PSYCHOMETRIC ANALYSIS OF THE GUILT AND SHAME EXPERIENCE SCALE (GSES)

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ABSTRACT

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Objectives. Recent research has begun to pay attention to the experiences of guilt and shame in different realms of human life. However, there is an urgent need to develop valid instruments for measuring these emotional experiences. The main aims of this study are to introduce a newly developed tool, the Guilt and Shame Experience Scale (GSES), and to psychometrically evaluate its properties.
Sample and settings. An online sample of Czech respondents aged 15 and over (N=1101; 34.4 ± 13.0 years; 26.9% men) participated in the survey. Experiences of guilt and shame (GSES), together with basic socio-economic information, were measured.
Results. The non-parametric comparison of different socio-demographic groups showed a higher disposition for experiencing guilt among women and religious respondents and a lower disposition for experiencing both vindication and shame among middle-aged respondents. For the purpose of factor analysis, the data set was divided into two groups. One group (N=551) was used for Exploratory Factor Analysis (EFA) and the second (N=550) for Confirmatory Factor Analysis (CFA). On the basis of the EFA performed on a matrix of polychoric correlations and the subsequent CFA, two items were excluded. The eight-item version of the scale has good internal consistency, with Cronbach's alpha 0.86 and McDonald's ω_t 0.88.
At the same time, the polychoric correlations between the items of the scale showed a low to moderate inter-item correlation, with values between 0.20 and 0.60. A two-factor model has the best fit with the data. The two-factor solution also corresponds to the theoretical assumptions and to the two expected subscales of the questionnaire: shame and guilt. Each subset contains four items.
Study limitations. The main limitation of this study is that it did not reach a representative sample, allowing a more detailed exploration among socio-demographic groups, and therefore, it was not possible to determine the norms for the population.

key words:
GSES,
guilt,
shame,
Czech Republic,
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klíčová slova:
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INTRODUCTION

Evaluating emotions such as shame and guilt is an integral part of human life. A certain degree of feeling of shame and guilt is necessary for individuals, as well as a society, but current surveys also show the negative consequences of the increased experiencing of these emotions. Therefore, the need for research in this area is increasing.

In the original concept, shame and guilt were perceived as moral emotions associated with the violation of internal or external standards, with guilt being considered as an emotion bound mainly to the inner self-assessment of the individual, while the experience of shame involved the awareness of assessment from the social environment (Ausubel, 1955). However, the main pioneer of the modern study of shame and guilt, June Price Tangney (1995), has questioned the issue of an audience's presence. In a newer approach, taking into account the existence of "private shame" and "public guilt", she clearly labelled guilt as a feeling connected with a violation of moral standards and subsequent rejection and condemnation of one's own actions that leads to prosocial behaviour – reparations for damage done, apologising, etc. (Stuewig et al., 2010). In contrast, in the professional literature shame leads to withdrawal from social interaction (Kemeny, Gruenewald, & Dickerson, 2004).

Guilt and shame are universal emotions (Orth, Robins, & Soto, 2010) and often occur together. Only a few events cause only one of these moral emotions in all people. A situation of moral misconduct (for example, lying, deceit, theft, failure to help others, disobedience to parents, etc.) causes a feeling of guilt more often in some people, while others feel ashamed (Tangney, Wagner, & Gramzow, 1992; Niedenthal, Tangney, & Gavanski, 1994). Most people, therefore, are inclined to one or the other type of feeling. However, that does not mean that they do not feel the other emotion to some extent. Nevertheless, in several social offences, we are more likely to be able to determine which of the shame/guilt dyad will be involved. For example, when a person commits socially inappropriate behaviour or comes unsuitably dressed to a social event, the people in these situations tend to feel ashamed. Conversely, in situations where harm is caused to another person or in the case of failures at school or work, we may rather encounter guilt (Tangney, 1995).

Guilt is an emotion with a negative valence that differs from anger and fear (Baumeister, Stillwell, & Heatherton, 1994) and is tied to a previous event in which the individual actively participated (Tangney, 1991). Since the beginning of studies on guilt, the concept of guilt has been associated with Freud's psychoanalytic understanding of hostility in the context of the Oedipus complex (O'Connor et al., 1997), i.e. with the response of the superego to unacceptable impulses (Eisenberg, 2000). According to Erikson's interpretation, a failure to perform a developmental task in the game period leads to the development of inhibition as a counterbalance to initiative (Erikson, 2015). Nevertheless, guilt is often considered as an adaptive moral emotion, which suggests prosocial behaviour (Tangney, 1995) and emphasizes a sense of control in the world (Lindsay-Hartz, 1984).

