**Psychiatr. Pol. 2015; 49(5): 1089–1099**
PL ISSN 0033-2674 (PRINT), ISSN 2391-5854 (ONLINE)
www.psychiatriapolska.pl
DOI: http://dx.doi.org/10.12740/PP/36754

# Trauma Related Guilt Inventory – psychometric properties of the Polish adaptation (TRGI-PL)

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**Summary**

**Aim.** Although various aspects of guilt are frequent problems of patients suffering from PTSD, they have been included into the diagnostic criteria for PTSD just in the present version DSM-5. Kubany proposed a cognitive conceptualization of guilt in PTSD followed by development of the Trauma Related Guilt Inventory (TRGI). The aim of the paper is to present psychometric properties of the Polish version of the inventory – the TRGI-PL.

**Methods.** A Polish adaptation of the Trauma-Related Guilt Inventory was applied to a sample of 280 motor vehicle (MVA) participants (147 females, 133 males of age from 18 to 80 (M = 34.93, SD = 13.71) within 1–24 months after a MVA (M = 10.18, SD = 6.23). Validation of the Polish version was done by analyzing the internal structure of the instrument and comparing the emotional and cognitive aspects of guilt assessed by the TRGI with PTSD symptoms, post-traumatic cognitions and responsibility for MVA and subjective agreement with the judgment.

**Results.** The model with four latent factors: Distress, Hindsight-Bias/Responsibility, Wrongdoing and Insufficient Justification scales showed acceptable fit (Satorra-Bentler $chi^2$ = 518.62, df = 203, $p < 0.01$, RMSEA = 0.079, CFI = 0.96, GFI = 0.97), what confirms the four-factor structure of guilt, obtained in the studies on original TRGI version. Reliability coefficients are similar to original version. Correlations with other PTSD measures showed satisfactory convergent and discriminative validity.

**Conclusions.** The Polish adaptation of the Trauma-Related Guilt Inventory is a reliable and valid tool for assessing guilt as a multidimensional phenomenon, comprising emotional and several cognitive characteristics, in trauma survivors.

**Key words:** PTSD, guilt, TRGI, questionnaire

The study was supported by Grant N N106360937 " Factors determining the effectiveness of cognitive-behavioural psychotherapy of post-traumatic disorders" from Polish Ministry of Science and Higher Education.

## Introduction

Guilt is a frequent phenomenon in post-traumatic stress disorder (PTSD). It has been underlined so far in clinical practice rather than as a criterion required for the formal diagnosis of PTSD. Renaissance of interest and detailed examination of trauma related guilt might be expected following introduction, in 2013, into DSM-5 a set of criteria including "Persistent, distorted cognitions about the cause or consequences of the traumatic event(s) that lead the individual to blame himself/herself or others" and "persistent guilt" [1, 2]. As a result of detailed studies on the phenomenon of guilt in trauma survivors Kubany suggested conceptualising guilt as a multidimensional phenomenon with emotional (distress/emotional pain) and cognitive components (a set of dysfunctional beliefs) [3]. Dysfunctional beliefs – typical for guilt – can be categorised into: (1) hindsight-bias – possibility to foresee and prevent of what happened (a belief that the outcome was foreseeable and this knowledge should be used to prevent it, i.e."I should have known better"; (2) Insufficient justification for own behaviours; (3) Full responsibility for causing negative, frequently tragic event (i.e."I was responsible for causing what happened"; (4) Violating personal values during the course of the trauma – wrongdoing; (5) A set of general, guilt related cognitions (i.e. "What I did was unforgiveable") [3]. Kubany's approach to understanding of guilt and the treatment derived from such conceptualization has already been described in a separate paper published in "Psychiatria Polska" [2].

## Trauma Related Guilt Inventory (TRGI)

Trauma Related Guilt Inventory (TRGI) was developed by Kubany to assess emotional and cognitive aspects of guilt associated with a specified traumatic event (combat experience, car accident, physical or sexual abuse, or sudden death of a loved one). Its development resulted from clinical work with trauma survivors, review of literature, available guilt scales, and structured interviews followed by exploratory factor analyses [4]. The questionnaire was designed in accordance with the theoretical approach [5], using exploratory factor analyses [4]. The final version consists of 32 items in 6 scales. One of the scales (the Guilt Cognition Scale) comprises 3 subscales. In all 32 items the answers are recorded on 5-point scale (ranging from 1 to 5) with poles described as: "extremely true/always true"; to "not all al true/never true" (eight items are reverse-scored). The Distress Scale consists of 6 items, the Global Guilt Scale consists of 4 items. The Guilt Cognitions Scale covers three empirically derived subscales: Hindsight-Bias/Responsibility (7 items), Wrongdoing (5 items) and Insufficient Justification (4 items) subscales, along with additional 6 – general cognitions items. In several subsequent studies (The Distress Scale and three specific subscales belonging to the Guilt Cognitions Scale) this tool was characterised by stable four-factor structure [3, 4]. During the TRGI development the Global Guilt Scale was considered

