Acta Psychiatrica Scandinavica

Acta Psychiatr Scand 2018: 138: 536–546

DOI: 10.1111/acps.12956

ACTA PSYCHIATRICA SCANDINAVICA

The International Trauma Questionnaire: development of a self-report measure of ICD-11 PTSD and complex PTSD

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Cloitre M, Shevlin M, Brewin CR , Bisson JI, Roberts NP, Maercker A, Karatzias T, Hyland P. The International Trauma Questionnaire: development of a self-report measure of ICD-11 PTSD and complex PTSD.

Objective: The purpose of this study was to finalize the development of the *International Trauma Questionnaire* (ITQ), a self-report diagnostic measure of post-traumatic stress disorder (PTSD) and complex PTSD (CPTSD), as defined in the 11th version of the International Classification of Diseases (ICD-11).
Method: The optimal symptom indicators of PTSD and CPTSD were identified by applying item response theory (IRT) analysis to data from a trauma-exposed community sample (n = 1051) and a trauma-exposed clinical sample (n = 247) from the United Kingdom. The validity of the optimized 12-item ITQ was assessed with confirmatory factor analyses. Diagnostic rates were estimated and compared to previous validation studies.
Results: The latent structure of the 12-item, optimized ITQ was consistent with prior findings, and diagnostic rates of PTSD and CPTSD were in line with previous estimates.
Conclusion: The ITQ is a brief, simply worded measure of the core features of PTSD and CPTSD. It is consistent with the organizing principles of the ICD-11 to maximize clinical utility and international applicability through a focus on a limited but central set of symptoms. The measure is freely available and can be found in the body of this paper.

Significant outcomes

- A 12-item version of the International Trauma Questionnaire (ITQ) for the ICD-11 PTSD and CPTSD disorders was finalized and validated.
- Consistent with ICD-11 guidelines, the ITQ is (i) a brief and simply worded measure that facilitates straightforward translation and maximizes international applicability and (ii) provides a set of simple diagnostic rules to maximize ease of use in clinical and research settings.
- The ITQ is freely available in the public domain for all interested parties without any change. Further evaluation and development of the measure are needed, as is research regarding the nature, predictors, course, treatment and outcomes of PTSD and CPTSD.

Limitations

- While the community sample was drawn from a nationally representative panel, it cannot be concluded that the trauma-exposed participant sample was nationally representative.
- The participants in the clinical sample were recruited from trauma speciality clinics and may not be representative of the general help-seeking trauma-exposed population.
- Generalizability of the current findings to other countries, especially non-English speaking countries, is unknown.

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Key words: post-traumatic stress disorder; complex PTSD; ICD-11; the International Trauma Questionnaire; self-report

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Accepted for publication August 13, 2018

Introduction

The World Health Organization (WHO) published the 11th revision of the *International Classification of Diseases* (ICD-11) in 2018, the first major revision to the ICD in 26 years (1). The organizing principles underpinning revisions to mental disorders in ICD-11 were that disorders should have clinical utility, be focused on a limited set of core symptoms and have international applicability (2). A revised definition of post-traumatic stress disorder (PTSD), comprised of six symptoms distributed across three symptoms clusters (Re-experiencing in the here and now, avoidance of traumatic reminders and a sense of threat), is included within the category of 'Disorders Specifically Associated with Stress'. A sibling diagnosis of complex PTSD (CPTSD) is also included in this category and is comprised of the core PTSD symptom clusters plus three additional symptom clusters (affective dysregulation, negative self-concept and disturbances in relationships) that collectively represent 'Disturbances in Self-Organization' (DSO) (3). Brewin et al. (4) reviewed the existing literature on ICD-11 PTSD and CPTSD and found strong support for their construct validity.

Unlike the DSM (5), the ICD does not necessarily provide a defined list of specific symptoms necessary for a diagnosis of a given disorder. Rather, the ICD provides a narrative description of the 'definition of a disorder along with a list of that disorder's essential (required) features (6). This broad formulation sets a framework for the general understanding of a disorder. However, the absence of specific symptoms and diagnostic criteria creates ambiguity and potential problems in establishing a shared understanding of the meaning and presentation of a disorder among both clinicians and researchers. In an attempt to operationalize the narrative descriptions of ICD-11 PTSD and CPTSD provided by the WHO (6), researchers including members of the 'Working Group for Disorders Specifically Associated with Stress' developed a preliminary-stage, self-report measure called the *International Trauma Questionnaire* (ITQ) (7), along with a defined set of diagnostic criteria. The development of the PTSD items was influenced by the work of Brewin et al. (8), and the development of the DSO items was based on the results of the DSM-IV field trials which assessed the most frequently reported CPTSD symptoms (9), and the results of a consensus survey among expert clinicians who were asked to identify the most frequent and most impairing CPTSD symptoms (10). The preliminary-stage version of the ITQ included 28 test items, and multiple studies have shown that its latent structure reflects the distinction between PTSD and DSO symptomatology and provided support for the factorial, discriminant, concurrent, predictive and cross-cultural validity of PTSD and CPTSD (4, 11, 12) (see Appendix 1 for a list of all ITQ items). However, to align with the organizing principle of ICD-11 that disorders should focus on a limited but central set symptoms, the goal of the current study is to abbreviate the ITQ to a final set of 12 items so that each PTSD and DSO cluster is represented by two items.