Some studies, however, have come to the opposite conclusion. O'Connor et al. (1997) and Quiles and Bybee (1997) emphasized the important role of guilt in the development of depression. Other studies have also documented a proportionate relationship between guilt and many other phenomena: the duration of psychological adaptation after loss and the intensity of grief (Barr, & Cacciatore 2007; Barr, 2012), the internalization of symptoms (Ferguson, Eyre, & Ashbaker, 2000), experiencing stigma and psychological adaptation in patients with cancer (Else-Quest et al., 2009), suicidality (Exline, Yali, & Sanderson, 2000), post-traumatic symptoms (Lee, Scragg,

& Turner, 2001) and the abuse of addictive substances (Dearing, Stuewig, & Tangney, 2005). Most studies on guilt are devoted to its connections with psychological phenomena, but the experiencing of guilt can also have a significant impact on physical health. There are surveys documenting the incidence of intense guilt in connection with the negative experiencing of illness in patients with chronic pain associated with spinal cord injuries (Conant, 1998), lower back pains (Serbic, & Pincus, 2014; Serbic et al., 2016), hypercholesterolemia (Frich et al., 2007) and cancer (Abrams, & Finesinger, 1953). These studies usually have a cross-sectional design, so it is not possible to assess the direction of causality. A very interesting contribution to the study of the influence of the experiencing of guilt on somatic health is the description of its facilitating role in the onset and course of inflammatory processes (Dickerson, Gruenewald, & Kemeny, 2004). Similarly, Gruenewald et al. (2004) recorded a significant increase in cortisol levels in respondents who were exposed to a socio-assessment situation. Additionally, Herrald and Tomaka (2002) documented the connection between cardiovascular reactivity and the experiencing of anger, shame and pride.

As in the case of the experiencing of guilt, the disposition to experience shame is seen as a factor contributing to the emergence and maintenance of psychopathology and undesirable social phenomena. Erikson and Šimek (2015) understand the experiencing of guilt as a consequence of failure in the second phase of development, when the crisis of autonomy against shame and doubts takes place. An example of the negative impact of shame on experiencing can be found in studies linking frequent feelings of shame with low self-esteem, aggression, hostility, depressivity, suicidality and others (Baumeister, Stillwell, & Heatherton, 1994; Bennett, Sullivan, & Lewis, 2010; Garofalo et al., 2016).

Despite the undeniable negative valence of self-assessing emotions, Tangney and Stuewig (2004) point out that the only subgroup of the population unable to feel shame is people with severe personality disorders and that in the case of convicted offenders the ability to feel at least some moral emotion holds out hope for their reintegration into society. In the case of both quantitative and qualitative abnormalities, feelings shame and guilt can appear as a factor that has a negative effect on the life of an individual. However, at the same time their occurrence to a reasonable extent is necessary for the healthy functioning of an individual in society. Despite the wide range of phenomena which guilt and shame affect, we lack accessible and easy-to-use tools for their measurement and hence deeper exploration. The foreign instruments used are unsatisfactory because of their descriptive nature and are unsuitable for inclusion in a wider test battery.

One of the most widely used foreign instruments is the Test of Self-Conscious Affect (TOSCA) developed by J. P. Tangney (Tangney, Wagner, & Gramzow, 1989; Fontaine et al., 2001). It is based on the detection of a reaction to the present description of a situation and is based on the author's research concept, which includes, among other things, the assumption that guilt is a productive and constructive force, while shame is counterproductive (Sanchez, 2014). Given the above-mentioned assumption that most situations do not cause either guilt or shame in all people universally, the question is whether TOSCA really measures the occurrence of these two phenomena. Giner-Sorolla, Piazza and Espinosa (2011) and Fontaine et al. (2001) offer in their confirmatory analyses the idea that the scale of guilt can be interpreted rather as a motivation to action (or a tendency to compensation) than the experiencing of a feeling and the scale of shame as a measure of the tendency to global negative self-assessment. Therefore, it is more the assessment of dealing with feelings of guilt and shame rather than the assessment of experiences themselves. This rather suggests that people with certain

characteristics or dispositions tend to cope with self-evaluating emotions in a counterproductive way than that shame is a destructive emotion and guilt is a constructive one. Another frequently used tool is the *Personal Feelings Questionnaire* (PFQ-2) checklist, which asks how often the respondent experiences certain emotions. Unlike TOSCA, this questionnaire focuses on negative, dysfunctional aspects of guilt associated with psychopathology (remorse, intense guilt), and the scales have a stronger correlation with each other.

Although we can also find references to other scales in the literature, the choice is currently quite limited, especially because of the lack of validated versions of these instruments in the Czech language, their time-consuming administration or a narrow focus on psychopathology. Therefore, the aim of this study is to offer and validate an easily manageable tool for the quantitative measurement of shame and guilt experiences based on empirical studies of these emotions rather than on the detection of behavioural tendencies in model situations.

METHODS

Participants

In the first phase, the research tool was tested on a sample of 324 primary and secondary school students (administration by pencil and paper) and a sample of 316 adult respondents aged over 15 years old (filling in an online questionnaire). On the basis of the preliminary results and consultations with experts in the field, the wording of some questions and the number of items were accordingly modified. The research itself was subsequently completed by filling in a short online questionnaire (version A), through which a sample of 705 respondents was obtained using a snowball technique. Another 306 respondents were gained through a larger online survey (version B), in which the modified version of the GSES scale was included. The data was gathered from June to November 2017. The resulting data set consists of 1101 respondents from the Czech Republic (26.9% men, average age 34.4; SD 13.0).

Measures

The original scale consisted of 10 items that were designed on the basis of empirical studies and after consultation with experts in psychological and psychotherapeutic practice, in order to cover different aspects of shame and guilt.