as a scale of reference (it was assumed that all the items should substantially correlate with scores of this scale). Six items assessing general guilt cognitions correlated highly with scores of this scale, but at a time demonstrated factor loading on more than one specific guilt cognition subdimension. For this reason these six items were included into the Guilt Cognition Scale, but they do not form a specific cognition subscale with a separate score [3].The inventory demonstrates satisfactory reliability (Cronbach's alpha from 0.67 to 0.82 for cognitive subscales and from 0.86 to 0.90 for other three scales) and validity (confirmed by confirmatory factor analysis as well as correlations with other instruments assessing PTSD, depression, anxiety, etc.) in groups of people experiencing various traumatic stressors (war veterans, women experiencing physical violence, victims of accidents) [3, 4]. Also the stability of the TRGI in time, measured by the authors of the original tool, with one week test-retest interval is satisfactory, with correlations ranging from 0.84 to 0.86 for three scales, and 0.73–0.75 for the three subscales of the Guilt Cognitions Scale.

## Aim

The aim of this paper is to present psychometric properties of the Polish adaptation of the TRGI (TRGI-PL), and to answer the question whether TRGI-PL can be considered a valid and reliable tool for assessment of guilt related to traumatic experience.

## Material

Sample consisted of 2,80 people involved in motor vehicle accidents (MVA): 147 females (52.5%) and 133 males (47.5%) aged between 18 and 80 (M = 34.93; SD = 13.71), mainly with secondary (n = 110; 39.3%) and higher education (n = 140; 50.4%). The main kinds of accidents were: car or car/motorbike collision (n = 186; 66.4%), running off the road (n = 41; 14.6%), hitting a pedestrian (n = 27; 9.6%) or a cyclist (n = 16; 5.7%) and other sort of accidents (n = 10; 3.6%). Fifty-nine subjects (21.1%) reported that they were recognised by the police/court as perpetrators of the accident, 164 (58.6%) as victims and in case of 57 subjects (20.3%) their responsibility was not established by the time of the study. Out of 223 subjects with recognised responsibility 195 individuals (87.4%) subjectively agreed and 28 (12.6%) did not agree with the judgment of the police/court.

## Method

The study was conducted at the Interdisciplinary Centre of Behaviour Genetics Research at the University of Warsaw, between 2010 and 2012, after approval by the local Ethical Committee for Psychological studies. Subjects were investigated with

a set of self-report questionnaires once, between 1 and 24 months after an accident (M = 10.18; SD = 6.23).

Trauma-related guilt was assessed using the Trauma-Related Guilt Inventory adapted into Polish by the authors of this study. The TRGI-PL was developed as two independent translations of the original instrument. No back translation was performed because the items were not culturally sensitive and the similarity of the obtained translations was unequivocal. The validation was done on the data obtained in the sample of MVA victims. First step was to analyse the internal structure of the instrument – comparison of the emotional and cognitive aspects of guilt assessed by the TRGI-PL with PTSD symptoms, experienced emotions, post-traumatic cognitions and responsibility for MVA and subjective agreement with the judgment, assessed using other tools.

For assessing the intensity of PTSD symptoms the PTSD-C inventory, developed by Zawadzki et al. was applied [6]. The inventory was developed on the basis of the two-parameters model of Item-Response Theory (IRT) to assess the severity of PTSD symptoms. It also enables to diagnose PTSD, according to DSM-IV-TR [7]. In this study Cronbach's alpha was 0.97. Items of PTSD-C were anchored to the period of the past month as well as items assessing the basic emotions experienced by subjects. For this purpose also the Affect Inventory developed by Diener, Smith and Fujita [8] and adapted into Polish by Wojciszke and Baryła was used [9]. The Affect Inventory enables assessing six basic emotions: joy, love, fear, anger, shame-guilt and sadness. Validation study was based only on scales assessing subdimensions of negative affect [8]: fear ($\alpha = 0.88$), anger ($\alpha = 0.87$), shame-guilt ($\alpha = 0.76$) and sadness ($\alpha = 0.87$).

