Validation of a clinician-administered diagnostic measure of ICD-11 PTSD and Complex PTSD: The International Trauma Interview in a Swedish sample

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Abstract

Objectives: The recently published ICD-11 includes substantial changes to the diagnosis of posttraumatic stress disorder (PTSD) and introduces the diagnosis of Complex PTSD (CPTSD). The International Trauma Interview (ITI) has been developed for clinicians to assess these new diagnoses but has not yet been evaluated. The objective **of this study** was to evaluate the **psychometric properties of the Swedish translation of the ITI by examining** the interrater agreement, latent structure, internal consistency, and convergent and discriminant validity.

Methods: In a prospective study, 186 adults who had experienced a potentially traumatic event were assessed with the ITI and answered questionnaires for symptoms of posttraumatic stress, other psychiatric disorders, functional disability, and quality of life (QoL).

Results: The diagnostic rate was 16% for PTSD and 6% for CPTSD**. Interrater agreement was satisfactory ($\alpha = .76$), and confirmatory factor analysis indicated that a two-factor second-order model consistent with the ICD-11 model of CPTSD provided acceptable fit to the data**. Composite **reliability analysis demonstrated that the ITI possessed** acceptable internal reliability, and associations with measures of other psychiatric disorders, insomnia, functional disability, and QoL supported the concurrent validity of the ITI.

Conclusion: The Swedish ITI shows promise as a clinician-administered instrument to assess and diagnose ICD-11 PTSD and CPTSD.

Keywords: ICD-11, PTSD, Complex PTSD, Psychometrics, Factor Analysis

Highlights

- The Swedish version of the International Trauma Interview measures two latent factors reflecting symptoms of PTSD and disturbances in self organization (DSO).
- PTSD symptoms were most strongly associated with measures of fear, anxiety, and insomnia, and DSO symptoms with measures of depression, general psychiatric distress, greater functional impairment, and reduced quality of life.
- The Swedish version of the International Trauma Interview shows promise as a method of assessing ICD-11 PTSD and CPTSD.

Introduction

In 2018, the World Health Organization (WHO) published their 11th version of the
International Classification of Diseases (ICD-11) and it is projected to come into effect in
2022 (World Health Organization, 2018). The ICD-11 includes substantial revisions in the
nomenclature of Posttraumatic Stress Disorder (PTSD) which is defined as a response related
to a specific traumatic event, manifested as re-experiencing of the event **in the here and now**,
avoidance, and a sense of current threat. In addition, ICD-11 introduces Complex PTSD
(CPTSD) and the diagnosis comprises criteria for PTSD and persistent and pervasive
'disturbances in self-organization' (DSO). These disturbances manifest as affect
dysregulation, negative self-concept, and disturbances in relationships (Maercker et al., 2013).
**It was argued that this symptom profile is more likely to occur following exposure to
trauma of a prolonged nature or multiple or repeated events from which escape is not
possible, and that the DSO features of CPTSD can be present independent of presence of
trauma related reminders (Maercker et al., 2013). CPTSD is associated with higher
rates of childhood and prolonged types of traumatic events, and with lower socio-
economic status** (Brewin et al., 2017).

Although CPTSD has been long-debated, the previous lack of a standardized
definition compelled clinicians and researchers to rely on various definitions and substitute
diagnoses (Bryant, 2012). A standardisation of the nomenclature should have positive effects
on research and practice, **and enable research on testing the validity of the disorder,
identifying risk factors, and developing treatment options.** However, crucial for this is the
development of standardised assessment methods.

Field studies of the inter-rater reliability for PTSD and CPTSD indicate a lower
agreement ($\kappa = .49$ and $.56$) than for most other disorders when assessing the disorders with
unstructured clinical interviews (Reed et al., 2018). To operationalize the descriptions of

ICD-11 PTSD and CPTSD and to facilitate assessment of the disorders, two instruments have been developed: the self-report *International Trauma Questionnaire* (ITQ) and the semi-structured clinician-assessed *International Trauma Interview* (ITI) (Roberts et al., 2018, Cloitre et al., 2018). Aligning with the overarching principles of ICD-11 that disorders should focus on a limited number of core features, both instruments include 12 symptom indicators plus indicators of functional impairment (Hyland et al., 2017, Roberts et al., 2018, Ben-Ezra et al., 2018). Studies using preliminary versions of the ITQ with samples exposed to various types of traumas and from diverse cultural backgrounds suggest that the instrument is a valid and reliable tool. Factor analyses indicate good fit for the ICD-11 model of CPTSD (i.e., a second-order hierarchical model separating PTSD and DSO symptomatology), although there is also support for a model that distinguishes between these symptoms at the first-order level (Karatzias et al., 2016, Nickerson et al., 2016, Hyland et al., 2017, Ben-Ezra et al., 2018, Kazlauskas et al., 2018, Vallières et al., 2018). In general, PTSD symptoms have been found to be associated with measures of fear and anxiety whereas DSO symptoms show stronger associations with measures of depression, dysthymia, and general distress. PTSD and CPTSD scores are both associated with functional disability, with CPTSD being associated with greater impairment (Karatzias et al., 2016, Hyland et al., 2017) .