1) I feel guilty, even though I do not know exactly where is it coming from.

The question focuses on non-reflected feelings of guilt. Although they are classified under the term "guilt", they actually reflect a generalized state of guilt, shame, or a sense of one's badness related to the entire personality, not just an individual case of behaviour (Blum, 2008).

2) I experience moments when I cannot even look at myself.

The question maps the experience of shame, which is in the literature defined as an acutely painful mixture of thoughts and emotions that affects the whole person. It is associated with acute self-awareness and a feeling of helplessness and anger at oneself (e.g. Velotti et al., 2017; Elison, Garofalo, & Velotti, 2014).

3) There are moments when I would rather sink without trace.

The question focuses on one of the typical manifestations of shame: the need to disappear (Tangney et al., 1996; Lindsay-Hartz, 1984).

4) When I do something wrong, I feel an exaggerated feeling of guilt.

The question assesses the intensity with which the feelings of guilt are experienced. These feelings are associated with internal moral judgments about actions and, to a

considerable extent, they help to realize misconduct and lead to regret and desire for remedy and rectification of disturbed relationships (Lindsay-Hartz, 1984). However, if they are excessively strong, coupled with the inability to forgive oneself, they can block normal experiencing and lead to anxiety preventing people from doing anything (Quiles, & Bybee, 1997).

5) I feel the need to explain or apologize for the reasons for my actions.

The question deals with the need to defend one's actions, which is a typical sign of the frequent experiencing of feelings of guilt (Alberti, & Emmons, 2017).

6) I am losing the hope that I will ever be a good person.

The question captures another of the feelings associated with shame: hopelessness in relation to one's own person and possible improvement of one's self-image (Tangney, & Dearing, 2002).

7) I blame myself even for things that other people do not think of.

The question follows the degree of anxiety in the moral area. Excessive anxiety caused by the internalization of social standards is referred to as scrupulousness. It is associated with feelings of guilt for every minor and even purely imagined violation of moral standards and expectations (Tangney, Stuewig, & Mashek, 2007).

8) If I do something inconsistent with my conscience, I need to fix it quickly.

The question maps the intensity of the need for reparative behaviour that occurs as a reaction to misconduct (Tangney et al., 1996).

9) If I do anything wrong, I have to think about it all the time.

The question focuses on so-called ruminative tendencies, which in the literature often are associated with guilt. It is represented by repeated thinking about misconduct and the desire to behave differently (Tangney, Wagner, & Gramzow, 1992).

10) If people around me knew what kind of person I am, they could not respect me.

The question maps the experience of shame, which is often associated with a distorted view of how the person is perceived by their environment (Turner, 2014).

Questions 1, 2, 3, 6, and 10 were designed to form the subscale "Shame" and questions 4, 5, 7, 8, and 9 to form the subscale "Guilt". For each item, the respondents answered questions using a four-point scale graded according to the degree of agreement with the individual claims. Those respondents who filled out only the short form of the online questionnaire (version A) chose a verbal evaluation (not at all; a little bit; moderate; a lot) to which point values (1 = not at all; 2 = slightly; 3 = moderately; 4 = significantly) were assigned, so that high GSES scores correspond to a high intensity of experiencing shame and guilt. For the second type of online questionnaire (version B), the verbal evaluation was accompanied by a number on a four-point scale (1 = significantly; 2 = moderately; 3 = slightly; 4 = not at all). The values for each item were then reversed for statistical processing to match the scoring direction of the first half of the data. In the resulting form, a higher GSES score means higher experience of feelings of shame and guilt. For statistical analyses, it is possible to use a summary score or to dichotomize the scale. Dichotomization in the middle seems to be the most natural way of dichotomization; however, other approaches, such as the dichotomization in the lower or upper quartile of the entire score, may be used for specific purposes.

Religiosity was measured by the question: "At present, would you call yourself a believer?" (With possible answers: 1 = Yes, I am a member of a church or a religious society, 2 = Yes, but I am not a member of a church or a religious society, 3 = No, 4 = No, I am a convinced atheist).

Gender and age were obtained by the questionnaire.

Statistical Analysis of Data

The distribution of the individual items and raw score of the questionnaire was evaluated by histograms, and their normality was verified by Shapiro-Wilk's normality test. Since the data did not meet the assumption of a normal distribution, non-parametric methods were used for the statistical analyses. To evaluate the gender difference, the Wilcoxon rank-sum test was used; in other cases a non-parametric analysis of variance was performed using the Kruskal-Wallis test. For p values from multiple group comparisons Bonferroni correction was used. The mutual correlation of the individual scale items was evaluated using polychoric correlations.

