

ICD-11 PTSD AND THE IES-R

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Predictive validity of ICD-11 PTSD as measured by the Impact of Event Scale-Revised: A  
15-year prospective study of political prisoners

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## Abstract

The 11<sup>th</sup> edition of the International Classification of Diseases (ICD-11) proposes a model of posttraumatic stress disorder (PTSD) that includes six symptoms. This study assessed the ability of a classification-independent measure of posttraumatic stress symptoms, the Impact of Event Scale-Revised, to capture the ICD-11 model of PTSD. The current study also provided the first assessment of the predictive validity of ICD-11 PTSD. Former East German political prisoners were assessed in 1994 ( $N = 144$ ) and 2008-09 ( $N = 88$ ), on numerous psychological variables using self-report measures. 48% and 37% of participants met probable diagnosis for ICD-11 PTSD at the first and second assessments, respectively. Confirmatory factor analysis supported the factorial validity of the three-factor ICD-11 model of PTSD, as represented by items selected from the Impact of Event Scale-Revised. Hierarchical multiple regression analysis demonstrated that, controlling for sex, the symptom clusters of ICD-11 PTSD (Re-experiencing, Avoidance, and Sense of Threat) significantly contributed to the explanation of depression, quality of life, internalized anger, externalized anger, hatred of perpetrators, dysfunctional disclosure, and social acknowledgment as a victim across the 15-year study period. Current findings add support for the factorial and predictive validity of ICD-11 PTSD within a unique cohort of political prisoners.

*Keywords:* posttraumatic stress disorder (PTSD); International classification of diseases 11<sup>th</sup> edition (ICD-11); Impact of Event Scale-Revised (IES-R); trauma; political prisoners; predictive validity.

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### Predictive validity of ICD-11 PTSD as measured by the Impact of Event Scale-Revised: A 15-year prospective study of political prisoners

The forthcoming revision of the International Classification of Diseases (ICD) into its 11<sup>th</sup> version by the World Health Organisation involves a new concept of posttraumatic stress disorder (PTSD) which essentially is a narrower description compared to previous PTSD definitions. Based on a variety of research designs including dimensional modelling of PTSD symptoms, ICD-11 PTSD is defined by three core elements; re-experiencing of the traumatic event in the present (Re), avoidance of thoughts and behaviours related to the trauma (Av), and an ongoing sense of threat (Th) (Brewin et al., 2009, Maercker et al., 2013). The current report concerns an investigation of whether items from an existing, widely used measure of posttraumatic stress, the Impact of Event Scale-Revised (IES-R: Weiss & Marmar, 1996) can be used to model the ICD-11 description of PTSD, and additionally whether scores generated from this scale can predict a range of outcomes over a 15-year study period.

The ICD-11 principles involve simplifying disorders wherever possible in order to improve their recognisability and clinical utility worldwide (First et al., 2015). In the proposals for PTSD, there will be six (or seven, if a respondent indicates that they possess no clear memory of the traumatic event) symptoms included in the diagnosis; a substantial reduction in the number of symptoms included as compared to the ICD-10 and the DSM-5. In order to meet diagnostic criteria for PTSD, ICD-11 requires exposure to a traumatic event of a threatening or horrific nature, the combination of one of two Re symptoms (one of three should an individual indicate no clear memory of the trauma), one of two Av symptoms, and one of two Th symptoms (Table 1). In a further revision to the ICD-10 criteria, symptoms must be present for several weeks, and there must be evidence of functional impairment associated with these symptoms. Emerging evidence indicates that the three-factor structure fits the data very well although in some samples other models are also viable (Forbes et al.,

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2015; Gluck et al., 2016; Hansen et al., 2015; Haravuori, Kiviruusu, Suomalainen, & Marttunen, 2016; Tay et al., 2015). Moreover, in direct comparisons the ICD-11 structure has been shown to fit the data better than DSM-based models (Hansen et al., 2015; Tay et al., 2015). There is preliminary evidence that prevalence under ICD-11 is lower than under ICD-10, probably due to the requirement for evidence of functional impairment, and that comorbidity with depression is reduced relative to DSM-based diagnoses (Morina et al., 2014; Stammel et al., 2015).