Aims of the study

In the assessment of trauma-related distress, it is essential to ascertain whether symptoms are related to a precipitating event, therefore, it is important to evaluate the ICD-11 model with a rigorous clinician-rated assessment. The current study **aims to evaluate the psychometric properties of the Swedish ITI by** (1) **the examination of** interrater agreement, latent structure, and internal reliability, and, (2**) the assessment of** convergent and discriminant validity. Based on theoretical descriptions and data from the ITQ, it was hypothesised that (a) the ITI would possess satisfactory interrater and internal reliability; (b) the two-factor second-

order model of CPTSD would provide a satisfactory representation of the sample data; and (c) PTSD symptoms would be most strongly associated with indicators of fear and anxiety, and DSO symptoms would be most strongly associated with indictors of depression and general dysphoria, and functional disability.

Method

Participants and procedure

The participants in the current study were partaking in a longitudinal prospective survey – the Traumatic Events in a Longitudinal Survey (TRACES) study - at Uppsala University, Sweden. The TRACES study aims to examine psychological reactions to adverse events among health care and non-health care seeking individuals and how such reactions fluctuate over time. Inclusion criteria included having experienced an ICD-11 qualifying traumatic life event during the past five years (i.e., "a stressor of an extremely threatening or horrific nature"); being ≥ 18 years of age; and being able to communicate in Swedish. Participants were self-recruited via advertisements in local print media and social media platforms, flyers at primary and psychiatric care facilities, and via information from health-care providers. Recruitment took place between May 2015 and April 2018. Exclusion criteria were currently living in high-risk/stressful circumstances (e.g., refugees, or persons currently living in abusive relationships) or suffering from a psychotic disorder. Participants were screened for eligibility in a telephone interview. Informed consent for eligible participants was obtained by post and participants who gave their consent were invited to a structured clinical assessment. A week before the assessment, the participants received a survey to fill out prior either via the internet or with paper and pencil. The interviewers were master level students of clinical psychology or licensed clinical psychologists and received 10 hours of training in the interview protocol by authors KB and FKA. Any uncertainties in scoring were resolved by

consensus discussions within the research team. Inter-rater assessments of recorded interviews and discussion of these occurred every two months to prevent interviewer drift. **Due to resource constraints a limited number of** cases for calculating inter-rater reliability (n = 23) were randomly selected from the full sample and scored via audio or video recording by one independent interviewer. The study was approved by the Ethical Review Board in Uppsala (Dnr. 2014/283).

The sample comprised 184 participants with a mean age of 33 years (SD = 13.6, range = 18-76) and was predominately female (n = 143; 79%). Three people chose not to disclose their gender. The participants were mainly students (n = 70, 38%), and less than half were in full- (n = 40, 22%) or part-time (n = 20, 11%) employment. The remaining participants were either unemployed, on parental leave, sick leave, retired, or stated rehabilitation/vocational training as their primary occupation. The participants were living in single households (n = 71, 39%), married or cohabitating (n = 68, 37%), living with their parents (n = 18, 10%), or living with another adult in a platonic relationship (n = 18, 10%). Nearly half of the participants had a university degree (n = 77, 42%), whereas 46 participants (25%) reported ongoing or unfinished university education, and 34 (18%) reported 12 years of education. Nine (5%) participants did not provide any information regarding occupation, family status or education.

The most prevalent traumatic event was the traumatic loss of a loved one (n = 51, 28%), followed by sexual violence (n = 37, 20%), assault (n = 29, 16%), somatic injuries/illnesses (n = 27, 15%), accidents (n = 23, 12%), and other (n = 17, 9%; e.g. war, natural disasters, terror, or unspecified). A third of the sample (n = 61, 33%) indicated that they had not received any treatment after the event, 64 (35%) had received psychotherapy, 41 (22%) medication, and 41 (22%) participants indicated that they had received other kinds of support such as debriefing, counselling, or support from family and friends. Some participants

(n = 31, 17%) endorsed several kinds of treatment or support, with the most common combination being medication and psychotherapy (n = 22, 12%), and 11 (6%) participants did not provide any information regarding treatment.