Aims of the study

To achieve this goal, the psychometric properties of all (dichotomously scored) ITQ items were assessed using item response theory (IRT) models. Although much of the existing ITQ psychometric research has employed factor analysis models (11, 12), IRT models are more appropriate to assess the performance of indicators when their purpose is to identify the presence of a symptom. In relation to the final selection of PTSD items, the psychometric performance of the two commonly used re-experiencing items (RE1: *nightmares* and RE2: *flashbacks*) would have to be found to be poor to consider replacing either (or both) with alternative test items. The criteria for the selection of the DSO items were that (i) the Affective Dysregulation cluster should include one 'hyperactivation' item

and one 'deactivation' item (see 13); (ii) items with higher discrimination would be preferred; and (iii) items that have excessively high or low thresholds for endorsement would be rejected. Following the selection of the final set of 12 items for the optimized version of the ITQ, diagnostic rates for ICD-11 PTSD and CPTSD were estimated and compared to those from the previously used diagnostic algorithm based on the preliminary-stage version of the ITQ. The latent structure of the optimized ITQ was assessed using confirmatory factor analysis (CFA), and diagnostic groups were compared in terms of their levels of lifetime interpersonal trauma.

Material and methods

Participants and procedures

The current study was based on two distinct samples drawn from the adult population of the United Kingdom (UK). Sample 1 was a community sample drawn from an existing online research panel that is representative of the entire UK adult population. Panel members were randomly recruited through probability-based sampling, and inclusion criteria for sample selection in this case were that respondents (a) had been born in the UK, (b) were aged 18 years or older at the time of the survey and (c) screened positive for at least one lifetime traumatic event (assessed using the Life Events Checklist, described below). Ethical approval was granted by the ethical review board of the institution to which the last author is affiliated. No inducements or incentives were offered for participation. In total, 2653 panel members were assessed to meet the inclusion criteria and 1051 people qualified as valid cases (selection rate = 39.6%). There were no missing data. This mean age of the sample was 47.18 years (SD = 15.00, range = 18–90 years), and 68.4% (n = 719) of participants were female. The majority of individuals indicated that they were in a committed relationship (70.4%, n = 740), did not have children under the age of 16 years (67.5%, n = 709), had completed third-level education (62.7%, n = 659) and were in full- or part-time employment (58.5%, n = 615). A number of participants indicated that they had emigrated at some point in their lifetime (17.8%, n = 187).

Sample 2 was a clinical sample, and participants were recruited in an opportunistic manner from two treatment centres in the UK that provide psychological treatment for trauma-exposed persons (N = 247). No incentives or inducements were used to recruit participants, and participation did not determine access to care. Ethical approval for this data collection was provided by the relevant local research ethics committees. The mean age of the sample was 42.07 years (SD = 12.96, range = 18–71 years), and 68.0% (n = 168) were female. The majority of the sample indicated that they were unemployed (52.8%, n = 130), not in a committed relationship (68.5%, n = 167), and had completed third-level education (52.6%, n = 130). Full data were available for this sample.

Measures

Traumatic exposure. The Life Events Checklist for DSM-5 (LEC-5) (14) was used in both samples to assess lifetime traumatic exposure. Participants were asked to indicate on a 'Yes' (1) or 'No' (0) basis if they had directly experienced 16 traumatic events plus any other traumatic event not listed. A total score was calculated for each sample ranging from 0 to 17. The mean number of lifetime traumas in the community sample was 3.36 (Mdn = 3.00, SD = 2.70, range = 1–17), and the most commonly experienced trauma was the sudden and unexpected death of someone close to you (56.6%, n = 595). This event was also the most commonly reported 'most distressing traumatic event' (29.4%, n = 309). Among the clinical sample, the mean number of lifetime traumas was 6.68 (Mdn = 6.00, SD = 3.12, range = 1–17), the most commonly experienced trauma was physical assault (86.6%, n = 214), and sexual assault was the most commonly reported 'most distressing traumatic event' (23.5%, n = 58). Following Ehring and Quack's (15) recommendations, a total score of interpersonal trauma (physical assault, assault with a weapon, sexual assault, other unwanted or uncomfortable sexual experiences, combat or exposure to a war-zone, captivity, serious injury and/or harm and/or death you caused to someone else) was calculated where scores ranged from 0 to 7.

ICD-11 PTSD and CPTSD. The preliminary-stage version of the ITQ (7) used in this study included 12 PTSD items and 16 DSO items. There were eight re-experiencing items including two that have been consistently used (RE1 and RE2) and six test indicators (RE3-RE8), some of which were taken from the Dissociative Symptoms Scale (16). There were two items measuring avoidance (AV1, AV2) and sense of threat (TH1, TH2) symptoms. The avoidance and sense of threat items were adapted from the Posttraumatic Stress Disorder Checklist for DSM-5 (PCL-5) (17). There were nine Affective Dysregulation items (five 'hyperactivation' [AD1-

AD5] and four 'deactivation' [AD6-AD9] items), four Negative Self-Concept (NSC1-NSC4) items and three Disturbances in Relationship (DR1-DR3) items. Additionally, three items measure functional impairment (social, occupational and other important areas of life) associated with the PTSD and DSO symptoms respectively. Internal reliability was assessed by Cronbach's alpha (α), and within the community sample, αs for all PTSD and DSO subscales were $\geq$0.77, with the exception of the avoidance items which were slightly lower than desirable ($\alpha = 0.67$). In the community sample, reliabilities for all PTSD and DSO subscales were satisfactory; all αs ≥ 0.79.