For factor analysis purposes, the data (N = 1101) was divided into two halves. Using the random permutation of the respondents' order, two data sets were created, one of which (N = 551) was used for exploratory factor analysis (EFA) and the second (N = 550) for confirmatory factor analysis (CFA). Using CFA, on the basis of theoretical assumptions, firstly the two-factor structure of the questionnaire was tested, with five items (1, 2, 3, 6, and 10) belonging to the "Shame" factor and five items (4, 5, 7, 8, and 9) belonging to the "Guilt" factor. To determine the number of factors, a combination of the Kaiser (K1) criteria, scree plot, parallel analysis (PA) and Minimum Average Partial (MAP) test was used. Since the individual items of the questionnaire are of an ordinal type, the PA and MAP analyses were performed on the polychoric correlation matrix using the random.polychor.pa package in the R programming environment. The EFA was calculated by means of the Weighted Least Squares (WLS) method based on the polychoric correlation matrix. Due to the correlation of the individual items of the scale, oblique rotation (Oblimin) was used. The EFA was calculated using the Psych package of the R program. The dimensional structure of the questionnaire was tested by CFA using the polychoric correlation matrix. The CFA was performed using the lavaan package of the R program, where the Diagonally Weighted Least Squares (DWLS) method was used as a method of estimating parameters from the ordinal data. The full ten-item model was compared to several nested models using the Likelihood-ratio test (LRT). The internal consistency of the scale was evaluated using Cronbach's alpha and McDonald's omega coefficients. Correlations between the GSES scales were evaluated using Spearman's correlation coefficients. All the analyses were performed using the IBM SPSS Statistics, versions 21 and R 3.4.0.

RESULTS

Psychometric Properties

Verification of Factor Structure

The descriptive characteristics of the entire data set and the two sets created for factor analysis purposes are presented in Table 1.

The mutual correlation of the items of the GSES scale in the first data set is low to moderate. Besides items 8 and 10, whose correlation coefficients are the lowest, the inter-item correlations attain values of 0.20–0.60 (see Table 2). Therefore, Oblimin rotation was used for the purpose of Exploratory Factor Analysis.

The number of factors was assessed using the Kaiser criterion (number of eigenvalues ≥ 1), scree plot, parallel analysis (PA) and a Minimum Average Partial (MAP) test. PA was calculated by simulating 1000 random matrices of permutations on the measured data. Parallel analysis recommended the extraction of two factors, while the MAP method recommended the extraction of one factor. There are two eigenvalues greater than one. Therefore, an exploration of both models, single-factor and two-factor, was carried out.

Table 1 Descriptive characteristics of the three data sets used for the analyses

		Whole data set		1st half of permutated data		2nd half of permutated data	
		n	%	n	%	n	%
Total		1101		551		550	
Gender	females	805	73.12	414	75.14	391	71.09
	males	296	26.88	137	24.86	159	28.91
Age	15–19	105	9.54	52	9.44	53	9.64
	20–29	389	35.33	202	36.66	187	34.00
	30–39	237	21.53	114	20.69	123	22.36
	40–49	213	19.35	108	19.60	105	19.09
	50–59	103	9.36	54	9.80	49	8.91
	60 and more	50	4.54	19	3.45	31	5.64
	missing data	4	0.36	2	0.36	2	0.36
Religiosity	believers	739	67.12	361	65.52	378	68.73
	believers OC	164	14.90	86	15.61	78	14.18
	non-believers	160	14.53	85	15.43	75	13.64
	atheists	38	3.45	19	3.45	19	3.45
GSES raw score	average (SD)	23.08 (5.93)		23.38 (6.02)		22.78 (5.83)	
	median	22		23		22	
	min – max	10–40		10–40		10–40	
	IQR 25% – 75%	19–27		19–27		18–27	

Note: SD=standard deviation, IQR=inter-quartile range, believers OC (outside the Church)
The second and third data sets were created by dividing the permutated complete data set into two halves.

Table 2 Polychoric correlation coefficients between GSES scale items in the first data set

Item	1	2	3	4	5	6	7	8	9	10
1										
2	0.513									
3	0.468	0.595								
4	0.490	0.489	0.409							
5	0.393	0.348	0.413	0.418						
6	0.373	0.451	0.467	0.293	0.275					
7	0.491	0.480	0.473	0.557	0.446	0.384				
8	0.077	0.042	0.075	0.230	0.161	-0.020	0.179			
9	0.354	0.337	0.331	0.551	0.378	0.209	0.427	0.366		
10	0.354	0.433	0.377	0.274	0.260	0.493	0.290	0.028	0.240	

The statistically significant result of Bartlett's test of sphericity ($\chi^2(45) = 6073.1$; $p < 0.001$) and the value of the Kaiser-Meyer-Olkin criterion > 0.8 (KMO = 0.89) showed that our data met the baseline conditions for using factor analysis (Kaiser, Cerny, 1979). EFA using the Oblimin rotation on the matrix of polychoric correlations is presented in Table 3. The first two eigenvalues are 4.31 and 1.35; the first two components describe 32% and 21% of the variability in the data. In the single-factor model of the GSES scale, moderate to high factor loadings occur for all items, except for item 8. However, items 5, 6, 8, 9, and 10 show a low communality h2. In the two-factor model of the GSES scale, the factor loadings are slightly lower than in the single-factor model. In addition, items 5 and 7 have a double loading. Three items (5, 8, and 10) show a low communality h2. In addition, items 8 and 10 have a low correlation with the raw score. In the two-factor model, the first factor is loaded with items 1, 2, 3, 6, and 10. The second factor is loaded with items 4, 5, 7, 8, and 9. Items 5 and 7 with double loading were classified within the second factor because of their content. The correlation between the factors is moderate, r = 0.48.