Measures

The International Trauma Interview (ITI)

The ITI is a semi-structured clinical interview divided into two parts that assesses symptoms of PTSD and DSO, respectively (Roberts et al., 2018). Part one is based on the Clinician-Administered PTSD Scale for DSM-5 (CAPS-5) (Weathers et al., 2013a), the gold standard for assessing PTSD according to the DSM, and includes two items for each of the three PTSD symptom clusters: re-experiencing in the form of flashbacks or nightmares (Re), avoidance of internal or external reminders of the event (Av), and a sense of current threat expressed in hypervigilance or startle reactions (Th). Each symptom is assessed with regard to its intensity and frequency over the past month to determine a rating on a five-point scale (0 = not present, 4 = extreme). Part one also includes two questions about impairment in social and occupational functioning in relation to the PTSD symptoms and is scored from 'No adverse impact' (0) to 'Extreme impact, little or no functioning' (4).

Part two of the interview concerns the DSO symptoms and assesses persistent and pervasive reactions and changes that have occurred or worsened after a potentially traumatic event. It comprises two items per symptom cluster: affective dysregulation (AD) characterized by hyper- or hypoactivation (exaggerated emotional reactions or a tendency towards emotional numbing or dissociation) when confronted with minor stressors; negative self-concept (NSC) (feeling like a failure and feeling worthless); and disturbances in relationships (DR) (feeling distant and cut-off and finding it hard to stay close to people). Each symptom is assigned a rating on a five-point scale (0 = not present, 4 = extreme). Part

two also includes two questions about social and occupational impairment in relation to these symptoms, scored in the same way as the PTSD part of the interview.

Trauma relatedness is assessed by asking respondents if an endorsed problem began or got worse following trauma exposure, or if they think that the problem is trauma related. Trauma-relatedness is assessed as 'definite' if the symptom can be clearly attributed to the index event; 'probable' if the symptom is likely, though not definitively, related to the index event; or 'unlikely' if the symptom can be attributed to some cause other than the index event.

The ITI generates a severity score for PTSD (range = 0-24), DSO (range = 0-24), and a combined CPTSD score (range = 0-48), as well as cluster severity scores (all ranges = 0-8). To make a diagnosis of PTSD, one symptom must be present with at least a moderate severity (i.e., severity score ≥ 2) from each cluster, in conjunction with functional disability on account of the symptoms. For a diagnosis of CPTSD, one symptom must be present from every symptom cluster, in conjunction with functional disability on account of both the PTSD and DSO symptoms. Diagnostic algorithms corresponding to ICD-11 criteria are then applied, yielding either no diagnosis, a diagnosis of PTSD if the individual fulfils criteria for PTSD but not for DSO, and a diagnosis of CPTSD if the individual fulfils criteria for both PTSD and DSO.

The Swedish version of the ITI was translated from English to Swedish by authors KB and FKA. It was then back-translated by an independent professional translator and approved by the original ITI authors.

Life Event Checklist for DSM-5 (LEC-5)

Trauma exposure was assessed with the Swedish version of the LEC-5, a self-report measure assessing exposure to 16 traumatic events and one additional item for any other stressful events (Weathers et al., 2013b). The LEC-5 was given to participants during the interview and

used to assess a worst experience as the index event for the ITI assessment. Based on the participant's description of the event during the interview, the interviewer coded the event as either interpersonal (e.g., assault, robbery, threat, abuse, rape, molestation) or non-interpersonal (e.g., loss, accidents, somatic illnesses or injuries, terror, war, natural disasters).

Impact of Event Scale-Revised (IES-R)

The IES-R (Weiss, 2007) is a widely used measure of symptoms of posttraumatic stress. The IES-R includes 22 items rated on a five-point scale from 'not at all' (0) to 'very much' (4), indicating how distressing each symptom has been over the past 7 days. Items are sorted into three clusters; intrusions, avoidance, and hyperarousal. Total score ranges from 0 to 88 (range of subscale scores: intrusion 0-32, avoidance 0-32, and hyperarousal 0-25). The Swedish version of the IES-R has excellent psychometric properties (Arnberg et al., 2014). Cronbach's alpha in the current study was $\alpha = .95$ for the full scale, and $\alpha = .86$ to $.90$ for the subscales.