The ITQ items were measured using a five-point Likert scale ranging from 'Not at all' (0) to 'Extremely' (4). Following standard practice in trauma research (18, 19), scores $\geq$2 ('Moderately') were used to indicate the presence of a symptom. All analyses were based on these dichotomized items. Two diagnostic algorithms for ICD-11 PTSD and CPTSD were used in this study. The first is consistent with the diagnostic algorithm that has been used in all prior studies utilizing the preliminary-stage version of the ITQ (see 11, 12). The second is based on the optimized version of the ITQ. Under this algorithm, diagnosis of PTSD requires the endorsement of one of two symptoms from each PTSD cluster, plus endorsement of functional impairment associated with these symptoms. Diagnosis of CPTSD requires the endorsement of one of two symptoms from each of the six PTSD and DSO clusters, plus endorsement of functional impairment associated with these symptoms. The ICD-11 taxonomic structure dictates that a person may only receive a diagnosis of PTSD or CPTSD, but not both.

Data analysis

Analysis for this study consisted of two linked phases. In Phase 1, endorsement rates were calculated for all ITQ items, and 1- and 2-parameter binary logistic IRT models were estimated for the PTSD and DSO items separately. Mplus 7.4 (20) was used to specify and estimate the model parameters using robust maximum-likelihood. For the 2-parameter model, discrimination and difficulty parameters were estimated for all items. The discrimination parameter is the logistic regression that relates the latent variable, theta θ (with a mean of 0 and a variance of 1), to the binary indicator where higher values indicate increased discriminatory power. The difficulty parameter represents 'cut-points' on the underlying trait (θ). Mplus estimates these parameters as thresholds, and these were converted into difficulty estimates that represent the level of θ where an individual has a probability of 0.50 of endorsing the indicator. A 1-parameter model was also tested where the item discrimination parameters were constrained to be equal for indicators loading on each latent variable. This is 'within cluster equality' where the discrimination parameters for the indicators for each symptom cluster were constrained equal, but no constraints were imposed across clusters. The Akaike information criterion (AIC), the Bayesian information criterion (BIC) and the sample size-adjusted Bayesian information criterion (ssaBIC) were used to evaluate the models. The model with the lowest BIC value was considered to be the better model, and a difference of $\geq$10 was considered to be indicative of a 'significant' difference (21). On the basis of parsimony, the 1-parameter model was selected unless the information criteria indicated that the 2-parameter model was superior. With such a large number of indicators, some violations of the assumptions of IRT were likely, particularly local independence, but this model provides easily interpretable parameters that could help inform the process of item selection. Therefore, the IRT modelling at this stage was not used as a method to identify the best performing items; rather, it was used to identify any potentially problematic items with obviously poor performance such as excessively high or low difficulty and/or poor discrimination. The information on endorsement rates, discrimination/difficulty and clinical relevance was used collectively to identify PTSD and DSO indicators that could be used for the 12-item, optimized version of the ITQ.

In Phase 2, the psychometric and diagnostic performance of the optimized ITQ was assessed. This involved (i) assessing the latent structure of the ITQ using CFA based IRT model; (ii) testing for differential item functioning based on a multigroup IRT model; (iii) calculating the diagnostic rates of ICD-11 PTSD and CPTSD and comparing these findings to the diagnostic rates produced using the preliminary-stage version of the ITQ; and (iv) testing whether there were significant differences in lifetime interpersonal trauma exposure across the diagnostic categories. To assess the latent structure of the optimized ITQ, two models identified in prior validation studies were evaluated (11, 12). Model 1 is a correlated six-factor model (Re-experiencing, avoidance, sense of threat, affective dysregulation, negative self-concept, and disturbances in relationships) where each factor is measured by two items. Model 2 is a two-factor second-order model whereby the first-order factor correlations are explained by two correlated

second-order factors: PTSD and DSO. These models were estimated using the robust weighted least squares estimator (WLSMV) with a nonlinear probit link based on the tetrachoric correlation matrix of latent continuous response variables and delta parameterization. The scale of the latent variables was set by fixing the first loading of each latent variable at 1 thereby allowing the factor variances to vary across the groups. Model fit was evaluated in relation to a number of goodness-of-fit indices, and standard criteria were used to determine the model fit (22): a nonsignificant chi-square (χ^2) result indicates good model fit; Comparative Fit Index (CFI) and the Tucker-Lewis Index (TLI) values ≥0.90 and ≥0.95 reflect acceptable and excellent model fit respectively; and root mean square error of approximation (RMSEA) values ≤0.08 and ≤0.05 indicate acceptable and excellent model fit respectively.