Changing PTSD definitions and criteria have been bemoaned by clinicians and researchers (e.g. Bisson, 2013) because they may create transition problems from the previous to the new version. As an alternative to designing new instruments it may be possible to estimate who meets the new criteria by using disorder assessments that are independent of particular classification versions. Based on Horowitz's pioneering work on stress-response syndromes, the IES-R (Weiss & Marmar, 1996) is such a generic measure of PTSD, largely independent of succeeding versions of the DSM or ICD, and measuring symptom severity instead of frequency. The IES-R has been widely used in assessing PTSD in diverse settings around the world (e.g., Herberman et al., 2016; Thormar et al., 2016) and therefore may be applicable to researching even the recent ICD-11 PTSD definition with its narrowed-down approach to diagnosis.

A longitudinal study on traumatized political prisoners from the former East German communist country (German Democratic Republic: 1949-1990) provides an opportunity to investigate the symptom structure and predictive validity of ICD-11 PTSD estimated from items of the IES-R, mapped over a 15-year interval. We predicted that confirmatory factor analysis (CFA) on the selected items would support the three-factor structure proposed for ICD-11 (Re, Av, and Th). In addition, the dataset allows for prospective prediction of a broader range of PTSD-related outcomes. Based on the well-established relationships

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between depression (e.g. Stander, Thomsen, & Highfill-McRoy, 2014) and quality of life (e.g. Schnurr & Lunney, 2016), respectively, and PTSD symptomatology, we hypothesised that ICD-11 PTSD would be a robust predictor of both of these outcome variables. In addition to these traditionally studied correlates of PTSD, the current study focused on two important sets of outcomes for trauma victims that are understudied (see Maercker & Horn, 2013): PTSD-relevant social affects (anger, and hatred towards perpetrators) and interpersonal consequences (dysfunctional disclosure experiences, and perceived social acknowledgment as a victim). Based on data indicating that ICD-11 PTSD, with its refined symptom set focusing on symptoms relating to emotions of fear and horror, is associated with reduced levels of PTSD-relevant social affective responses such as aggression (e.g. Hansen et al., 2015), we predicted that ICD-11 PTSD would be a stronger predictor of the interpersonal outcome variables than of the social affective outcome variables.

## Method

### *Participants and Procedures*

This study uses longitudinal data from a sample of former East German political prisoners (Maercker et al., 2013). The sample was first investigated in 1994 (Time 1: T1) ( $N = 144$ ), five years after the fall of the communist regime and shutdown of political prisons, and again in 2008/09 (Time 2: T2) ( $N = 91$ ). T1 interviews were conducted approximately 24 years ( $M = 23.60$ ,  $SD = 10.70$ ) after their release from prison. The participation rate at follow-up was 63.2%, due to mortality, refusal to participate, or inability to locate the respondent. Interviews were conducted at a university hospital in Dresden or, if participants were unable to travel, in their hometowns. Ethical approval for the project was granted by the Ethics Review Board of the University of Zurich.

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Among those assessed at T1, 85.4% ( $n = 123$ ) were male, and most were married (58.6%,  $n = 82$ ). The mean age was 53.60 years ( $SD = 11.90$ ), and the mean duration of imprisonment was 36.30 months ( $SD = 37.20$ ). Many individuals were employed (32.6%,  $n = 45$ ), receiving state pension (39.9%,  $n = 55$ ), or unemployed (22.5%,  $n = 31$ ), while the remainder were either in part-time employment (2.9%,  $n = 4$ ), or in education (1.4%,  $n = 2$ ). Of those available to follow-up, 83.5% were male ( $n = 76$ ), and the majority were married (58%,  $n = 51$ ). The mean age was 64.40 years (range 40-85 years), and individuals had a mean of 30.00 months ( $SD = 29.20$ ) duration of imprisonment. More details of the sample demographics and study procedures are given in Maercker et al. (2013), who reported that only older age and lower education were associated with sample attrition between T1 and T2.