Symptom Checklist–27 (SCL-27)

The SCL-27 (Hardt and Gerbershagen, 2001) is a 27-item self-report measure assessing general psychiatric symptoms. Respondents rate how much they have been bothered by a symptom during the past week on a five-point scale from 'not at all' (0) to 'very much' (4). Total scores range from 0-108 and subscale scores as follows: depressive (score 0-16), dysthymic (0-16), vegetative (somatisation) (0-24), mistrust (0-16), social phobic (0-16), and agoraphobic symptoms (0-20), each including four to six items. The SCL-27 has shown good psychometric properties across different samples (Hardt and Gerbershagen, 2001, Kuhl et al., 2010). Cronbach's alpha in the current study ranged from $\alpha = .75$ (depression subscale) to $\alpha = .85$ (dysthymic and vegetative subscale).

Dissociative Experience Scale-Taxon (DES-T)

The DES-T includes eight items, extracted from the full-scale DES, that reflects pathological

dimensions of dissociation (Waller et al., 1996). Respondents rate how often a dissociative symptom has been experienced in the past month on a 10-point scale from 'never' (0 % of the time) to 'always' (100 % of the time). The total score ranges from 0 to 100 and scores ≥ 30 are generally found among patients with dissociative disorders. The DES-T has been shown to be a reliable instrument and highly correlated with the full-scale DES. Cronbach's alpha in the current study was $\alpha = .94$.

Insomnia Severity Index (ISI)

The Insomnia Severity Index is a 7-item self-report measure assessing sleep-related problems. Items are scored on a 5-point scale ranging from 'no problems' (0) to 'severe problems' (4) and renders a full score of 0-28. The scale has previously demonstrated good psychometric properties. A score ≥ 10 is indicative of insomnia (Morin et al., 2011). Cronbach's alpha in the current study was $\alpha = .87$.

The Alcohol Use Disorder Identification Test (AUDIT)

The AUDIT (World Health Organization, 2001) is a 10-item screening tool that assesses problematic alcohol use. The form is a standard screening procedure for alcohol use disorder within Swedish health care. A total score of ≥ 8 indicates harmful use. The Swedish version of AUDIT has good psychometric properties (Bergman and Källmén, 2002, Lundin et al., 2015).

World Health Organization Disability Assessment Scale 2.0 (WHODAS 2.0)

The WHODAS 2.0 (12+24) is a rater-based tool for assessing functional disability in the past 30 days across six domains (cognition, mobility, self-care, getting along with others, domestic and work activities, and participation in society). All items are scored from 'no difficulties' (0) to 'extreme difficulties or cannot do' (4). The instrument comprises an initial set of 12 items, and an additional set of 24 items that are given conditional on reported disability (at

least one item scored > 0) in the first set. Items not given on account of no reported disability are scored 0. In this study we used the complex scoring method: each item is recoded according to an algorithm provided by WHO and generates a total score ranging from 0 ('no disability') to 100 ('full disability'). WHODAS 2.0 has demonstrated excellent psychometric properties (Üstün et al., 2010).

Brunnsviken Brief Quality of Life Scale (BBQ)

The Brunnsviken Brief Quality of life scale (BBQ) consists of 12 items in 6 different life areas (leisure, view on life, creativity, learning, friends, and view on self). Respondents rate their satisfaction with each area (e.g. 'I am satisfied with my leisure time. I have an opportunity to do what I want in order to relax and enjoy myself.'), and the importance of the area for their quality of life (e.g. 'My leisure time is important for my quality of life'). All items are scored from 'don't agree at all' (0) to 'agree completely' (4). A total score is computed by multiplying the satisfaction and importance rating for each area, and summing the six products for a total score that ranges from 0 to 96. A lower score indicates lower quality of life. The Swedish BBQ has shown satisfactory psychometric properties (Lindner et al., 2016).

Demographics

The survey included questions about age, gender, employment, education and treatment for psychiatric illnesses.

Data Analysis

The analytical process included three linked elements. First, **we calculated** descriptive statistics, diagnostic rates, and inter-rater agreement for diagnostic status. Second, confirmatory factor analysis (CFA) was used to evaluate the fit of seven alternative factor models of the ITI, as described by Shevlin and collegaues (2017) and Karatzias and

collegaues (2016) (see figure 1). Third, the latent variables from the best fitting model of the ITI were entered into a structural equation model (SEM) to determine (a) how strongly gender, age and type of traumatic event (interpersonal or non-interpersonal) predicted the ITI factors, and (b) how strongly the ITI factors predicted sum scores of the IES-R, SCL-27, DES-T, ISI, and AUDIT (entered into the SEM model as observed variables) while controlling for the association between PTSD and DSO, **as well as for the covariates of** gender, age, and type of traumatic event.