Subsequent models that tested for 'configural' and 'scalar' invariance were fitted to the correlated six-factor model. The configural model specified a multigroup model where the loadings were free to vary across the clinical and community groups. The scalar model placed equality constraints on the loadings across the groups. Thresholds were invariant across groups, and the latent variable means in the community group were fixed to zero, and the latent variable means for clinical group were estimated. The relative fit of the models was tested using the DIFFTEST (23). It has been shown that overall WLSMV-based model fit statistics are not sensitive enough to identify potential violations of local independence (24) that can result in biased parameter estimates. To identify potential violations of local independence, the solution from the multigroup analysis was examined using the modification indices (MI) and the expected parameter change (EPC) parameters. The MIs were used to identify potential correlated residual errors that should be included in the model; a cut-off value of 10 was used as MIs have been shown to increase the risk of type 1 errors with large samples (25). The EPC estimates the expected value of a fixed parameter if it was a freely estimated parameter in the model. The EPC for the residual correlations (which is analogous to Yen's Q_3) (26) was inspected, and values >0.20 would be indicative of local independence violations (27). Following the guidance of Saris, Satorra and van der Veld (28), MIs and EPCs were interpreted in combination.

Finally, the diagnostic groups (no diagnosis, PTSD and CPTSD) identified by the optimized ITQ were compared in relation to their mean levels of lifetime interpersonal trauma using a one-way between-group analysis of variance (ANOVA). The Tukey HSD test was used for post hoc pairwise comparisons, and overall effect sizes were calculated using eta-squared (η^2). Based on Cohen's guidelines (29), η^2 values from 0.01 to 0.05 reflect a small effect, values from 0.06 to 0.13 indicate a medium effect, and values ≥0.14 indicate a large effect.

Results

Phase 1 results: Binary logistic IRT model results

Table 1 reports the fit statistics for the IRT models of the PTSD and DSO items in both samples. The BIC value was lower for the 1-parameter model compared to the 2-parameter model in each case, indicating that the items were equivalent in discriminatory power, except for the DSO model based on the data from the community sample.

Tables 2 and 3 report the endorsement rates and IRT parameters for the PTSD and DSO items in both samples. The endorsement rates for the two commonly used re-experiencing items (RE1 and RE2) were slightly lower than the endorsement rates for the avoidance and sense of threat items. However, neither item possessed excessively high (RE7) or low (RE4) endorsement rates. Furthermore, RE1 and RE2 produced satisfactory discrimination and difficulty parameters, and as such, there was no evidence to indicate the need to replace either item. Therefore, RE1 and RE2 were selected for inclusion in the optimized ITQ alongside AV1, AV2, TH1 and TH2.

The Affective Dysregulation items were inspected in order to select one 'hyperactivation' item (AD1-AD5) and one 'deactivation' item (AD6-AD9). The threshold/difficulty parameters of AD4, AD5, AD8 and AD9 were deemed to be excessively high relative to the other items within these clusters and were consequently rejected. The remaining items performed similarly in both

Table 1. Fit statistics for the item response theory models of PTSD and DSO symptoms

Sample	Scale	Model	AIC	BIC	ssaBIC
Community	PTSD	1-parameter	9138.979	9228.214	9171.043
		2-parameter	9129.527	9263.379	9177.623
	DSO	1-parameter	13474.879	13583.944	13514.069
		2-parameter	13357.405	13530.918	13419.752
Clinical	PTSD	1-parameter	2463.162	2526.331	2469.271
		2-parameter	2455.515	2550.268	2464.678
	DSO	1-parameter	3586.520	3667.236	3594.327
		2-parameter	3571.794	3698.132	3584.012

AIC, Akaike information criterion; BIC, Bayesian information criterion; DSO, Disturbances in Self-Organization; PTSD, post-traumatic stress disorder; ssaBIC, sample size-adjusted BIC.

Table 2. Endorsement rates and item response parameters for all ITQ item for the community sample ($N = 1051$)

Indicator	Endorsement		Discrimination (SE)	Threshold (SE)	Difficulty (SE)
	N	%			
PTSD symptoms					
RE1. Upsetting dreams	282	26.8	3.89 (0.17)	2.59 (0.18)	0.666 (0.05)
RE2. Reliving event in the here and now	334	31.8	3.89 (0.17)	1.99 (0.17)	0.512 (0.04)
RE3. Being reminded then spacing out	319	30.4	3.89 (0.17)	2.16 (0.17)	0.555 (0.04)
RE4. Moments when lose control and act as in past	197	18.7	3.89 (0.17)	3.73 (0.20)	0.960 (0.05)
RE5. Memory so strong lose track of surroundings	272	25.9	3.89 (0.17)	2.71 (0.18)	0.697 (0.05)
RE6. React to others as back in the past	242	23.0	3.89 (0.17)	3.01 (0.19)	0.796 (0.05)
RE7. Upset by reminders	482	45.9	3.89 (0.17)	0.45 (0.16)	0.117 (0.04)
RE8. Flashbacks even for a moment	283	26.9	3.89 (0.17)	2.58 (0.18)	0.663 (0.05)
AV1. Internal reminders	396	37.7	6.32 (0.58)	2.03 (0.29)	0.322 (0.04)
AV2. External reminders	364	34.6	6.32 (0.58)	2.55 (0.32)	0.404 (0.04)
TH1. Being on guard	378	36.0	6.53 (0.62)	2.38 (0.33)	0.364 (0.04)
TH2. Jumpy/startled	310	29.5	6.53 (0.62)	3.57 (0.39)	0.546 (0.04)
DSO symptoms					
AD1. Intense reactions	432	41.1	2.65 (0.20)	0.738 (0.13)	0.278 (0.05)
AD2. Long time to calm down	450	42.8	2.78 (0.21)	0.623 (0.13)	0.223 (0.05)
AD3. Feelings easily hurt	544	51.8	2.21 (0.17)	−0.108 (0.11)	−0.049 (0.05)
AD4. Uncontrollable anger	299	28.4	2.53 (0.19)	1.759 (0.15)	0.695 (0.05)
AD5. Reckless behaviour	195	18.6	2.50 (0.22)	2.724 (0.21)	1.087 (0.06)
AD6. Numb	379	36.1	3.79 (0.33)	1.535 (0.19)	0.405 (0.04)
AD7. Difficulty feeling pleasure	358	34.1	3.78 (0.32)	1.753 (0.20)	0.463 (0.04)
AD8. World is distant	333	31.7	4.54 (0.45)	2.367 (0.28)	0.521 (0.04)
AD9. Feeling outside of body	265	25.2	4.58 (0.47)	3.295 (0.34)	0.718 (0.04)
NSC1. Failure	381	36.3	6.64 (0.91)	2.488 (0.41)	0.374 (0.04)
NSC2. Worthless	363	34.5	8.41 (1.43)	3.516 (0.66)	0.418 (0.04)
NSC3. Shame	372	35.4	6.37 (0.70)	2.545 (0.34)	0.399 (0.04)
NSC4. Guilt	479	45.6	3.64 (0.29)	0.478 (0.15)	0.131 (0.04)
DR1. Feel cut-off from others	424	40.3	5.69 (0.74)	1.538 (0.28)	0.270 (0.04)
DR2. Difficulty staying close to others	416	39.6	4.54 (0.48)	1.344 (0.22)	0.296 (0.04)
DR3. Avoid relationships	333	31.7	2.75 (0.23)	1.571 (0.15)	0.569 (0.05)