### *Materials*

#### *Measures of ICD-11 PTSD symptoms:*

The Impact of Event Scale-Revised (Weiss & Marmar, 1996; German version: Maercker & Schützwohl, 1998) includes 22 items measuring symptom severity in the domains of intrusions, avoidance, and hyperarousal during the last seven days. Symptoms are measured on a four-point Likert scale (1 = *not at all*, 2 = *rarely*, 3 = *sometimes*, and 4 = *often*; the German version uses the four-point scaling of the original IES and thus differs from the English version of the IES-R). It was applied with reference to the index trauma of political imprisonment. Six IES-R items were selected to map the ICD-11 PTSD definition (Table 1). The six items reflected the symptoms provided by First et al. (2015) for ICD-11 PTSD. In order to estimate probable ICD-11 PTSD diagnosis, the six items were dichotomized to indicate the presence or absence of a given symptom. Standard conventions for determining symptom presence based on self-report, Likert scale measurements were followed (e.g., Elklit & Shevlin, 2007) whereby a score of 3 or greater was used to indicate symptom presence.

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Functional impairment associated with PTSD symptoms was not measured at T1 (1994), but was included at T2 (2008/09) as part of the clinician-administered “Diagnostic Interview for Psychological Disorders” (Schneider & Margraf, 2006). Accordingly, estimates of probable ICD-11 PTSD diagnoses at T1 were based on symptom criteria requirements, while at T2, diagnostic estimates were estimated using symptom criteria alone, and with the use of the functional impairment criteria. The internal reliability (Cronbach’s alpha) of the six items of the IES-R was satisfactory at T1 ( $\alpha = .82$ ) and T2 ( $\alpha = .84$ ).

### **INSERT TABLE 1 HERE**

#### *Measures of Mental Health:*

The Beck Depression Inventory (Beck Steer, & Carbin, 1988) is a well-established 21-item self-report instrument for assessing depression severity. Each item is measured along a four-point Likert scale (0-3), with higher scores indicating greater levels of depressive symptomatology. The reliability among the current sample was  $\alpha = .93$ .

The ‘WHO-5’ assesses quality of life with five well-being-related items (Bech, 2004). The scale developed by WHO has been globally validated and shows good psychometric features (Topp, Østergaard, Søndergaard, & Bech, 2015). The reliability was satisfactory among the current sample ( $\alpha = .86$ ).

#### *Measures of Social Affect:*

The State-Trait-Anger-Expression-Inventory (STAXI) (Spielberger, 1988) is a 45-item self-report measure assessing the extent of anger and its expression (externalized and internalized anger). The internalized scale measures the extent to which feelings of anger are withheld, and the externalized scale measures the extent to which feelings of anger are expressed outwardly. The psychometric properties of the German translation of the STAXI have been previously demonstrated (Schwenkmezger et al., 1992). Reliability of the full scale

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( $\alpha = .90$ ) and the internalizing ( $\alpha = .75$ ) subscale were satisfactory, although the externalizing subscales was somewhat low ( $\alpha = .61$ ).

Hatred towards perpetrators was measured via three items (e.g., “*Do you feel hatred about what has happened to you during the imprisonment?*”) previously used by Lopes-Cardozo et al. (2003). The items assess degrees of hatred and revenge feelings, fantasies or intentions on a 3-point scale (*not at all* to *extremely*). The scale possesses satisfactory psychometric properties (Orth et al., 2003) and the original reference to hatred towards war was replaced with a reference to political imprisonment. The reliability of the three items among the current sample was  $\alpha = .86$ .