For posttraumatic cognitions the Posttraumatic Cognitions Inventory (PTCI), by Foa et al. [10], adapted into Polish by Dragan et al. [11] was used. The PTCI is a widely used instrument designed to measure trauma-related cognitions and beliefs. The PTCI contains 33 statements that are rated on a Likert scale, that constitute a 3-factor structure: (a) Negative Cognitions About Self ($\alpha = 0.97$), (b) Negative Cognitions About the World ($\alpha = 0.92$), and (c) Self-Blame ($\alpha = 0.85$).

The data on perpetration of the MVA and subjective agreement with the judgment/sentence was obtained – as well as other variables, like demographic characteristics, using the Inventory for people involved in MVA [12].

## Results

### Confirmatory factor analysis

Analysis of data started from confirmatory factor analysis, in which goodness of fit of the models was examined, which in original studies were tested by exploratory and confirmatory factor analyses [3, 4]. The model with four latent factors (22 items of TRGI): (1) Distress, (2) Hindsight-Bias/Responsibility, (3) Insufficient Justification, and (4) Wrongdoing scales was fitted to the data by DWLS model (model applies

correlations with asymptotic covariances). The model showed acceptable fit (Satorra-Bentler $\chi^2 = 518.62$, df = 203, $p < 0.01$, $\chi^2/df = 2.56$, RMSEA = 0.079, CFI = 0.96, GFI = 0.97, according to Schermelleh-Engel, Moosbrugger and Müller, [13] models with RMSEA ≤ 0.08, $\chi^2/df \leq 3.00$, CFI ≥ 0.95 and GFI > 0.90 could be considered as acceptable). These results fully replicate findings obtained in original TRGI studies [3, 4]. Not acceptable fit (Satorra-Bentler $\chi^2 = 995.30$ df = 208, $p < 0.01$, $\chi^2/df = 4.79$, RMSEA = 0.130, CFI = 0.90, GFI = 0.91) was demonstrated for the model with two latent factors of guilt (the same 22 TRGI items): emotional (Distress/Pain) and cognitive (Hindsight-Bias/Responsibility, Wrongdoing and Insufficient Justification) as well as for Distress and all items assessing cognitive aspects of guilt (28 TRGI items: Satorra-Bentler $\chi^2 = 1250.15$, df = 349, $p < 0.01$, $\chi^2/df = 3.58$, RMSEA = 0.108, CFI = 0.94, GFI = 0.93). On the other hand, hierarchical model combining two – and four-factors, namely distress and broad cognitive factor with three lower level factors: Hindsight-Bias/Responsibility, Wrongdoing and Insufficient Justification, and six items assessing general cognitive aspects of guilt, showed acceptable fit (Satorra-Bentler $\chi^2$ = 809.05, df = 346, $p < 0.01$, $\chi^2/df = 2.34$, RMSEA = 0.077, CFI = 0.97, GFI = 0.96). These results indicate that post-traumatic guilt should be first of all considered as

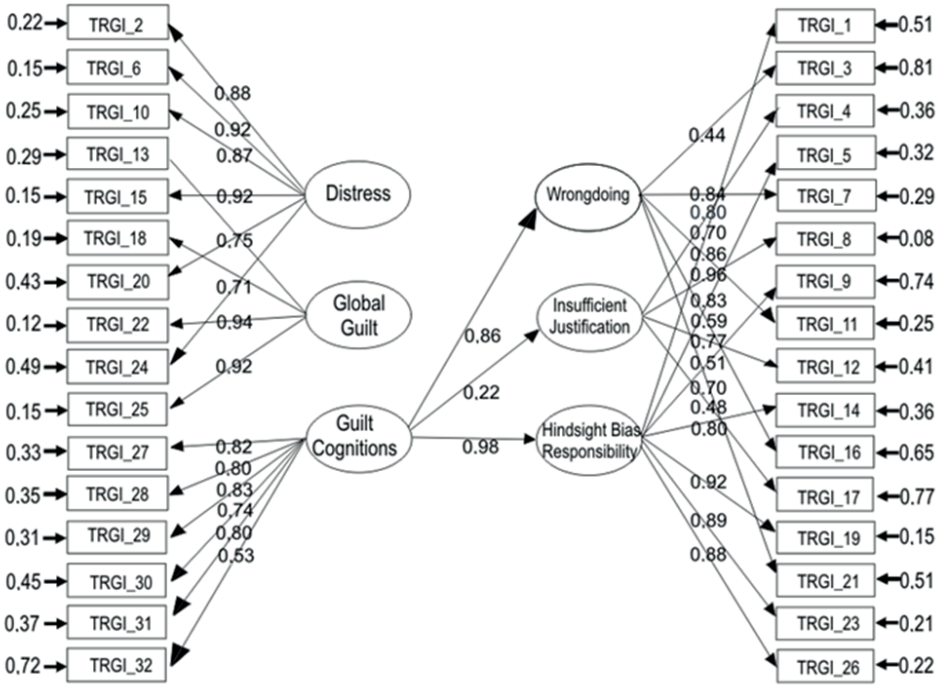


Figure 1. **Hierarchical model of trauma-related guilt – results of confirmatory analysis**

Note. Item scores 4, 8, 12, 17, 18, 22, 25 and 32 (reverse-scored) were recoded

a multidimensional phenomenon, comprising emotional and broad cognitive factor with several specific cognitive characteristics.

In the last step analysis that tested the fit of the whole model was conducted by extending hierarchical model with the sixth scale: Global Guilt. This model also showed acceptable fit (Satorra-Bentler $\chi^2 = 1076.11$, df = 458, $p < 0.01$, $\chi^2/df = 2.35$, RMSEA = 0.078, CFI = 0.97, GFI = 0.97) and is depicted in Figure 1.

## Reliability – internal consistency

In result the reliability coefficient was very high for cognitive subscales (from 0.76 to 0.92) and from 0.91 to 0.92 for other scales, strictly comparable to indices of original TRGI. Table 1 aside of reliability, summarizes also descriptive statistics of TRGI-PL scales.

Table 1. **Descriptive statistics and psychometric indices of scales of the Polish TGRI version [4]**

| TRGI-PLscale | No of items | M | SD | M (item) | SD (item) | Cronbach's alpha | Skewness | Kurtosis |
|---|---|---|---|---|---|---|---|---|
| Distress | 6 | 11.06 | 6.78 | 1.84 | 1.13 | 0.92 | 0.17 | -0.94 |
| Wrongdoing | 5 | 5.85 | 4.26 | 1.17 | 0.85 | 0.76 | 0.55 | -0.34 |
| Insufficient Justification | 4 | 9.41 | 4.20 | 2.35 | 1.05 | 0.79 | -0.26 | -0.70 |
| Hindsight-Bias/ Responsibility | 7 | 9.34 | 6.75 | 1.33 | 0.97 | 0.90 | 0.37 | -0.86 |
| Guilt Cognitions | 22 | 30.52 | 15.58 | 1.39 | 0.71 | 0.92 | 0.32 | -0.34 |
| Global Guilt | 4 | 4.61 | 4.12 | 1.15 | 1.03 | 0.91 | 0.60 | -0.51 |

M – mean; SD – standard deviation of scale results; M (item) – mean of the scale calculated as the mean of the item score; SD (item) – standard deviation

The items were scored on a scale ranging from 0 to 4 points.

## Concurrent and discriminative validity

In validity studies it should be underlined that no significant correlations were found with age. Only poor correlations of: Insufficient Justification with education (-0.14*), Wrongdoing with the time passing from accident (0.13*), gender with Distress (-0.11*) and with Insufficient Justification (0.16*) were found, indicating that females are more prone to experience emotional guilt and less of insufficient justification than males.

The correlations of TRGI-PL scales and PTSD-C, Inventory assessing four negative emotions, posttraumatic cognitions, and the item from MVA inventory,

assessing responsibility for the accident, are depicted in Table 2. Correlations with subjective agreement with the judgment were not significant, but it should be also noted that victims demonstrated lower level of guilt (except distress) than perpetrators. Aside from the correlations calculated for the whole sample, the differences of correlations obtained for gender, age and education subgroups were examined (for age and education the sample was split by appropriate medians). Among 54 correlations the only five were statistically different for gender subgroups (two were obtained for responsibility for MVA) and only one for education (those coefficients are presented in Table 2, next to the correlations obtained for the whole sample). These results indicate the high demographic invariance of validity of Polish TRGI version, but also suggest that gender could be a moderator of relationship between subjective guilt and responsibility for MVA and agreement with the judgment, what was found in set of analyses of variance.

Table 2. **Correlation coefficients between TRGI scales and PTSD-C. Inventory assessing basic emotions and responsibility of guilt**

| TRGI scale | Intensity of PTSD (PTSD-C) | Fear | Anger | Shame-guilt | Sadness | Negative self (PTCI) | Negative-world (PTCI) | Self-blame (PTCI) | Perpetra-tor/ victim (Eta N = 223) |
|---|---|---|---|---|---|---|---|---|---|
| Distress | 0.62* (Ed: 0.51*/0.71*) | 0.54* | 0.28* | 0.39* | 0.46* | 0.33* | 0.27* | 0.32* | -0.09 |
| Wrongdoing | 0.37* (G: 0.49*/0.26*) | 0.26* | 0.20* | 0.40* | 0.28* | 0.46* | 0.23* | 0.42* | – 0.21* |
| Insufficient Justification | -0.07 | -0.08 | 0.02 | 0.01 | -0.03 | 0.13* | 0.09 | 0.01 | -0.23* |
| Hindsight-Bias/ Responsibility | 0.19* | 0.26* | 0.13* | 0.46* (G: 0.38*/0.57*) | 0.27* | 0.46* | 0.13* | 0.70* | -0.39* (G: - 0.57*/ -0.19*) |
| Guilt Cognitions | 0.24* | 0.23* | 0.13* | 0.48* | 0.28* (G: 0.19*/ 0.41*) | 0.47* | 0.19* | 0.67* | -0.42* |
| Global Guilt | 0.29* | 0.28* | 0.13* | 0.48* | 0.27* | 0.45* | 0.10 | 0.65* | -0.30* (G: -0.44*/ -0.13) |

*Note*. Correlations (Pearson's *r/Eta*) significant at $p < 0.05$ are marked by an asterisk. Sign of Eta correlation was added after analysis of direction of subgroups differences. The significance of differences of correlations between gender, age and education subgroups were assessed by *z*-test (see. [16], p. 591) – in table the only those correlations are presented for which the significant differences were found. G – gender (correlations are presented in order: females, males); Ed – education (in order: lower = primary-secondary, higher = university).

For Hindsight-Bias/Responsibility subscale, Global Guilt and Guilt Cognition Scales the significant interaction of responsibility for MVA and subjective agreement with the judgment/sentence were found (see Figure 2).

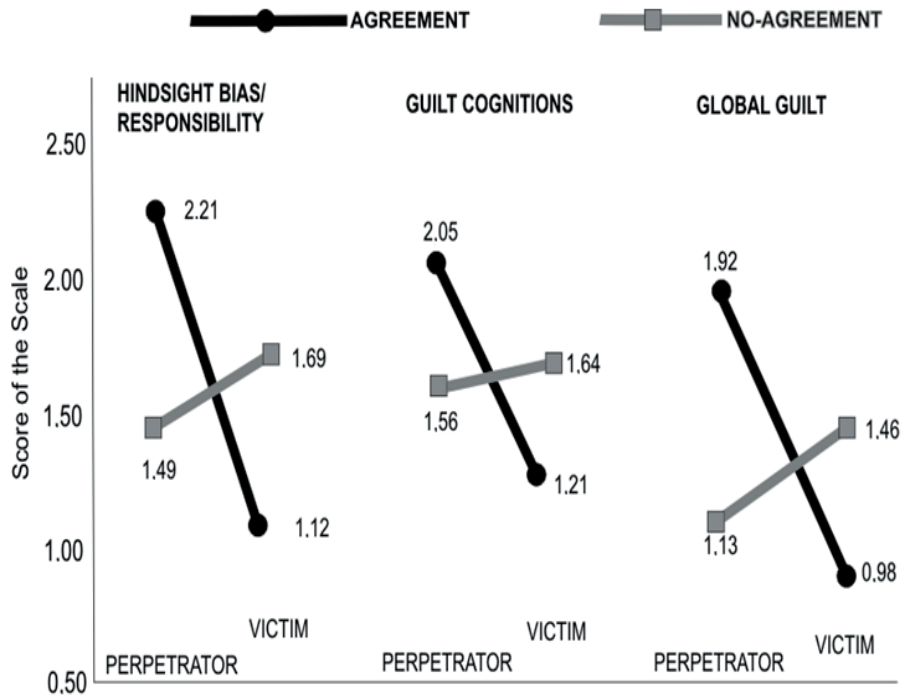


Figure 2. **Interactions between assigned and perceived perpetration of the accident as predictors of the scores of: Hindsight-Bias/Responsibility, Guilt Cognitions and Global Guilt.**

Note. Three-factor analysis of variance (perpetration, agreement, gender) – significant interactions of perpetration and agreement with the judgement ($df = 1/215$, $p < 0.05$): $F = 10.15$ ($\eta^2 = 0.05$), $F = 10.24$ ($\eta^2 = 0.05$) and 8.68 ($\eta^2 = 0.04$) for Hindsight-Bias/Responsibility, Guilt Cognitions and Global Guilt, respectively (three-factor interactions not significant). For Hindsight-Bias/Responsibility Scale and Global Guilt also perpetration-gender interactions were found: $F = 10.70$ ($\eta^2 = 0.05$) and 5.95 ($\eta^2 = 0.03$), as well as agreement with the judgement and gender $F = 6.86$ ($\eta^2 = 0.03$) and 10.07 ($\eta^2 = 0.05$).

The significant differences were found for perpetrators (not victims) between agreement and no-agreement subgroups, but also between perpetrators and victims within both agreement and no-agreement subgroups. It was also found that (data not presented) responsibility for MVA enhances guilt in females (interaction between gender and responsibility – female perpetrators demonstrated higher subjective guilt than female victims), and lack of agreement with the judgment in males leads to higher subjective guilt (interaction between gender and agreement with the judgment).

## Discussion

The aim of the study was to assess the psychometric properties of the TRGI-PL. The data support the view that TRGI-PL is a very useful tool for the assessment of trauma related guilt. The structure of guilt, obtained in the studies on original TRGI version has been confirmed also in our study. Within variety of conceptualisations of guilt based on various theoretical approaches [3, 4] most authors agree that guilt has emotional and cognitive components. Our results indicate that post-traumatic guilt should be first of all considered as a multidimensional phenomenon, comprising emotional and several cognitive characteristics. The advantage of the tool, unlike other tools measuring guilt, is detailed and multi-dimensional presentation of the phenomenon of guilt. Isolating the specific cognitive components of guilt, enables to study them and monitor changes during therapy [2, 13]. Although almost all TRGI scales correlated significantly with PTSD and scales assessing subdimensions of negative affect (what confirms convergent validity of TRGI-PL scales), the highest correlations were found for distress and PTSD symptoms as well as all negative emotions, but mainly with fear. For cognitive aspects of guilt higher correlations were found for shame-guilt than with other emotions, what indicates discriminative validity of TRGI-PL scales.

Correlations with PTCI are a source of important data on validity of TRGI-PL. High and significant correlations with negative beliefs about self and with self-blame support placing guilt in the "D" criteria for PTSD included in DSM-5, together with persistent negative cognitions of oneself and the world, distorted way of thinking about the causes or consequences of the traumatic event and persistent, a negative emotional state. Highest correlations of self-blame with Global Guilt, Guilt Cognitions and Hindsight-Bias/Responsibility in our sample indicate validity of the tool. They also contribute to the discussion on analysis of the problem of relatively low self-blame in MVA victims raised by Beck et al. [14], self-blame is relatively small in contrast to, for example, victims of sex crimes.

Majority of studies focus on the role of litigation (ongoing vs. settled) in PTSD symptomatology in MVA victims [14]. An interaction of responsibility for MVA and subjective agreement with the judgment found in our study indicate that global and cognitive aspects of post-traumatic guilt may have primary external roots (as in the case of perpetrators and victims who had not agreed with a judgement). However it, should be mainly considered as a subjective phenomenon, which is influenced by subjective assessment of responsibility for MVA (in the case of perpetrators who had not agreed with a judgment), which is in part irrational (in the case of victims who had not agreed with the official judgment). These findings are strictly in line with predictions based on model of guilt [3] and indicate a space for therapeutic interventions focused on cognitive distortions related to guilt [15].

## Conclusions

The Polish adaptation of the Trauma Related Guilt inventory enables reliable and valid assessment of the phenomenon of guilt in trauma survivors. It may be used in studies on PTSD psychopathology but also in cognitive conceptualisation, treatment planning and monitoring the effects of the treatment of PTSD.

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