Diagnostic status was determined by applying the ICD-11 algorithm to the individual item-ratings provided by interviewers. Inter-rater agreement was examined for 12% of the sample using Krippendorff's alpha (Hayes and Krippendorff, 2007). The internal reliability of the best fitting model of the ITI (described below) was examined using composite reliability analysis. Composite reliability was used as this is more appropriate than traditional measures of internal reliability (e.g., Cronbach's alpha) in a latent variable context and is suitable for measures with few items: values > .60 indicate acceptable internal reliability (Raykov, 1997). The mean and variance adjusted weighted least squares (WLSMV) estimator was used to estimate the CFA and SEM models as it provides accurate standard errors for ordinal level indicators (Flora and Curran, 2004). Model fit for the CFA and SEM was evaluated using the same measures of fit: a non-significant chi-square result indicates good model fit; Comparative Fit Index (CFI) and Tucker Lewis Index (TLI) values $\geq$ .90 and $\geq$ .95 indicate adequate and excellent fit, respectively; and Root Mean Square Error of Approximation (RMSEA) values $\leq$ .08 and $\leq$ .06 indicate adequate and excellent fit, respectively (Bentler, 1990, Steiger, 1990, Markus, 2012). To compare alternative models, we relied on changes (Δ) in the RMSEA result as this index includes penalties for model complexity, and $\Delta \geq$ .015 are indicative of significant changes in the fit of the respective models.(Chen et al., 2008) Analyses were conducted using Mplus 8.0 (Muthén and Muthén,

2017), except descriptive statistics and inter-rater agreement which were calculated using R

software and the package *Psych* (Revelle, 2018) and *irr* (Gamer et al., 2012).

No participants had missing values on the ITI items. Some participants' self-report

questionnaires were incomplete and one person did not complete the WHODAS 2.0

interview. Participants with missing data on two or more items were excluded from analysis

concerning those variables (n = 9). For participants with one missing item on a questionnaire,

data were imputed using the mean of the participants' responses for that specific scale or

subscale (n = 9). Thus, n = 175 (95% for IES-R, SCL-27, ISI, DES, and BBQ; n = 172 (93%)

for AUDIT; and n = 182 (98%) for WHODAS. In the SEM-model, three participants were

excluded due to undisclosed gender. For the external variables in the SEM model, missing

data was handled using the pairwise present analysis method.

FIGURE 1 HERE

Results

Table 1 presents the descriptive statistics for the ITI and all other measures. Most participants

did not meet ICD-11 diagnostic criteria for PTSD or CPTSD (n = 144, 78%,); 29 (16%)

fulfilled criteria for PTSD, and 11 (6%) fulfilled criteria for CPTSD. The inter-rater

agreement was fair (Krippendorff α = .76).

TABLE 1 HERE

Factorial validity and composite reliability

Table 2 presents the fit statistics for the seven models of the ITI. All models, with the

exception of Model 1, provided an acceptable fit of the sample data. Models 2, 4 and 5

provided excellent fit to the data and the ΔRMSEA across these models indicated that they

were statistically indistinguishable. Considering the small differences among these models,

that the first-order model (model 2) is more susceptible to problems of multicollinearity

than model 4, that model 4 is more parsimonious than model 2, and is most consistent

with the theoretical description of PTSD and CPTSD in ICD-11, model 4 was used for

further analysis.

<div align="center">TABLE 2 HERE</div>

Standardized factor loadings for the first- and second-order PTSD and DSO factors from Model 4 were all positive, statistically significant (p < .001) and ranged from moderate to high (Table 3). The standardized factor loadings of the first-order Av and AD factors on the second-order PTSD and DSO factors, respectively, were > 1.0. This result often occurs in the presence of multicollinearity but is not indicative of model misspecification (Deegan, 1978). The standardized factor correlation between PTSD and DSO was .67 (p < .001). **Composite reliability analyses indicated that the two second-order factors of** PTSD (.86) and DSO (.89) yielded satisfactory internal reliability.

<div align="center">TABLE 3 HERE</div>

Convergent and discriminant validity

The SEM model fit the data well (χ^2 (217) = 261, p = .02, RMSEA = .034 (95% CI = .01, .04), CFI = .971, TLI = .947). Gender and age were not associated with PTSD or DSO, and interpersonal trauma was associated with higher levels of PTSD (β = .62 (95% CI = .33 to .90), p < .001) and DSO (β = .52 (95% CI = .23 to .82), p < .001).

Table 4 displays the associations between the latent variables of PTSD and DSO and each of the external variables. PTSD, but not DSO, was strongly associated with the IES-R subscales. With respect to the SCL-27, PTSD was most strongly associated with the agoraphobia, vegetative, and mistrust subscales, whereas, DSO was most strongly associated with the depression, dysthymia, and social phobic subscales. Scores of insomnia were

moderately associated with PTSD and weakly associated with DSO. Dissociation scores were not associated with PTSD but had a moderate association with DSO. PTSD and DSO were both associated with higher levels of functional disability, with DSO scores being associated with greater functional disability and lower quality of life as compared to PTSD scores.