### *Measures of Interpersonal Consequences:*

The Dysfunctional Disclosure Questionnaire (DDQ) (Müller & Maercker, 2006) covers in three subscales the reluctance to talk, the urge to talk, and emotional reactions during disclosure. The DDQ includes 12 items and each item is assessed using a six-point Likert scale. The scale has demonstrated sufficient psychometric properties (Müller et al., 2008). The reliability of the DDQ in the current sample was  $\alpha = .80$ .

The Social Acknowledgement Questionnaire (SAQ) (Maercker & Müller, 2004) measures individuals’ perception of being recognized as a victim or survivor, and the perceived support from one’s societal milieu. The SAQ contains 16 items, each measured using a Likert scale from 1 (*not at all*) to 3 (*completely*). The SAQ possesses sufficient psychometric features (Mueller et al., 2008). The reliability among the current sample was  $\alpha = .69$ .

### *Analysis*

The analytic plan for the current study contained three elements. First, estimates of probable diagnosis of ICD-11 PTSD were computed for T1 and T2.



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Second, the factorial validity of ICD-11 PTSD was assessed using CFA techniques. This involved a comparison of three models: Model 1, a correlated three-factor model (two items loading onto Re, Av, and Th, respectively) consistent with the ICD-11 proposals; Model 2, a correlated two-factor model identified by Forbes et al. (2015) and Haravuori et al. (2016) in which the Re and Av factors are combined into a single factor; and Model 3, a unidimensional model in which the six items load onto a single PTSD factor. This analysis was based on T1 data (1994) and conducted using Mplus 7.00 (Muthén & Muthén, 2013) (n.b., it was not possible to assess the latent structure at T2 given the limited sample size). The weighted least square mean- and variance-adjusted (WLSMV) estimator (Beauducel & Herzberg, 2006) was used for CFA. Standard procedures for determining model fit were followed (Klein, 2011) whereby excellent fit was indicated by a non-significant chi-square value ( $\chi^2$ ); Comparative Fit Index (CFI) and Tucker Lewis Index (TLI) values greater than .95; and a Root Mean Square Error of Approximation with 90% confidence intervals (RMSEA 90% CI) value less than .06. Furthermore, the Bayesian Information Criterion (BIC) was used to evaluate alternative models, with the smallest value indicating the best fitting model (the robust maximum likelihood estimator was used to generate BIC values for the purposes of model comparison). A ten-point difference between two BIC values is suggested to represent strong evidence (odds ratio 150:1) that the model with the lower value is superior (Raferty, 1995).

Third, hierarchical multiple regression analysis was conducted to assess the ability of the constituent elements of ICD-11 PTSD, measured in 1994, to predict seven outcome variables (depression, quality of life, internalized anger, externalized anger, hatred for perpetrators, dysfunctional disclosure, and social acknowledgement as a victim) 15 years later in 2008/09. For all outcome variables, sex was entered into the regression model at step 1 and summed scores of Re, Av, and Th were entered at step 2. Analyses were conducted in SPSS version 23.

## Results

### *Descriptive statistics*

Descriptive statistics of the PTSD symptom clusters and total scores from T1 and T2 are reported in Table 2. Based on the symptom criteria requirements for diagnosis of ICD-11 PTSD, 48.2% ( $n = 66$ ) of the sample at T1 met diagnostic criteria, and 42.5% ( $n = 37$ ) met diagnostic criteria at T2. When functional impairment was included at T2, 37.2% ( $n = 32$ ) of the sample met diagnostic criteria, a non-statistically significant change in prevalence ( $z = 0.77$ ,  $p = .22$ ). At T1 and T2, Re was the most commonly endorsed symptom cluster, followed by Th and Av.

Among those available at follow-up, 22.0% ( $n = 18$ ) met the ICD-11 PTSD symptom diagnostic criteria at T1 and T2; 17.1% ( $n = 14$ ) met diagnostic criteria at T1 and did not meet diagnostic criteria at T2; 19.5% ( $n = 16$ ) did not meet diagnostic criteria at T1 and did meet diagnostic criteria at T2; and 41.5% ( $n = 34$ ) did not meet diagnostic criteria at T1 and T2.