AD, affective dysregulation; Av, avoidance; DR, disturbances in relationships; DSO, Disturbances in Self-Organization; NSC, negative self-concept; PTSD, post-traumatic stress disorder; Re, re-experiencing in the here and now; SE, standard error; TH, sense of threat.

samples; however, AD2 (hyperactivation) and AD6 (deactivation) showed the highest discrimination parameters in the community sample and satisfactory endorsement rates in the clinical sample and were judged to possess good clinical relevance. Therefore, AD2 and AD6 were selected to represent the Affective Dysregulation cluster.

With respect to the Negative Self-Concept items, the endorsement rate for NSC4 was considered excessively high relative to the other items in this cluster and was therefore rejected. NSC1-NSC3 performed similarly across both samples, and as such, any two of these three items could have been selected. NSC1 and NSC2 have been consistently used to represent this symptom cluster in prior studies (19), both items are very simply worded, and both items were judged to possess good clinical relevance. Therefore, NSC1 and NSC2 were selected to represent the Negative Self-Concept cluster.

With respect to the Disturbances in Relationships cluster, DR3 was deemed to possess excessively low discrimination and excessively high difficulty parameters relative to the other items in this cluster and was consequently rejected. Therefore, DR1 and DR2 were selected to represent the Disturbances in Relationships cluster. The 12-item, optimized version of the ITQ is presented in Appendix 2.

Phase 2: Diagnostic and psychometric performance of the optimized ITQ

The CFA results of the optimized ITQ are presented in Table 4. The first- and second-order models fitted the data from the community and clinical samples extremely well. The CFI, TLI and RMSEA values all suggested excellent model fit for the first- and second-order models within both samples. The only exception was the chi-square test; however, this should not lead to model rejection as the power of the chi-square is positively related to sample size and tends to reject models based on large sample sizes (30).

The model with configural invariance had acceptable model fit. There were no MIs >10, and

Table 3. Endorsement rates and item response parameters for all item indicators for the clinical sample ($N = 247$)