Discussion

This study is the first to examine the validity and reliability of the ITI, the only available clinician-assessed measure of ICD-11 PTSD and CPTSD. It is also the first study to use a disorder-specific clinician-assessed instrument to examine the latent structure of the ICD-11 symptoms of PTSD and CPTSD. Overall, the results were generally consistent with the study hypotheses and provided evidence to support of the inter-rater agreement, internal reliability, and the factorial, convergent, and discriminant validity of the Swedish ITI.

The observed inter-rater agreement in diagnostic status in the current study was superior to previous field studies with unstructured interviews suggesting that use of the ITI may increase concordance among clinicians (Reed et al., 2018). In the current study, rates of CPTSD were lower than rates of PTSD. This is, in general, incongruent with studies using self-report measures that have typically found lower rates of probable PTSD compared to probable CPTSD (Karatzias et al., 2016, Nickerson et al., 2016, Hyland et al., 2017, Hyland et al., 2018). The dissimilarity may be due to differences in the studied samples. **Participants were both health-care and non-health care seeking, and a large proportion did not fulfil criteria for either PTSD or CPTSD. It is possible that the results would be different in more symptom burdened samples, or that the ITI provides conservative estimates of PTSD rates.** However, it may also reflect the possibility that DSO items are difficult to assess as trauma-related or not. Clinical interviews are likely to be more conservative in attributing DSO items to trauma and may be needed to more accurately assess whether problems consistent with DSO should count towards a CPTSD diagnosis. All interviewers in the current

study had received ample training in the instrument and were well versed in ICD-11 criteria. It is recommended that administration of the ITI should be preceded by education in the new conceptualization and training in the instrument. Future research is required to determine if there are discrepancies between DSO ratings using the ITQ and ITI, and, if so, what they are and why.

The CFA results suggested that several models distinguishing between PTSD and DSO symptoms fit similarly well to the data. Among these were the ICD-11 distinction between PTSD and DSO symptoms at the second-order level. In this model, a second-order PTSD factor accounted for the correlations between the first-order Re, Av, and Th factors, and a second-order DSO factor accounted for the correlations between the first-order AD, NSC, and DR factors. A moderate-to-strong correlation between the PTSD and DSO factors indicated that the constructs are conceptually overlapping but not interchangeable as only 45% of the variance was shared between the two factors. The results are very similar to those examining the latent structure of the ITQ (Karatzias et al., 2016, Hyland et al., 2017, Kazlauskas et al., 2018, Vallières et al., 2018). It is encouraging that the latent structure of the ICD-11 symptoms of PTSD and CPTSD is consistent across self-reported and clinician-administered measures. However, as in most studies with the ITQ, Model 2 also provided excellent fit. This model does not include a hierarchal separation of PTSD and DSO symptoms and simply distinguishes between these symptoms at the first-order level. **The hierarchical model was favoured in this study as it is more in line with the current diagnostic conceptualization, and is more parsimonious. However, based on the current findings, researchers should feel confident using scores from the first- or second-order factors from the ITI.**

As hypothesised, analyses of convergent and discriminant validity were similar to the findings from studies of the ITQ in that PTSD symptoms were robustly associated with

fear/anxiety-based measures and DSO symptoms with measures of depression, general distress, and dissociation (Karatzias et al., 2016, Hyland et al., 2017, Ben-Ezra et al., 2018). Also in line with previous research, DSO symptoms were associated with higher levels of functional disability and lower levels of quality of life, compared to PTSD symptom (Nickerson et al., 2016). These findings further support the ICD-11 model that PTSD symptoms reflect fear-based responses and DSO symptoms reflect more pervasive disturbances in an individual's functioning. Self-report and clinician-assessed measures have now shown that as compared to PTSD symptomatology, DSO symptomatology is associated with greater impairments in functioning. On an underlying continuum of distress and impairment, CPTSD should be viewed as being further toward the severe end of the continuum than PTSD.

Following the principles of ICD-11 that disorders should focus on a limited number of core symptoms in order to maximise clinical utility, the ITQ and ITI are designed as short instruments to facilitate ease of use in clinical settings (First et al., 2015, Roberts et al., 2018, Cloitre et al., 2018). It is, therefore, unsurprising that minor parameter problems have been identified within both measures, most notably in relation to the AD symptom cluster. The two AD indicators were selected to represent distinct ways in which emotional regulation difficulties can arise following traumatic exposure (i.e., hyper- and hypo-activation of affective responses). As noted in a recent study that also found a weak association between the AD indicators, it is unlikely that a person presents with both of these responses (Knefel et al., 2019). The disconnect between the indicators is not ideal from a psychometric perspective, although it may be a necessary trade-off for having a brief scale that maximises clinical utility. Nonetheless, as CPTSD is a new diagnosis it could be valuable for research purposes to have a set of additional questions that would allow for examination of a broader set of symptom indicators within each cluster.