### **INSERT TABLE 2 HERE**

### *CFA results*

CFA findings supported the factorial validity of the proposed ICD-11 model of PTSD. The correlated three-factor model demonstrated excellent fit across all indices ( $\chi^2 = 1.78$ ,  $df = 6$ ,  $p = .94$ ; CFI = 1.00; TLI = 1.02; RMSEA = .00 (90% CI = .00/.03); BIC = 2348.77), and was superior to the two-factor ( $\chi^2 = 26.09$ ,  $df = 8$ ,  $p = .001$ ; CFI = .96; TLI = .93; RMSEA = .13 (90% CI = .08/.18); BIC = 2363.17) and unidimensional ( $\chi^2 = 29.27$ ,  $df = 9$ ,  $p < .001$ ; CFI = .96; TLI = .93; RMSEA = .13 (90% CI = .08/.18); BIC = 2359.34) models. Additionally, each item loaded onto its respective factor positively and strongly, and the three factors were moderate-to-highly correlated (Table 3).

**INSERT TABLE 3 HERE***Hierarchical multiple regression results*

Table 4 includes the results of a series of hierarchical multiple linear regression analyses. Seven outcome variables were assessed (depression, quality of life, internalized anger, externalized anger, hatred of perpetrators, problems in disclosure, and social acknowledgment as a victim), and in each case sex was entered at step 1 and the PTSD symptom clusters (Re, Av, and Th) were entered at step 2. Preliminary analyses revealed no serious violations of the assumptions of multicollinearity, homoscedasticity, linearity, and normality.

At step 1 of the analyses sex significantly contributed to the explanation of depression ( $F(1, 79) = 11.01, p = .001, R^2 = .12$ ), quality of life ( $F(1, 78) = 13.22, p < .001, R^2 = .15$ ), and dysfunctional disclosure ( $F(1, 78) = 10.49, p = .002, R^2 = .12$ ). The introduction of the ICD-11 PTSD symptom clusters significantly contributed a meaningful percentage of variance to all seven outcomes. The largest unique explanatory effect was observed for dysfunctional disclosure ( $\Delta R^2 = .27; F(3, 75) = 10.93, p < .001$ ), followed by quality of life ( $\Delta R^2 = .21; F(3, 75) = 7.97, p < .001$ ), depression ( $\Delta R^2 = .17; F(3, 76) = 6.19, p = .001$ ), hatred of perpetrators ( $\Delta R^2 = .15; F(3, 76) = 4.65, p = .005$ ), social acknowledgment as a victim ( $\Delta R^2 = .12; F(3, 75) = 3.50, p = .019$ ), externalized anger ( $\Delta R^2 = .14; F(3, 76) = 3.43, p = .021$ ), and internalized anger ( $\Delta R^2 = .10; F(3, 75) = 2.80, p = .046$ ).

In the final model, increased levels of Th significantly predicted decreased levels of quality of life ( $\beta = -.42, p = .002$ ), increased levels of social acknowledgment ( $\beta = .33, p = .028$ ), and increased levels of depression ( $\beta = .29, p = .031$ ). The Av symptoms significantly predicted increased levels of internalized anger ( $\beta = .30, p = .032$ ) and dysfunctional disclosure ( $\beta = .25, p = .031$ ). Finally, although Re did not predict any of the outcome variables to a

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statistically significant degree, the observed positive, predictive effect on feelings of hatred for one's perpetrator was of such a magnitude that it warrants consideration as a potentially meaningful effect ( $\beta = .24, p = .071$ ).

### **INSERT TABLE 4 HERE**

### **Discussion**

This study sought to evaluate the possibility of using the well-tried IES-R to estimate the new ICD-11 PTSD definition, and to subsequently assess its ability to prospectively predict a range of trauma-relevant outcomes. Data from a comprehensive 15-year longitudinal study on former political prisoners from the communist East Germany supported the general applicability of the new ICD-11 PTSD definition. The two items included from each of the three symptom groups (Re, Av, and Th) showed satisfactory model fit and meaningful predictive patterns.