Confirmatory Factor Analysis

For the purpose of CFA, the second half of the permutated data (N = 550) was used. The descriptive characteristics of this data set are presented in Table 1. The CFA was calculated on the basis of the polychoric correlation matrix. Both single-factor and two-factor models were verified. The loadings in the single-factor model with all 10 items are moderate to high (with values of 0.64–0.76) for all items except item 8, which has a loading only 0.21. The model shows good fit to our data but has unacceptably high residual values (see Table 4). Removing item 8 resulted in a slight improvement of the model fit, but unfortunately not in a sufficient reduction of the RMSEA and SRMR values. Thus, several models with the exclusion of different combinations of items with a low communality h2 (items 5, 6, 8, 9, and 10) were compared. The best-fitting single-factor model was that with the exclusion of four items (namely 5, 8, 9, and 10). This model has satisfactory CFI and TLI parameter values (> 0.95) and values of RMSEA and SRMR lower than 0.1. A comparison of the CFA results for some models is presented in Table 4.

In a two-factor model, the items were divided into factors according to the EFA results: the *shame* factor contained items 1, 2, 3, 6, and 10; the *guilt* factor comprised items 4, 5, 7, 8, and 9. Items 5 and 7 with double loading in EFA were included in the *guilt* factor not only because of their content but also because of the CFA results. The models in which items 5 and 7 were included in the *shame* factor showed worse fit to the data. With a full two-factor model (with all 10 items), the loadings are moderate to high (with values of 0.69–0.83) for all items except item 8, which has a loading only 0.26. This model has relatively good fit to our data (see Table 4). After the removal of item 8, the loadings of the individual items increased slightly, and the model fit improved as well. Considering the fact that the two-factor version of EFA had several items of a low communality h2 (items 5, 8, and 10), and items 8 and 10 had a low correlation with the raw score, other models were also compared using CFA, with removal of various combinations of these items. A model with items 8 and 10 removed was chosen as the best-fit two-factor model. This model has acceptable values for all the parameters of the fit that were compared (see Table 4) and leaves a balanced number of items in both factors. The final model is presented in Figure 1.

All of the following analyses were performed on the complete data set (N = 1101) to ensure sufficient power of the tests used.

Table 3 Item analysis and factor structure of the GSES using exploration factor analysis with Oblimin Rotation

	Item	1-factor model		2-factor model			Item analysis		
		Shame + Guilt	Communality h2	Shame	Guilt	Communality h2	Average	SD	Correlation with raw score without item
1	I feel guilty, even though I do not know exactly what it is caused by.	0.73	0.53	**0.57**	0.25	0.52	2.10	0.97	0.61
2	I experience moments when I cannot even look at myself.	0.78	0.61	**0.74**	0.11	0.65	1.90	0.93	0.65
3	There are moments when I would rather sink without trace.	0.74	0.55	**0.69**	0.13	0.58	2.30	0.95	0.63
4	When I do something wrong, I feel an exaggerated feeling of guilt.	0.74	0.54	0.28	**0.63**	0.65	2.50	1.03	0.65
5	I feel the need to explain or apologize for the reasons for my actions.	0.62	0.39	**0.34**	**0.39**	0.40	2.80	0.94	0.53
6	I am losing the hope that I will ever be a good person.	0.64	0.41	**0.83**	-0.15	0.60	1.60	0.85	0.50
7	I also blame myself for things that other people do not mind.	0.75	0.57	**0.44**	**0.44**	0.57	2.40	1.00	0.65
8	If I do something inconsistent with my conscience, I need to fix it quickly.	0.20	0.04	-0.30	**0.64**	0.32	3.30	0.80	0.19
9	If I do anything wrong, I have to think about it all the time.	0.61	0.37	0.06	**0.76**	0.62	2.90	0.89	0.55
10	If people around me knew what kind of person I am, they could not respect me.	0.57	0.33	**0.67**	-0.05	0.42	1.70	0.89	0.46
	Eigenvalue	4.31		4.31	1.35				
	% variability	32		32	21				

Note: SD=standard deviation, RS=raw score

Table 4 Confirmatory factor analysis parameters of various models of the GSES

Model GSES		DWLS Chi-Square	P-value	CFI	TLI	RMSEA (90% CI)	SRMR
1 factor	complete	347.7 (df 35)	<0.001	0.951	0.937	0.128 (0.116–0.140)	0.100
	without item 8	238.1 (df 27)	<0.001	0.966	0.955	0.119 (0.106–0.134)	0.088
	without items 5, 8, 9, and 10	49.5 (df 9)	<0.001	0.987	0.978	0.091 (0.067–0.116)	0.055
2 factors	complete	183.6 (df 34)	<0.001	0.977	0.969	0.090 (0.077–0.102)	0.075
	without item 8	97.7 (df 26)	<0.001	0.988	0.984	0.071 (0.056–0.086)	0.057
	without items 8 and 10	**44.8 (df 19)**	**<0.001**	**0.995**	**0.993**	**0.050 (0.031–0.069)**	**0.042**