The current study should be considered with its limitations in mind. We acknowledge that the sample was small, predominately female, and was self-selected including individuals from the general population and from clinical settings. It is unclear how these results would generalize to samples with a higher overall symptom burden and to predominantly male samples, not the least in regard to prevalence rates. It is also possible that the self-selection recruitment process eliminated specific groups, for example, individuals with high levels of avoidance. Additionally, the assessments of concurrent and discriminant validity for the ITI were based on self-report measures, and it would have been preferable to base these analyses on data collected using same method (i.e., clinician-administered data). The associations in this study, however, are unlikely to be heavily influenced by this method bias. **Only a random subsample was used for the analysis of inter-reliability**, and further studies are needed to ascertain the validity of the ITI in this regard.

These limitations notwithstanding, the Swedish version of the ITI shows promise as a reliable and valid tool for assessing and diagnosing ICD-11 PTSD and CPTSD. It contributes to the emerging evidence for the validity of the ICD-11 model of PTSD and CPTSD, and is the first study supporting ICD-11 model using a clinician-administered diagnostic scale. The results should motivate further studies on the ITI, in other languages and in more symptom burdened and whole community representative samples, to provide clinicians access to a reliable and validated standardized tool when ICD-11 comes into practice in 2022.

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Table 1: Descriptive statistics of the International Trauma Interview (ITI) and external variables

	Full sample (N = 184)		No disorder (N = 144)		PTSD (N = 29)		CPTSD (N = 11)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
ITI total	9.6	8.0	7.0	6.1	14.9	4.3	28.3	5.5
PTSD total	5.2	4.4	3.6	3.1	10.2	2.4	13.2	3.7
Reexperiencing	1.4	1.6	0.8	1.3	3.1	1.0	3.7	1.8
Avoidance	2.3	2.0	1.8	1.8	3.7	1.3	5.1	1.4
Sense of Threat	1.6	1.8	1.0	1.4	3.4	1.3	4.4	2.2
DSO total	4.3	4.9	3.4	4.2	4.7	3.6	15.1	3.2
Affect dysregulation	1.5	1.7	1.3	1.5	1.7	1.7	4.3	1.9
Negative self-concept	1.6	2.3	1.2	1.9	1.7	2.1	6.6	1.6
Disturbances in relationships	1.3	1.8	1.0	1.6	1.3	1.6	4.3	1.7
IES-R								
Total	30.9	21.3	25.2	18.9	48.9	16.8	56.2	15.2
Intrusion	11.8	8.1	9.8	7.3	18.1	6.4	21.6	6.2
Avoidance	11.8	8.7	10.0	8.3	18.1	6.7	18.6	6.5
Hyperarousal	7.2	6.4	5.4	5.4	12.6	5.6	16.0	4.9
SCL-27								
Depression	5.5	3.7	4.8	3.5	7.2	3.9	8.9	3.2
Dysthymia	8.3	4.6	7.6	4.6	10.1	4.2	12.0	3.3
Vegetative	6.0	5.7	4.6	4.9	10.8	5.4	11.9	5.7
Agoraphobic	4.0	4.3	2.8	3.4	6.7	4.3	11.4	3.7
Social	8.3	3.8	7.5	3.5	9.8	3.9	13.0	3.3
Mistrust	4.1	4.0	3.3	3.6	6.6	4.3	8.3	3.6
ISI	15.4	7.1	14.1	6.7	18.6	6.9	23.2	3.7
AUDIT	6.2	5.9	6.0	6.1	6.3	5.7	8.1	2.8
DES	9.2	12.9	7.8	11.9	11.5	11.9	19.3	21.4
WHODAS	18.1	17.3	15.1	15.9	24.9	17.6	39.8	15.2
BBQ	49.7	22.1	52.3	22.3	47.3	17.4	23.5	8.2

Note: PTSD, Posttraumatic stress disorder; DSO, Disturbances in self-organization; IES-R, Impact of Event Scale-Revised; SCL-27, Symptom Checklist-27; ISI, Insomnia Severity Index; AUDIT, Alcohol Use Disorder identification test; DES, Dissociative Experience Scale-taxon; WHODAS, WHO Disability Assessment Schedule 2.0; BBQ, Brunnsviken Brief Quality of Life Scale.

Table 2: Model fit statistics for the alternative models of the International Trauma Interview

Models	χ^2	df	P	CFI	TLI	RMSEA	(90% CI)
1	199	54	.000	.903	.881	.121	(.103-.139)
2	51	39	.099	.992	.987	.040	(.000-.069)
3	133	48	.000	.943	.922	.098	(.078-.118)
4	**64**	**47**	**.049**	**.989**	**.984**	**.044**	**(.003-.070)**
5	73	50	.018	.985	.980	.050	(.021-.074)
6	83	50	.002	.978	.971	.060	(.036-.082)
7	92	53	.001	.974	.968	.063	(.040-.084)

Note: Estimator = WLSMV; n = 182; χ^2, Chi-Square Goodness of Fit statistics; *df*, degrees of freedom; *P* = Statistical significance; CFI, Comparative Fit Index; TLI, Tucker Lewis Index; RMSEA (90% CI), Root Mean Square Error of Approximation with 90% confidence intervals; Best fitting model in bold

Table 3: Standardized factor loadings (standard errors) for Model 4

First order	Re	Av	Th	AD	NSC	DR
Nightmares	.71 (.08)					
Flashbacks	.60 (.07)					
Internal avoidance		.73 (.07)				
External Avoidance		.72 (.07)				
Hypervigilance			.73 (.07)			
Startle reactions			.80 (.07)			
Long time to calm down				.45 (.10)		
Feeling numb				.47 (.10)		
Failure					.91 (.04)	
Worthless					.96 (.03)	
Cut-off from others						.90 (.04)
Difficult to stay close						.78 (.06)

Second order	**PTSD**	**DSO**
Re-experiencing (Re)	.95 (.11)	
Avoidance (Av)	1.03 (.07)	
Sense of current threat (Th)	.80 (.07)	
Affective dysregulation (AD)		1.37 (.24)
Negative self-concept (NSC)		.86 (.05)
Disturbances in relationships (DR)		.94 (.06)

Note: All factor loadings were statistically significant at $P < .001$.

Re, Re-experiencing; Av, Avoidance; Th, Sense of current threat; AD, Affective dysregulation; NSC, Negative self-concept; DR, Disturbances in relationships; PTSD = Posttraumatic stress disorder, DSO = Disturbances in self-organization.

Table 4: Standardized regression coefficients between PTSD and DSO and each external variable

	Impact of Event Scale-Revised			Symptom Checklist-27										
	Int	Avo	Hyper	Dep	Dys	Veg	Agora	Mis	Soc	ISI	AUDIT	DES	WHODAS	BBQ
Latent PTSD	.88***	.69***	.81***	.07	.16	.49***	.59***	.36**	.19*	.40**	.00	−.02	.25**	.08
Latent DSO	−.03	.06	.06	.65***	.58***	.28**	.17	.29**	.55***	.28**	.06	.53***	.43***	−.75***
Female	.09	.15*	.02	−.05	.04	.07	.08	.06	.06	−.02	−.08	.05	−.02	.02
Age	.21**	.05	.15*	.16*	.04	.10	.04	.01	−.09	.23	−.06	−.03	.04	−.04
Interpersonal event	−.22**	−.09	−.14*	−.04	−.10	−.07	-.04	.00	−.04	−.16	.21	−.50*	.00	.08
R^2	.62***	.52***	.61***	.42***	.44***	.43***	.49***	.40***	.59***	.39***	.07	.27***	.37***	.44***

Note. The associations were adjusted for gender, age and event type.

PTSD, Posttraumatic Stress Disorder; DSO, Disturbances in Self-Organization; Int, Intrusion; Avo, Avoidance; Hyper, Hyperarousal;

Dep, Depression; Dys, Dysthymic; Veg, Vegetative; Agora, Agoraphobic; Mis, Mistrust; Soc, Social phobia; ISI, Insomnia Severity Index;

AUDIT, Alcohol Use Disorder Identification Test; DES, Dissociative Experience Scale-taxon; WHODAS, World Health Organization Disability

Schedule 2.0; BBQ, Brunnsviken Brief Quality of Life Scale.

* $P < .05$, ** $P < .01$, *** $P < .001$.

Figure legends

Figure 1: Alternative models of the latent structure of ICD-11 PTSD and CPTSD symptoms. PTSD, Posttraumatic stress disorder; DSO, Disturbances in self-organization; Re, Re-experiencing; Av, Avoidance; Th, Sense of current threat; AD, Affective dysregulation; NSC, Negative self-concept; DR, Disturbances in relationships.