Based on the IES-R, a substantial proportion of the sample met probable PTSD diagnosis at both assessment periods. The absence of a measure of functional impairment within the IES-R may be considered one of the scale's primary limitations as a method of capturing the ICD-11 PTSD profile given that findings tend to indicate that omission of functional impairment can inflate diagnostic rates (e.g., Wisco et al., 2016). Despite this general trend in the literature, the introduction of functional impairment at the follow-up assessment did not lead to a statistically significant decline in the proportion of individuals meeting caseness for PTSD. In a previous study based on the same sample, Maercker et al. (2013) reported PTSD rates of 33% at T1 and 29% at T2 according to a diagnostic interview for DSM-IV. It is possible therefore that the diagnostic rates generated by the IES-R are an over-estimation of the true rates of PTSD. While the distinct symptom profiles of ICD-11 and DSM-IV can lead to discrepant diagnostic rates, the trend has been for the ICD-11 to produce

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lower, not higher, estimates than the DSM-IV (O'Donnell et al., 2014; Stammel et al., 2015). The elevated rates of probable PTSD based on the IES-R are thus more likely the result of the well-demonstrated trend for self-report measures to generate modestly higher levels of diagnosis compared to diagnostic interviews (e.g. Griffin, Uhlmansiek, Resick, & Mechanic, 2004).

The results of the CFA analyses supported the latent symptom structure of PTSD as proposed by the ICD-11. The three-factor model was found to provide an excellent representation of the current sample data and adds to a growing body of evidence drawn from diverse trauma and cultural samples supporting the factorial validity of ICD-11 PTSD (Forbes et al., 2015; Gluck et al., 2016; Hansen et al., 2015; Tay et al., 2015). Current findings suggest that the widely-used IES-R is a viable method of mapping the ICD-11 model of PTSD for research purposes. Given that self-report and diagnostic interview measures specifically designed for ICD-11 PTSD are currently under development, the IES-R offers researchers engaged in trauma research a feasible method of integrating ICD-11 proposals for PTSD into on-going research efforts.

In addition to providing further evidence of the factorial validity of ICD-11 PTSD, the current study provides the first piece of empirical evidence regarding the predictive validity of the model. Independent of sex, depression and quality of life at the 15-year follow-up were robustly predicted by the ICD-11 PTSD factors, with a particularly strong contribution from the Th symptoms. Trauma-related interpersonal consequences (social acknowledgement and disclosure) and social affects (anger and hatred) were meaningfully predicted by the PTSD symptoms, the former to a greater extent than the latter. Dysfunctional disclosure (reluctance to disclose and strong emotional reactivity whilst disclosing) was positively predicted by Av symptoms 15 years earlier. Disclosure of traumatic experiences contributes to short-term recovery from PTSD (Mueller et al., 2008) and current findings suggest that over the longer

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term recovery may also be impeded by high levels of initial avoidance, mediated by lack of disclosure. Threat symptoms specifically predicted current self-perceived social acknowledgment as a survivor. In Germany and other former communist countries in Eastern Europe, many former political prisoners of the totalitarian regime still feel unacknowledged (Kazlauskas & Zelviene, 2016). Current results indicate that their on-going sense of threat may have a substantial social component and not only consists of reactions towards situational or other contextual triggers.

This study contained several limitations. First, despite the unique nature of the sample, the sample size was small and consequently the generalizability of these findings are limited. It wasn't possible to assess the factorial validity of ICD-11 PTSD at T2 given the limited sample that remained, however Monte Carlo simulation studies of sample size requirements for CFA indicate that the available sample size at T1 was sufficient to reliably undertake the CFA procedures (Wolf, Harrington, Clark, & Miller, 2013). Although it was possible to control for sex in the regression analyses, the reduced sample size prevented the inclusion of additional covariates that are likely important. Age and educational status was associated with attrition from T1 to T2, therefore the omission of these covariate may have influenced the results. Future studies evaluating ICD-11 PTSD would benefit from the inclusion of additional covariates to provide a more robust assessment of the predictive validity of the model.