Indicators	Endorsement		Discrimination (SE)	Threshold (SE)	Difficulty (SE)
	N	%			
PTSD symptoms					
RE1. Upsetting dreams	185	74.9	2.42 (0.21)	−1.913 (0.26)	−0.789 (0.12)
RE2. Reliving event in the here and now	187	75.7	2.42 (0.21)	−1.980 (0.25)	−0.817 (0.12)
RE3. Being reminded then spacing out	196	79.4	2.42 (0.21)	−2.356 (0.27)	−0.972 (0.13)
RE4. Moments when lose control and act as in past	107	43.7	2.42 (0.21)	0.470 (0.23)	0.194 (0.10)
RE5. Memory so strong lose track of surroundings	156	63.2	2.42 (0.21)	−0.928 (0.23)	−0.383 (0.10)
RE6. React to others as back in the past	138	56.6	2.42 (0.21)	−0.457 (0.23)	−0.188 (0.10)
RE7. Upset by reminders	220	89.1	2.42 (0.21)	−3.678 (0.34)	−1.517 (0.16)
RE8. Flashbacks even for a moment	186	75.6	2.42 (0.21)	−1.960 (0.25)	−0.808 (0.12)
AV1. Internal reminders	211	85.4	1.64 (0.40)	−2.499 (0.36)	−1.525 (0.25)
AV2. External reminders	211	85.4	1.64 (0.40)	−2.506 (0.36)	−1.530 (0.25)
TH1. Being on guard	213	86.2	3.03 (0.60)	−3.815 (0.64)	−1.260 (0.13)
TH2. Jumpy/startled	209	84.6	3.03 (0.60)	−3.560 (0.60)	−1.176 (0.13)
DSO symptoms					
AD1. Intense reactions	206	83.4	1.428 (0.13)	−2.155 (0.21)	−1.509 (0.19)
AD2. Long time to calm down	222	89.9	1.428 (0.13)	−2.879 (0.25)	−2.017 (0.24)
AD3. Feelings easily hurt	208	84.2	1.428 (0.13)	−2.232 (0.23)	−1.563 (0.18)
AD4. Uncontrollable anger	139	56.3	1.428 (0.13)	−0.331 (0.17)	−0.232 (0.12)
AD5. Reckless behaviour	106	42.9	1.428 (0.13)	0.405 (0.17)	0.283 (0.12)
AD6. Numb	189	76.5	1.428 (0.13)	−1.587 (0.20)	−1.112 (0.15)
AD7. Difficulty feeling pleasure	181	73.3	1.428 (0.13)	−1.357 (0.19)	−0.951 (0.15)
AD8. World is distant	204	82.6	1.428 (0.13)	−2.080 (0.21)	−1.457 (0.18)
AD9. Feeling outside of body	170	68.8	1.428 (0.13)	−1.066 (0.18)	−0.747 (0.14)
NSC1. Failure	190	76.9	4.532 (0.58)	−1.181 (0.15)	−0.795 (0.09)
NSC2. Worthless	182	73.7	4.532 (0.58)	−3.602 (0.55)	−0.684 (0.09)
NSC3. Shame	194	78.5	4.532 (0.58)	−3.099 (0.53)	−0.853 (0.10)
NSC4. Guilt	214	86.6	4.532 (0.58)	−3.864 (0.60)	−1.186 (0.11)
DR1. Feel cut-off from others	214	86.6	2.915 (0.41)	−5.374 (0.76)	−1.293 (0.13)
DR2. Difficulty staying close to others	194	78.5	2.915 (0.41)	−3.769 (0.49)	−0.911 (0.11)
DR3. Avoid relationships	178	72.1	2.915 (0.41)	−2.655 (0.37)	−0.668 (0.10)

AD, affective dysregulation; Av, avoidance; DR, disturbances in relationships; DSO, Disturbances in Self-Organization; NSC, negative self-concept; PTSD, post-traumatic stress disorder; Re, re-experiencing in the here and now; SE, standard error; TH, sense of threat.

Table 4. Fit statistics, diagnostic rates and multigroup ITR results for the optimized ITQ in the community and clinical samples

Sample	χ^2	df	*P*	CFI	TLI	RMSEA (90% CI)	PTSD diagnosis	CPTSD diagnosis	Total
Community									
First-order model	64.587	39	0.006	0.999	0.998	0.025 (0.013–0.036)	5.3% ($n = 56$)	12.9% ($n = 136$)	18.3% ($n = 192$)
Second-order model	104.036	47	<0.001	0.998	0.997	0.034 (0.025–0.043)			
Clinical									
First-order model	62.822	39	0.009	0.987	0.979	0.050 (0.025–0.072)	14.6% ($n = 36$)	61.1% ($n = 151$)	75.7% ($n = 187$)
Second-order model	68.123	47	0.024	0.989	0.984	0.043 (0.016–0.064)			
Multigroup findings									
Configural invariance	128.505	84	0.001	0.998	0.998	0.029 (0.018–0.038)			
Scalar invariance	142.132	90	0.000	0.998	0.997	0.030 (0.020–0.039)			

χ^2, chi-square; CFI, comparative fit indices; df, degrees of freedom; *P*, statistical significance; RMSEA (90% CI), root mean square of approximation (90% confidence intervals); TLI, Tucker-Lewis Index.

the largest residual correlation EPC was −0.09 (for AD1 and DR2). The model with scalar invariance also fitted the data, but was a significantly poorer fit than the configural invariance model according to the DIFFTEST ($\Delta\chi^2 = 13.97$, $\Delta df = 6$, $P = 0.030$) although the differences in the CFI/TLI and the RMSEA were very small. The only model parameter with a MI >10 was for the residual correlation between DR1 and AD2 (MI = 10.20); however, the associated EPC was −0.11 indicating that including this correlated residual would be unlikely to significantly bias the model parameters. The factor means for the clinical group were all statistically significant indicating, as expected, significantly higher levels of PTSD and DSO for this group. Based on these analyses, it can be concluded that the optimized ITQ performs equally well for the clinical and community groups as there is no evidence of differential item functioning.

The ICD-11 PTSD and CPTSD diagnostic rates are also presented in Table 4. In total, 18.3% (n = 192) of the community sample met the criteria for a diagnosis of either PTSD or CPTSD. More specifically, 5.3% (n = 56) met the criteria for a PTSD diagnosis and 12.9% (n = 136) met the criteria for a CPTSD diagnosis. Relative to the diagnostic algorithm for the preliminary version of the ITQ, the optimized ITQ slightly increased the number of CPTSD cases (12.9% vs. 10.6%).

Among the clinical sample, 75.7% (n = 187) met the criteria for a diagnosis of either PTSD or CPTSD, with 14.6% (n = 36) meeting the criteria for a PTSD diagnosis and 61.1% (n = 151) meeting the criteria for a CPTSD diagnosis. Consistent with the community sample results, the optimized ITQ produced slightly more CPTSD cases compared to the diagnostic algorithm for the preliminary version (61.1% vs. 56.3%).

The results of the one-way between-group ANOVA tests are reported in Table 5. There were significant differences in the mean number of lifetime interpersonal traumas across the diagnostic groups [(i) no diagnosis, (ii) PTSD diagnosis and (iii) CPTSD diagnosis] in the community [$F(2, 1048) = 12.89$, $P < 0.001$, $\eta^2 = 0.02$] and clinical [$F(2, 244) = 10.73$, $P < .001$, $\eta^2 = 0.08$] samples. Post hoc comparisons using the Tukey HSD test indicated that for both samples, those with a CPTSD diagnosis experienced significantly more interpersonal traumas than those with no diagnosis. Additionally, for the clinical sample, those with a CPTSD diagnosis experienced significantly more interpersonal traumas than those with a PTSD diagnosis.

Discussion

The primary aim of this study was to finalize the development of the ITQ so that the ICD-11 narrative descriptions of PTSD and CPTSD could be effectively operationalized for research and clinical purposes. This involved selecting a final set of 12 symptom indicators for that best represented the symptom clusters of PTSD (re-experiencing, avoidance and sense of threat) and DSO (affective dysregulation, negative self-concept and disturbances in relationships). In line with the WHO's organizing principles for the ICD-11 (2, 6), the optimized ITQ represents a self-report diagnostic measure of PTSD and CPTSD which captures a limited but core set of symptoms using simply worded items which facilitate translation and thus maximize international applicability. Furthermore, the ITQ includes a simple and quick diagnostic algorithm which maximizes clinical (and research) utility. Importantly, consistent with the WHO principles of open science, the ITQ is made freely available in the public domain to all interested parties. It is our hope that researchers and clinicians from around the world will now begin to routinely use this measure of ICD-11 PTSD and CPTSD so as to continue to develop the evidence base not only for the scale's psychometric properties, but more importantly, to advance knowledge regarding the nature, predictors, course, treatment and outcomes of PTSD and CPTSD.

Table 5. One-way between-group ANOVA results for lifetime interpersonal trauma exposure in the community and clinical samples

	Group	n	M	SD	F	η^2
Community sample						
Lifetime interpersonal trauma	No diagnosis	859	1.19	1.36	12.89*	0.02
	PTSD	56	1.57	1.58		
	CPTSD	136	1.82	1.58		
Clinical sample						
Lifetime interpersonal trauma	No diagnosis	60	2.70	1.58	10.73*	0.08
	PTSD	36	2.61	1.55		
	CPTSD	151	3.55	1.39		

η^2, eta-squared (0.01–0.05 = small effect, 0.06–0.13 = medium effect, ≥0.14 = large effect); M, mean; SD, standard deviation; *$p < 0.001$; models have two degrees of freedom; lifetime interpersonal trauma ranges from 0 to 7.

In the community sample, approximately one-in-five people (18.3%) met the criteria for a diagnosis of PTSD or CPTSD, while three-in-four people (75.7%) in the clinical sample met the criteria for a diagnosis of PTSD or CPTSD. In both samples, the prevalence of CPTSD was higher than PTSD, and although this is expected in populations who have been multiply traumatized (11), it is important that future research tests the hypothesis that '... community rates of PTSD are higher than CPTSD while the reverse relationship obtains in trauma specialty clinics' (8). A complicating factor in testing this hypothesis is that evidence from nationally representative surveys has shown that exposure to multiple traumas can be as common, and often more common, than single exposure. Scott et al. (31) showed that using a standardized assessment of lifetime traumatic event exposure across 14 countries, multiple rather than single exposure was more common. Given that current and past findings (18) have shown that multiple trauma exposure can be more strongly associated with CPTSD than PTSD, it may be that the prevalence of CPTSD is also higher in the general population. This remains to be determined; however, the availability of the optimized ITQ now permits this work to be undertaken.

The psychometric and diagnostic results for the optimized ITQ were encouraging. The CFA

results were consistent with prior findings based on the preliminary-stage version of the ITQ (8, 9) and showed that the latent structure of the 12-item version of the ITQ effectively captures the distinction between PTSD and DSO symptomatology. The multigroup IRT results showed that the ITQ performed equally well within the community and clinical samples indicating that the scale is appropriate for use in both populations. The newly applied diagnostic algorithm for the optimized ITQ identified an identical number of people qualifying for a diagnosis of PTSD or CPTSD to the preliminary-stage diagnostic algorithm; however, despite the removal of 12 test items from the DSO cluster, the 12-item ITQ identified a slightly higher number of CPTSD cases. Additionally, and in line with previous results (19), individuals who met the criteria for CPTSD based on this new diagnostic algorithm had the highest levels of lifetime interpersonal trauma. This difference was evident in the community and clinical samples; however, the effect was stronger within the clinical sample.

This study had some limitations. First, although the community sample was drawn from a nationally representative panel, it cannot be concluded that the trauma-exposed participant sample itself was nationally representative. Second, the participants in the clinical sample were recruited from centres that provide psychological treatment for trauma exposure and so will not be representative of the help-seeking population in general. Third, these analyses were based on samples drawn from the UK, and, therefore, the generalizability of the current findings to (especially) non-English speaking countries is unknown.

In conclusion, the ITQ is the first instrument designed to capture the ICD-11 PTSD and CPTSD diagnoses. To date, several studies indicated that the preliminary-stage version of the ITQ was a reliable and valid measure of PTSD (10, 11) and DSO symptoms (31). This study represents the final development phase in which 12 items have been selected using IRT models based on a trauma-exposed community and clinical sample from the UK population. The findings of the current study indicate that the optimized ITQ, which is now freely available in the public domain, is a valid measure of the ICD-11 PTSD and CPTSD symptoms. Further research is now necessary in order to estimate prevalence rates of PTSD and CPTSD internationally and to identify risk factors for each disorder. The availability of the ITQ will ideally stimulate this important work.

Declaration of interest

The authors report no conflict of interest relevant to this study.

Disclaimer

Chris Brewin, Marylène Cloitre and Andreas Maercker participated as members of the World Health Organization Working Group on the Classification of Disorders Specifically Associated with Stress, reporting to the International Advisory Group for the Revision of ICD-10 Mental and Behavioural Disorders. However, the views expressed reflect the opinions of the authors and not necessarily the Working Group or Advisory Group, and the content of this article does not represent WHO policy.

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Appendix 1. Original ITQ Items

Label	Items
PTSD	
RE1	Having upsetting dreams that replay part of the experience or are clearly related to the experience
RE2	Having powerful images or memories that sometimes come into your mind in which you feel the experience is happening again in the here and now
RE3	Being reminded of the experience and then spacing out for a while
RE4	Having moments when you lost control and acted like you were back in the experience
RE5	Having a memory of the experience come back to you that was so strong that you lost track of what was going on around you
RE6	Reacting to people or situations as if you were back in the past experience
RE7	Feeling very upset when something reminded you of the experience
RE8	Having powerful images or memories that sometimes come into your mind in which you feel the experience is happening again in the here and now, even if only for a moment
AV1	Avoiding internal reminders of the experience (for example, thoughts, feelings or physical sensations)
AV2	Avoiding external reminders of the experience (for example, people, places, conversations, objects, activities or situations)
TH1	Being 'super-alert', watchful, or on guard
TH2	Feeling jumpy or easily startled
DSO	
AD1	I react intensely to things that do not seem to affect other people so much
AD2	When I am upset, it takes me a long time to calm down
AD3	My feelings tend to be easily hurt
AD4	I experience episodes of uncontrollable anger
AD5	I do things that people have told me are dangerous or reckless
AD6	I feel numb or emotionally shut down
AD7	I am the kind of person who has difficulty experiencing feelings of pleasure or joy
AD8	When I am under stress or confronted with reminders of my trauma, I often feel that the world is distant or that the world seems different
AD9	When I am under stress or confronted with reminders of my trauma, I often feel outside my body or feel that there is something strange about my body
NSC1	I feel like a failure
NSC2	I feel worthless
NSC3	I often feel ashamed of myself whether it makes sense or not
NSC4	I feel guilty about things I have done or failed to do
DR1	I feel distant or cut-off from people
DR2	I find it hard to stay emotionally close to people
DR3	I avoid relationships because they end up being too difficult or painful

Appendix 2. International Trauma Questionnaire (ITQ)

Instructions

Please identify the experience that troubles you most and answer the questions in relation to this experience.

Brief description of experience___

When did the experience occur? (circle one)

a. less than 6 months ago
b. 6–12 months ago
c. 1–5 years ago
d. 5–10 years ago
e. 10–20 years ago
fmore than 20 years ago

Below are a number of problems that people sometimes report in response to traumatic or stressful life events. Please read each item carefully and then circle one of the numbers to the right to indicate how much you have been bothered by that problem in the past month.

	Not at all	A little Bit	Moderately	Quite a bit	Extremely
1. Having upsetting dreams that replay part of the experience or are clearly related to the experience?	0	1	2	3	4
2. Having powerful images or memories that sometimes come into your mind in which you feel the experience is happening again in the here and now?	0	1	2	3	4
3. Avoiding internal reminders of the experience (for example, thoughts, feelings or physical sensations)?	0	1	2	3	4
4. Avoiding external reminders of the experience (for example, people, places, conversations, objects, activities or situations)?	0	1	2	3	4
5. Being 'super-alert', watchful or on guard?	0	1	2	3	4
6. Feeling jumpy or easily startled?	0	1	2	3	4
In the past month have the above symptoms:					
7. Affected your relationships or social life?	0	1	2	3	4
8. Affected your work or ability to work?	0	1	2	3	4
9. Affected any other important part of your life such as parenting, or school or college work, or other important activities?	0	1	2	3	4

Below are problems or symptoms that *people who have had stressful or traumatic events sometimes experience. The questions refer to wa*ys you *typically* feel, ways you *typically* think about yourself and ways you *typically* relate to others. Answer the following thinking about how true each statement is of you.

How true is this of you?	Not at all	A little Bit	Moderately	Quite a bit	Extremely
1. When I am upset, it takes me a long time to calm down	0	1	2	3	4
2. I feel numb or emotionally shut down	0	1	2	3	4
3. I feel like a failure	0	1	2	3	4
4. I feel worthless	0	1	2	3	4
5. I feel distant or cut-off from people	0	1	2	3	4
6. I find it hard to stay emotionally close to people	0	1	2	3	4
In the past month, have the above problems in emotions, in beliefs about yourself and in relationships:					
7. Created concern or distress about your relationships or social life?	0	1	2	3	4
8. Affected your work or ability to work?	0	1	2	3	4
9. Affected any other important parts of your life such as parenting, or school or college work, or other important activities?	0	1	2	3	4