shame experienced (as opposed to collectivist social ecologies where there is an externalized shame focus), and seems to be mirrored in an increased proneness to experience higher levels of internal shame in comparison to external shame in these countries.

Regarding the lower scores in external shame of Portuguese participants, it is worth noting that previous studies using another external shame measure (i.e., Other as Shamer scale-2, OAS2, Matos et al., 2015b) have also found

lower external shame mean scores in Portuguese samples (Matos et al., 2015b; Oliveira et al., 2020), in comparison to the ones reported in other studies conducted in other European countries with apparently similar sociocultural contexts (e.g., Italy; Saggino et al., 2017), or with other western countries (e.g., UK, Flynn, 2017; Australia, Baumann, 2018). Future studies using an anthropological framework should explore possible cultural and societal factors that might underlie these differences, namely this implied pattern of Portuguese individuals tendency to reveal lower levels of external shame than individuals from other western and eastern countries. These findings may suggest that even within a particular major social ecology there might be specificities that can vary across nations. More than addressing cultural differences, a focus in each country should be considered when conducting shame research, since these distinct patterns shouldn't be disregarded. Another possible explanation might be the

Fig. 1 Graphic representation of EISS scores across the five countries

existence of differences between countries in how individuals perceive, value and report the experience of shame, and the connotation of shame-related words (Kollareth et al., 2018; Wong & Tsai, 2007). In some countries, individuals may find it easier to admit and express feeling shame, than in others. This type of factors might help to understand these intriguing findings and should be explored in future research about the experience of shame, for example using other assessment methodologies (e.g., Shame Experiences Interview; Matos & Pinto-Gouveia, 2018).

Some methodological limitations should be considered when generalizing the current results. Due to the lack of representativeness of each country's sample, the generalization of these findings to other samples and countries is limited. In particular, it should be noted that the Japanese sample is mainly composed by emerging adults, which may limit the generalization of these findings to more sociodemographic heterogeneous samples. In addition, variables such as ethnicity, social position, marital status (among others) within each country should be assessed and considered in future replications of this study. Finally, given the uneven distribution of gender in the current study samples, future research should examine the EISS model measurement and structural invariance in larger and size equivalent samples of both genders, from different countries.

Notwithstanding these limitations, the current study may offer an important contribution for shame research. By demonstrating the validity and invariance of the EISS to evaluate global shame, external and internal shame, in adults from five different nations in four different languages, this study opens new avenues for the assessment of shame cross-nationally. Furthermore, the present findings may allow for a more in depth understanding of shame experiences, in particular potential differences in external and internal shame proneness, across nations and in different languages.

Acknowledgements The authors would like to thank Constança Martins, Daniela Melo, Inês Matos Pina (Portugal), Carla Nardelli, Louis Lambert, and Charlotte Perez (France) for their assistance in collecting the Portuguese and French samples.

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Funding The Japanese sample recruitment was supported by JSPS KAKENHI Grant Number JP19K14412.

Data Availability The data that support the findings of this study are available from the corresponding author, MM, upon reasonable request.

Declarations

Conflict of Interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

References

- Dearing, R. L., & Tangney, J. P. (Eds.). (2011). *Shame in the therapy hour*. APA Books.
- Baumann, T. (2018). *Psychometric study of the English version of the internal and external shame questionnaire: Cultural, gender and age differences*. [Unpublished master's thesis]. School of Psychology. University of Queensland.
- Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & L. S. Long (Eds.), *Testing structural equation models* (pp. 136–162). Sage.
- Buil, I., de Chematony, L., & Martínez, E. (2012). Methodological issues in cross-cultural research: An overview and recommendations. *Journal of Targeting Measurement and Analysis for Marketing*, 20, 223–234. <https://doi.org/10.1057/jt.2012.18>.
- Dimitrov, D. M. (2010). Testing for factorial invariance in the context of construct validation. *Measurement and Evaluation in Counseling and Development*, 43(2), 121–149. <https://doi.org/10.1177/0748175610373459>.
- Erkut, S. (2010). Developing multiple language versions of instruments for intercultural research. *Child Development Perspectives*, 4(1), 19–24. <https://doi.org/10.1111/j.1750-8606.2009.00111.x>.
- Ferreira, C., Moura-Ramos, M., Matos, M., & Galhardo, A. (2020). A new measure to assess external and internal shame: Development, factor structure and psychometric properties of the external and internal shame scale. *Current Psychology*, 1–10. <https://doi.org/10.1007/s12144-020-00709-0>.
- Fessler, D. M. T. (2007). From appeasement to conformity: Evolutionary and cultural perspectives on shame, competition, and cooperation. In J. Tracy, R. Robins, & J. Tangney (Eds.), *Self-conscious emotions: Theory and research* (2nd ed., pp. 174–193). Guilford Press.
- Flynn, A. (2017). *Experiences of shame, social rank and violence amongst male offenders*. [unpublished doctoral thesis]. University of East London.
- Gilbert, P. (1998). What is shame? Some core issues and controversies. In P. Gilbert & B. Andrews (Eds.), *Shame: Interpersonal behaviour, psychopathology and culture* (pp. 3–36). Oxford University Press.
- Gilbert, P. (2002). Body shame: A biopsychosocial conceptualisation and overview, with treatment implications. In P. Gilbert & J. Miles (Eds.), *Body shame: Conceptualisation, research and treatment* (pp. 3–54). Brunner.
- Gilbert, P. (2003). Evolution, social roles and the differences in shame and guilt. *Social Research*, 70, 1205–1230 <https://www.muse.jhu.edu/article/558610>.

- Gilbert, P. (2007). The evolution of shame as a marker for relationship security. In J. L. Tracy, R. W. Robins, & J. P. Tangney (Eds.), *The self-conscious emotions: Theory and research* (pp. 283–309). Guilford Press.
- Gilbert, P. (2010). *Compassion focused therapy: Distinctive features*. Routledge.
- Gilbert, P., & Andrews, B. (Eds.). (1998). *Shame: Interpersonal behavior, psychopathology and culture*. Oxford University Press.
- Gilbert, P., Bhundia, R., Mitra, R., McEwan, K., Irons, C., & Sanghera, J. (2007). Cultural differences in shame-focused attitudes towards mental health problems in Asian and non-Asian student women. *Mental Health, Religion & Culture*, 10(2), 127–141. <https://doi.org/10.1080/13694670500415124>.
- Gilbert, P., Clarke, M., Hempel, S., Miles, J., & Irons, C. (2004). Criticising and reassuring oneself: An exploration of forms, styles and reasons in female students. *British Journal of Clinical Psychology*, 43, 31–50. <https://doi.org/10.1348/014466504772812959>.
- Gilbert, P., & Irons, C. (2009). Shame, self-criticism, and self-compassion in adolescence. In N. B. Allen & L. B. Sheeber (Eds.), *Adolescent emotional development and the emergence of depressive disorders* (pp. 195–214). Cambridge University Press.
- Hair, J. F., Black, W. C., Babin, B. J. & Anderson, (2010). *Multivariate data analysis (7th ed.)*. Pearson Education.
- Hu, L., & Bentler, P. M. (1998). Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. *Psychological Methods*, 3(4), 424–453. <https://doi.org/10.1037/1082-989X.3.4.424>.
- Kaufman, G. (1989). *The psychology of shame: Theory and treatment of shame-based syndromes*. Springer.
- Kim, S., Thibodeau, R., & Jorgensen, R. (2011). Shame, guilt, and depressive symptoms: A meta-analytic review. *Psychological Bulletin*, 137(1), 68–96. <https://doi.org/10.1037/a0021466>.
- Kollareth, D., Fernandez-Dols, J. M., & Russell, J. A. (2018). Shame as a culture-specific emotion concept. *Journal of Cognition and Culture*, 18(3–4), 274–292. <https://doi.org/10.1163/15685373-12340031>.
- Leeming, D., & Boyle, M. (2004). Shame as a social phenomenon: A critical analysis of the concept of dispositional shame. *Psychology and Psychotherapy: Theory, Research & Practice*, 77(3), 375–396. <https://doi.org/10.1348/1476083041839312>.
- Lewis, M. (2000). Self-conscious emotions: Embarrassment, pride, shame and guilt. In M. Lewis & J. M. Haviland-Jones (Eds.), *Handbook of emotions* (pp. 623–636). Guilford Press.
- Lindisfarne, N. (1998). Gender, shame and culture: An anthropological perspective. In P. Gilbert & B. Andrews (Eds.), *Shame: Interpersonal behaviour, psychopathology and culture* (pp. 246–260). Oxford University Press.
- Matos, M., Ferreira, C., Duarte, C., & Pinto-Gouveia, J. (2015a). Eating disorders: When social rank perceptions are shaped by early shame experiences. *Psychology and Psychotherapy: Theory, Research and Practice*, 88(1), 38–53. <https://doi.org/10.1111/papt.12027>.
- Matos, M., Pinto-Gouveia, J., Gilbert, P., Duarte, C., & Figueiredo, C. (2015b). The other as Shamer scale - 2: Development and validation of a short version of a measure of external shame. *Personality and Individual Differences*, 74, 6–11. <https://doi.org/10.1016/j.paid.2014.09.037>.
- Matos, M., & Pinto-Gouveia, J. (2018). Understanding shame memories' phenomenology in clinical and nonclinical samples I. *The Shame Experiences Interview*. Submitted manuscript.
- Matos, M., Pinto-Gouveia, J., & Gilbert, P. (2013). The effect of shame and shame memories on paranoid ideation and social anxiety. *Clinical Psychology & Psychotherapy*, 20(4), 334–349. <https://doi.org/10.1002/cpp.1766>.
- Oliveira, S., Pires, C., & Ferreira, C. (2020). Does the recall of caregiver eating messages exacerbate the pathogenic impact of shame on eating and weight-related difficulties? *Eating and Weight Disorders*, 25, 471–480. <https://doi.org/10.1007/s40519-018-0625-8>.
- Pinto-Gouveia, J., & Matos, M. (2011). Can shame memories become a key to identity? The centrality of shame memories predicts psychopathology. *Applied Cognitive Psychology*, 25(2), 281–290. <https://doi.org/10.1002/acp.1689>.
- Saggino, A., Carlucci, L., Sergi, M. R., D'Ambrosio, I., Fairfield, B., Cera, N., & Balsamo, M. (2017). A validation study of the psychometric properties of the other as Shamer scale-2. *SAGE Open*, 7(2), 2158244017704241. <https://doi.org/10.1177/2158244017704241>.
- Saraiya, T., & Lopez-Castro, T. (2016). Ashamed and afraid: A scoping review of the role of shame in post-traumatic stress disorder (PTSD). *Journal of Clinical Medicine*, 5(11), 1–21. <https://doi.org/10.3390/jcm5110094>.
- Sznycer, D., Takemura, K., Delton, A. W., Sato, K., Robertson, T., Cosmides, L., & Tooby, J. (2012). Cross-cultural differences and similarities in proneness to shame: An adaptationist and ecological approach. *Evolutionary Psychology*, 10(2), 352–370. <https://doi.org/10.1177/147470491201000213>.
- Sznycer, D., Tooby, J., Cosmides, L., Porat, R., Shalvi, S., & Halperin, E. (2016). Shame closely tracks the threat of devaluation by others, even across cultures. *Proceedings of the National Academy of Sciences*, 113(10), 2625–2630. <https://doi.org/10.1073/pnas.1514699113>.
- Sznycer, D., Xygalatas, D., Agey, E., Alami, S., An, X. F., Ananyeva, K. I., et al. (2018). Cross-cultural invariances in the architecture of shame. *Proceedings of the National Academy of Sciences*, 115(39), 9702–9707. <https://doi.org/10.1073/pnas.1805016115>.
- Tangney, J. P., & Dearing, R. L. (2002). *Shame and guilt*. Guilford Press.
- Tracy, J. L. Robins, R. W. & Tangney J. P. (Eds.) (2007). *The self-conscious emotions: Theory and research*. Guilford.
- Vanderberg, 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, 4–70. <https://doi.org/10.1177/109442810031002>.
- Wong, Y., & Tsai, J. (2007). Cultural models of shame and guilt. In J. L. Tracy, R. W. Robins, & J. P. Tangney (Eds.), *The self-conscious emotions: Theory and research* (pp. 209–223). Guilford Press.

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