There are three limitations associated with using the IES-R to model ICD-11 PTSD. First, and as previously mentioned, the IES-R does not contain a measure of functional impairment which is a criteria for ICD-11 PTSD diagnosis. Second, the ICD-11 model of PTSD emphasises that re-experiencing of the trauma must occur in the "here and now" so as to distinguish these symptoms from similar symptoms observed in other clinical disorders such as depression (Brewin, 2015). The inclusion of present-moment re-experiencing is

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emphasised as empirical findings indicate that this type of re-experiencing can discriminate trauma-exposed individuals who will develop PTSD from those who will not (Brewin, 2015; Reynolds & Brewin, 1998). The IES-R items used to capture re-experiencing do not include a “here and now” component and this may also have contributed to the higher diagnostic estimates. Third, the IES-R enquires about trauma symptoms experienced over the past seven days whereas the ICD-11 requires that these distressing symptoms be present for several weeks.

The value of the IES-R as a measure capable of capturing the ICD-11 diagnosis of PTSD should be considered with these limitations in mind. The ICD-11 model of PTSD is distinguishable from the DSM-based models in terms of both structure (a correlated three-factor structure based on six/seven symptoms) and content (unique symptoms that emphasise present moment re-experiencing and a heightened sense of current threat, over a given period of time). The IES-R appears to perform well with respect to representing the ICD-11 PTSD structure but there are deficiencies with its ability to capture the ICD-11 PTSD content. In the absence of a specifically-designed and psychometrically validated self-report measure of ICD-11 PTSD (n.b., the development and validation of specific ICD-11 PTSD self-report and clinician-administered scales is on-going), the IES-R can be regarded as a useful method of capturing the ICD-11 PTSD structure for research purposes. In conclusion, current findings provide additional support for the basic factorial validity of ICD-11 PTSD among a unique sample of trauma victims, and offer initial evidence of the predictive validity of the construct.

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## ICD-11 PTSD AND THE IES-R

Table 1. *Item mapping for ICD-11 PTSD using the IES-R.*

<b>ICD-11 Symptoms of PTSD</b>	<b>Impact-of-Event Scale-Revised Items</b>
Upsetting dreams of the trauma	IES-R 20. I had dreams about (the trauma).
Reliving the trauma	IES-R 9. Pictures about (the trauma) popped into my mind.
Avoidance of internal reminders	IES-R 11. I tried not to think about (the trauma).
Avoidance of external reminders	IES-R 8. I stayed away from reminders of (the trauma).
Hypervigilance	IES-R 21. I felt watchful and on-guard.
Exaggerated startle response	IES-R 10. I was jumpy and easily startled.

## ICD-11 PTSD AND THE IES-R

Table 2. *Descriptive statistics and percentage of sample meeting symptom criteria for ICD-11 PTSD.*

	% Meeting Diagnostic Symptom Criteria	Mean (95% CI)	Median	SD	Range
<b><i>Time 1 - 1994</i></b>					
Re-experiencing	81.7%	5.73 (5.41 / 6.05)	6	1.86	2-8
Avoidance	55.1%	4.43 (4.08 / 4.77)	5	2.04	2-8
Sense of Threat	73.9%	5.41 (5.06 / 5.75)	6	2.00	2-8
ICD-11 PTSD	48.2%	15.60 (14.76 / 16.43)	16	4.87	6-24
<b><i>Time 2 - 2008/09</i></b>					
Re-experiencing	73.9%	5.45 (5.06 / 5.89)	6	1.96	2-8
Avoidance	56.3%	4.60 (4.15 / 5.05)	4	2.12	2-8
Sense of Threat	68.2%	5.09 (4.67 / 5.51)	5	1.98	2-8
ICD-11 PTSD	42.5% (36.8%)	15.17 (14.10 / 16.24)	15	5.05	6-24

Note: N at T1 = 144; N at T2 = 88; ICD-11 PTSD = ICD-11 model of Posttraumatic Stress Disorder; 95% CI = 95% Confidence Intervals for the Mean. Diagnostic rates at Time 2 with the functional impairment criteria included are presented in parentheses.