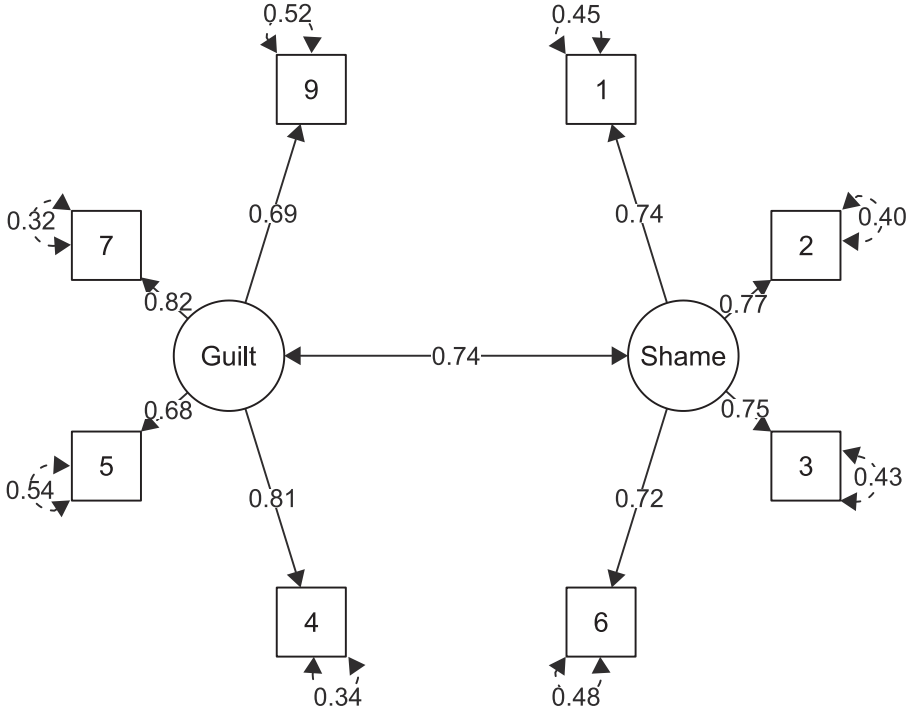

Figure 1 SEM model of confirmatory factor analysis of the two-factor model of the shortened version of the GSES (i.e. GSES without items 8 and 10). Numeric values indicate the factor loading of each item and the correlation between the factors.

Reliability

The internal consistency of the GSES questionnaire was first assessed for a complete ten-item scale. This analysis showed satisfactory reliability, with a Cronbach's alpha of 0.84 (95% CI 0.83–0.86). After removing individual items from the scale, the alpha values dropped slightly in all cases except for the removal of item 8, when the Cronbach's alpha is 0.86 (95% CI 0.84–0.87). After the extraction of items 8 and 10 (resulting from CFA), the Cronbach's alpha is 0.85 (95% CI 0.84–0.86). When the

data is divided into two factors without items 8 and 10, the Cronbach's alpha values are 0.78 (95% CI 0.76–0.80) for the *shame* factor and 0.79 (95% CI 0.77–0.81) for the *guilt* factor.

As the alpha coefficient assumes unidimensionality and the same variance of true scores across all items, we verified the reliability of the scale by means of the McDonald's omega (ω) coefficient suitable for multidimensional scales. The ω_h (hierarchical omega) coefficient is based on the hierarchical model and estimates the saturation of the general factor, while the ω_t (total omega) coefficient indicates the overall reliability of the test. The values of $\omega_h = 0.76$ and $\omega_t = 0.88$ for the complete ten-item GSES and $\omega_h = 0.68$ and $\omega_t = 0.88$ for the GSES scale without items 8 and 10 indicate that the reliability of this scale in the Czech environment is sufficiently high.

Descriptive statistics and comparison of socio-demographic groups

Descriptive characteristics of the data set and the results of the comparison of the mean scores of the simplified version of the GSES scale (excluding items 8 and 10) between socio-demographic groups are shown in Table 5.

The results of the Wilcoxon and Kruskal-Wallis tests indicate differences in *shame* and *guilt* values between socio-demographic groups of respondents. Women achieve significantly higher levels of *shame* than men ($p = 0.005$, with the effect size of Cohen's $d = 0.16$ and $\eta^2 = 0.006$). In various age groups the mean values in both subscales of *shame* and *guilt* gradually decrease with higher age and increase again in the

Table 5 Descriptive characteristics of the data set and results of a non-parametric comparison of the average scores of the factors of the resulting eight-item version of the GSES

	n (%)	Shame Average (sd)	Comparison of shame between groups	Guilt Average (sd)	Comparison of guilt between groups
Gender					
1. male	296 (26.9)	7.47 (2.78)	P=0.083	9.97 (2.74)	P=0.005
2. female	805 (73.1)	7.78 (2.83)		10.64 (3.10)	
Age					
1. 15–19	105 (9.5)	8.55 (2.89)	P<0.001 (1-3*, 1-5***, 2-5***, 4-5*)	10.80 (3.15)	P=0.007 (2-5*)
2. 20–29	389 (35.3)	7.92 (2.80)		10.82 (3.03)	
3. 30–39	237 (21.5)	7.43 (2.75)		10.08 (2.94)	
4. 40–49	213 (19.4)	7.69 (2.94)		10.32 (3.03)	
5. 50–59	103 (9.4)	6.60 (2.23)		9.85 (2.83)	
6. 60 and more	50 (4.5)	7.50 (2.76)		10.64 (2.93)	
Religiosity					
1. believer	739 (67.1)	7.85 (2.82)	P=0.002 (1-3*)	10.59 (2.95)	P=0.02
2. believer outside the Church	164 (14.9)	7.79 (3.05)		10.55 (3.22)	
3. non-believer	160 (14.5)	7.12 (2.58)		9.95 (2.97)	
4. convinced atheist	38 (3.5)	6.66 (2.30)		9.52 (3.44)	

Wilcoxon's two-choice test and the Kruskal-Wallis test. The P value refers to the comparison of all groups, whereas the relationships given in brackets are the result of multiple group comparisons.

age group over 60 years old. In particular, the age group between 50 and 59 years of age has a statistically significant reduction in *shame* and *guilt* values in comparison to the 20–29 age group (effect size: Cohen's d = 0.52; $\eta^2 = 0.063$ for *shame* and Cohen's d = 0.36 and $\eta^2 = 0.031$ for *guilt*). In the *shame* subscale, the age group between 50 and 59 years has statistically significantly lower values than all the other younger groups except the 30–39 age group. Both subscales, *shame* as well as *guilt,* are associated with religious belief. Believing respondents get higher values than non-believers (effect size: Cohen's d = 0.21; $\eta^2 = 0.011$ for *shame* and Cohen's d = 0.16; $\eta^2 = 0.006$ for *guilt*).

DISCUSSION

The aims of this study were to introduce a new instrument for measuring dispositional experiencing of shame and guilt and to assess the psychometric properties of the tool. The results of the descriptive statistics and the non-parametric comparisons between groups show a stronger disposition to the experiencing of guilt in women, and a stronger disposition to the experiencing of guilt and shame among religious respondents. Comparing different age categories shows a decrease in the experience of shame and guilt in older age groups. However, this trend is reversed in the group of respondents over 60 years old. The confirmatory factor analysis and reliability analysis recommended the extraction of two scale items. The resulting eight-item scale shows good reliability, with low to moderate correlation between items. The results of the confirmatory factor analysis support a two-factor model that corresponds to theoretical assumptions.

The results of our study are in part consistent with an extensive meta-analysis of inter-gender differences in experiencing feelings of shame and guilt, which has shown that women have a greater disposition to experience these feelings (Else-Quest et al., 2012). Using the newly created GSES scale on the Czech population sample showed that women had a higher disposition to experience feelings of guilt more frequently, while there was no significant difference between genders in experiencing shame. The disposition to experience feelings of guilt and shame is strongly influenced by socialization and by the acquisition of gender roles in a certain cultural context, Therefore, we can ask the question of whether the differences from the results of the above-mentioned meta-analysis does not reflect some specific features of socializing gender roles in the Czech cultural context.

The results of our study also showed a reduction in the dispositional experiencing of shame in older age groups. However, this tendency was reversed in the group of respondents aged over 60 years. Similar findings are reported by Orth, Robins and Soto (2010), who used the Affect-3 (TOSCA-3) method for measuring feelings of guilt and shame (Tangney, & Dearing, 2002). Orth, Robins and Soto (2010) show that the experiencing of shame decreased between the periods of adolescence and middle age, reached its minimum at the age of about 50, and then rose again. This partly corresponds to the results of our study. On the other hand, the findings of these authors differ in the experiencing of guilt. While our study shows a lower experiencing of guilt among the respondents aged 50–59 compared to the 20-29 age group, in a study published by Orth, Robins and Soto (2010), the perception of guilt in respondents increased from adolescence to 70 years and then showed a constant level. Subsequent studies should therefore also focus on the cultural context, which may influence other circumstances in the area of socio-demographic characteristics.

The results of our study also show a stronger predisposition to experience feelings of guilt and shame in religious (belonging to church) respondents compared to non-

religious respondents. One explanation may be the experiencing of different forms of spiritual struggles, which can also be associated with the experiencing stronger feelings of guilt (Exline, 2013). Varghese (2015) proves that an anxious relationship to God has been associated with a higher degree of shame. Surprisingly, in the case of feelings of guilt, this study reveals the opposite – an anxious relationship to God is associated with a lower perception of guilt. Murray, Ciarrocchi and Murray-Swank (2007) showed that the extent of alienation from God is a predictor of the experiencing of guilt and shame. Respondents who showed stronger feelings of alienation from God also experienced more feelings of guilt and shame. Comparing these results with the results of our study suggests that the subjective extent of alienation from God, an anxious relationship to God, and whether respondents are members of a Church or not are three different variables influencing the experience of feelings of shame and guilt in different ways.

The two-factor structure found in our data set corresponds to the theoretical prerequisites for creating the scale. The common characteristic of items 1, 2, 3 and 6 that constitute the *shame* factor is their reflection of a negative psychological experience which is not based on a concrete action, but is generalized to the whole person. This corresponds to the current definition of shame (Duncan, & Cacciatore, 2015). The common characteristic of items 4, 5, 7 and 9 that constitute the *guilt* factor is, on the contrary, their focus on a particular act or behaviour, that is associated with the desire to act differently. This corresponds to the basic definition of guilt, which is perceived as a negative emotion that is perceived as a result of a concrete action (Tangney, Stuewig, & Mashek, 2007).

Two items of the original scale worsened its psychometric properties and were therefore extracted from the scale. These are items 8 and 10. The corrective behaviour mentioned in question 8 is one of the natural responses to misconduct (Tangney et al., 1996). However, we can assume that this statement applied to the majority of respondents might have set the item 8 aside from the other items which reflect rather intense feelings of shame and guilt. The problem with question 10 might have been the fact that our formulation enabled the blending of two conceptual planes: the self-image of the respondents and the image of their perception by their environment. This might have had a negative impact on the understanding of the question.

The low to moderate correlation between the individual items of the scale, along with good reliability, suggests that the proposed scale covers different aspects of experiencing shame and guilt and measures the observed phenomena well, even with a low number of items. It can therefore be used as a tool that is suitable for larger test batteries. In the case of a narrower focus only on shame or guilt, it is also possible to use only the appropriate subscale.

Strengths and Limitations

The biggest strength of this study is that it responds to the lack of appropriate instruments for measuring feelings of shame and guilt and introduces a short and consistent scale that is usable for different types of surveys in this area. The second strength is the large sample of Czech respondents. A limitation is the fact that it is not a representative sample, and therefore it was not possible to compare more reliably the prevalence of observed phenomena between different various socio-demographic groups and to create norms for the whole population. Another limitation is the fact that the responses of some respondents (version B of the questionnaire) had reversed scoring that had to be re-reversed. It cannot be ruled out that the direction of the scoring may have a general impact on the respondents' answers. On the other hand, the numbers

were accompanied by explanatory comments, and it can therefore be assumed that the possible influence on the resulting selection would be minimal. Another limitation is that the data is based on the personal statements of the respondents and can therefore be affected by social desirability.

Implications

The results of the analyses indicate that GSES has satisfactory psychometric characteristics for research use. Future research could repeat the analyses on a representative sample. It is also recommended to shift some of the items of the scale, so the items on shame and guilt alternate as shown in the attached questionnaire.

Conclusion

Our research shows that GSES[1] is a measurement tool that can be used to analyse feelings of shame and guilt. Due to its simplicity, GSES is also easy to use in a broader research.

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[1] The tool is free to use; a condition is the approval of the author of the scale (a corresponding author) and OUSHI (oushi.upol.cz) and the citation of this original article. The scale is a part of the online supplementary material which is available for downloading under the option "Tools" at: oushi.upol.cz/publikace-vse/.

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SOUHRN

Psychometrická analýza Škály prožitků viny a zahanbení (Guilt and Shame Experience Scale, GSES)

Cíle. Do centra zájmu řady výzkumných studií se v současné době dostávají pocity zahanbení a viny a jejich spojitost s různými oblastmi lidského života. Aktuální potřebou je vývoj validních nástrojů pro měření těchto emocionálních zkušeností. Cílem této studie bylo představení nového nástroje, Škály prožitků viny a zahanbení (Guilt and Shame Experience Scale, GSES), a psychometrická analýza jeho vlastností.
Metoda. Výzkumný soubor byl tvořen 1101 respondenty získanými jako internetový vzorek metodou sněhové koule (26,9 % mužů; prům. věk 34,4; SD = 13,0). Součástí dotazníku byla otázka na religiozitu a základní sociodemografické údaje.
Výsledky. Výsledky neparametrických porovnání mezi různými sociodemografickými skupinami ukázaly vyšší míru dispozičního prožívání pocitů viny u žen a věřících respondentů a nižší dispoziční prožívání zahanbení i viny u respondentů středního věku. Pro účely faktorové analýzy byla data rozdělena na dvě poloviny. Jedna z nich (n = 551) byla použita pro explorační faktorovou analýzu (EFA) a druhá (n = 550) pro konfirmační faktorovou analýzu (CFA). Na základě výsledků EFA, provedené na matici polychorických korelací, a následné CFA byla původně desetipoložková škála zkrácena na 8 položek. Výsledná škála vykazuje dobrou reliabilitu, s hodnotou Cronbachova alfa 0,86 a McDonaldovova koeficientu omega 0,88 při nízké až střední korelovanosti jednotlivých otázek škály (hodnoty 0,20–0,60). Po analýze dat metodou EFA s využitím šikmé (Oblimin) rotace na matici polychorických korelací a metodou CFA se jako nejvhodnější jeví dvoufaktorové řešení s následujícími hodnotami CFA: χ^2 (19) = 44,8; $p < 0{,}001$; SRMR = 0,042; TLI = 0,993; CFI = 0,995; RMSEA = 0,050 (90% CI = 0,031–0,069). Dvoufaktorové řešení také odpovídá teoretickým předpokladům a očekávaným 2 subškálám dotazníku: zahanbení a vině. Každá subškála obsahuje 4 položky.
Omezení. Limitací této studie je, že se nejedná o reprezentativní vzorek a nebylo tedy možné např. zpracování norem pro českou populaci. V dalším výzkumu bude tedy vhodné provedené analýzy zopakovat i na vzorku reprezentativním.