## ICD-11 PTSD AND THE IES-R

Table 3. *Standardized factor loadings (standard errors) and factor correlations (standard errors) for ICD-11 PTSD at time 1.*

<i>Symptoms</i>	Re	Av	Th
1. Nightmares (IES-R 20)	.79 (.07)		
2. Reliving the trauma (IES-R 9)	.76 (.08)		
3. Avoidance of internal reminders (IES-R 11)		.90 (.05)	
4. Avoidance of external reminders (IES-R 8)		.76 (.06)	
5. Hypervigilance (IES-R 21)			.73 (.07)
6. Exaggerated startle response (IES-R 10)			.83 (.06)
<b><i>Factor Correlations</i></b>			
Re-experiencing (Re)	1		
Avoidance (Av)	.62 (.09)	1	
Sense of Threat (Th)	.83 (.08)	.80 (.07)	1

Note: All results are statistically significant ( $p < .001$ ).



## ICD-11 PTSD AND THE IES-R

Table 4. Hierarchical multiple regression models for external outcome variables (2008/09) predicted by sex and ICD-11 PTSD factors (1994).

	Depression	Quality of Life	Internalized Anger	Externalized Anger	Hatred	Dysfunctional Disclosure	Social Acknowledgement
	$\beta$ (95% CI)	$\beta$ (95% CI)	$\beta$ (95% CI)	$\beta$ (95% CI)	$\beta$ (95% CI)	$\beta$ (95% CI)	$\beta$ (95% CI)
<b>Step 1: <math>R^2</math></b>	<b>.12**</b>	<b>.15***</b>	<b>.01</b>	<b>.03</b>	<b>.01</b>	<b>.12**</b>	<b>.00</b>
Sex <sup>a</sup>	-.35** (-.56/-.14)	.38*** (.17/.59)	-.11 (-.33/.12)	-.12 (-.34/.09)	-.12 (-.34/.10)	-.34** (-.56/-.13)	.01 (-.21/.24)
<b>Step 2:</b>							
<b><math>R^2</math> change</b>	<b>.17**</b>	<b>.21***</b>	<b>.10*</b>	<b>.12*</b>	<b>.15**</b>	<b>.27***</b>	<b>.12*</b>
Sex <sup>a</sup>	-.29** (-.49/-.10)	.30*** (.11/.49)	-.10 (-.32/.12)	-.12 (-.34/.09)	-.11 (-.32/.11)	-.30** (-.49/-.12)	.08 (-.15/.30)
Re	.16 (-.08/.39)	-.15 (-.38/.08)	-.15 (-.42/.12)	.13 (-.13/.39)	.24 (-.02/.49)	.16 (-.07/.38)	.09 (-.17/.36)
Av	.03 (-.21/.27)	.12 (-.11/.35)	.30* (.03/.56)	.11 (-.16/.37)	.20 (-.06/.46)	.25* (.02/.47)	-.07 (-.34/.19)
Th	.29* (.03/.55)	-.42** (-.67/-.16)	.11 (-.19/.40)	.17 (-.12/.46)	.03 (-.26/.32)	.22 (-.02/.47)	.33* (.04/.63)

Note: N = 88. Re = Re-experiencing; Av = Avoidance; Th = Sense of Threat; <sup>a</sup> = sex coded as 0 = female, 1 = male;  $\beta$  (95% CI) = standardized beta value with 95% confidence intervals for  $\beta$ ; Step 1  $R^2$  = % of variance explained by sex;  $R^2$  change = Unique variance explained by Re, Av, and Th after the effects of sex are controlled for.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .