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Prevalence and Validity of ICD-11 Posttraumatic Stress Disorder (PTSD) and Complex PTSD: A Population-Based Survey of Hong Kong Adults

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Abstract

The present study aimed to report the prevalence of ICD-11 posttraumatic stress disorder (PTSD) and complex PTSD (CPTSD) in the general adult Hong Kong population, and examine the validity of the Chinese International Trauma Questionnaire (ITQ). This descriptive cross-sectional population-based telephone survey included a representative sample of 1,070 non-institutionalized permanent Hong Kong residents ages 18-64 years. Participants provided responses to the Chinese version of the ITQ, and measures of adverse childhood experiences (ACEs), depression, anxiety, and stress. Based on the diagnostic algorithm of the ITQ, 5.9% of the sample screened positive for either CPTSD or PTSD, with CPTSD (4.2%) being more common that PTSD (1.7%). Results of the confirmatory factor analysis indicated the first-order correlated 6-factor model to be the best fitting solution. Symptom cluster summed scores were all positively and significantly correlated with all criterion variables. This investigation established the prevalence rates of ICD-11 PTSD and CPTSD using a general adult population sample in Hong Kong. The Chinese ITQ demonstrated sound factorial validity and concurrent validity. Future research can further characterize ICD-11 PTSD and CPTSD in subgroups using the Chinese ITQ.

Keywords: PTSD, Complex PTSD, prevalence, International Trauma Questionnaire, psychometric evaluation, Chinese adults

Highlights

- Prevalence of ICD-11 PTSD and CPTSD in Hong Kong is 4.2% and 1.7%, respectively
- The Chinese ITQ showed sound psychometric properties in a general adult sample
- First-order correlated 6-factor model best represented the sample data
- Symptom scores significantly correlated with mental health and childhood adversity

1. Introduction

Posttraumatic stress disorder (PTSD) was officially recognized as a psychiatric disorder in the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III) in 1980 (American Psychiatric Association, 1980), and by the World Health Organization in its 10th revision of the International Classification of Diseases (ICD-10) in 1992 (World Health Organization, 1992). While the current version of the DSM (i.e. DSM-5) presents PTSD as a single diagnosis, the latest revision of the ICD (i.e. ICD-11) classified posttraumatic stress reactions into two distinct but related diagnoses, PTSD and Complex PTSD (CPTSD), which were presented under the parent category of "disorders specifically associated with stress" (World Health Organization, 2018). In ICD-11, there are three symptom clusters for PTSD including re-experiencing of the trauma in the here and now (Re), avoidance of traumatic reminds (Av), and a sense of current threat (Th). In addition to the three PTSD symptom clusters, CPTSD also includes additional symptoms that reflect 'disturbances in self-organization' (DSO), represented by three symptom clusters: affective dysregulation (AD), negative self-concept (NSC), and disturbances in relationships (DR). The qualitative difference between ICD-11 PTSD and CPTSD is that PTSD essentially represents a fear condition and CPTSD includes additional symptoms of DSO resulting from trauma (Cloitre et al., 2013), which captures a more complex presentation of posttraumatic response. Evidence from general population and clinical samples suggests that polytraumatisation, childhood and interpersonal traumatic stressors are predominantly associated with CPTSD (T. Karatzias et al., 2019; Karatzias et al., 2017), although the type of the traumatic stressor is only a risk factor for both ICD-11 PTSD or CPTSD and not a prerequisite.

Much research has also been devoted to estimating the prevalence of ICD-11 PTSD and CPTSD in the general population (Maercker, 2021). Population-based studies of adults have found rates of PTSD and CPTSD to be 3.4% and 3.8% United States (Cloitre et al., 2019); 5.0% and 7.7% in Ireland (Hyland et al., 2021); 6.7% and 4.9% in Israel (Ben-Ezra et al., 2018); and 5.8% and 1.8% in Lithuania (Kvedaraite et al., 2021). Thus, somewhere between 7% and 13% of the general adult population meet diagnostic requirements for PTSD and CPTSD, with absolute and relative rates of the disorders varying depending on the cultural context (notably, the abovementioned studies used extremely similar study designs). In East Asia, self-reported posttraumatic stress symptoms are likely influenced by cultural norms, such as underreporting of trauma and trauma-related responses due to shame or "saving face," emotional restraint, and higher tendency to agree with negative self-statements (Heim et al., 2022; G. W. K. Ho, A. C. Y. Chan, et al., 2019). Although little is known about the prevalence of PTSD and CPTSD in East Asian cultures, some evidence suggests CPTSD may be more common than PTSD (Ho et al., 2020).

The International Trauma Questionnaire (ITQ) was developed as a bespoke self-report measure to assess ICD-11 PTSD and CPTSD symptoms (Marylène Cloitre et al., 2018). Although structured interviews are considered by some to be the gold standard in psychiatric assessment (Drill et al., 2015; Mueller & Segal, 2014), the ITQ remains the most commonly used measure for ICD-11 PTSD and CPTSD to date (Gelezelyte et al., 2022). Previous psychometric evaluations of the ITQ have demonstrated good-to-excellent internal consistency (α =.89-.94), a strong correlation with the PTSD Checklist for DSM-5 (*r*=.89), and that it can reliably assess treatment-related change in PTSD/CPTSD (Cloitre et al., 2021). PTSD and DSO symptom clusters have also been found to significantly associate with mental health conditions, with prior studies demonstrating significant associations between depression and DSO symptoms but not PTSD, and anxiety associating with both but more strongly with PTSD (Hyland, Shevlin, Brewin, et al., 2017). A recent systematic review on the factorial validity of the ITQ showed that a correlated six-factor model (i.e., factors representing the six previously mentioned symptom clusters) and a two-factor second order model (i.e., second-order factors representing PTSD and DSO explained covariation among the six first-order factors) are commonly supported in prior studies (Redican et al., 2021).

Despite potential cultural differences in item responses (Khorramdel & von Davier, 2014), understanding trauma reactions (Chien & Fung, 2022), and emotion regulation difficulties (Nagulendran & Jobson, 2020), comparatively fewer studies have assessed the validity of the ITQ in the Asian context. A recent study (G. W. Ho et al., 2019) showed that the Chinese version of the ITQ demonstrated satisfactory psychometric properties (i.e. testretest reliability, concurrent validity, and semantic equivalence across English and Chinese versions) in a sample of university students in Hong Kong; and the latent structure was best supported by the two-factor second-order model in this sample. However, the findings also suggest PTSD and CPTSD appeared less distinctive in this Chinese sample given high correlations between affect dysregulation (a DSO symptom cluster) with other PTSD symptoms; PTSD and DSO symptoms also correlated slightly more strongly with depression than anxiety. Nonetheless, subsequent studies continued to support the factorial validity of the Chinese ITQ in young adults (Ho et al., 2020; Tian et al., 2020) and children (Li et al., 2021), and the association of CPTSD with childhood trauma (Guo et al., 2021). Notably, most studies to date have tested the ITQ using convenience samples of younger people, and none has assessed the prevalence of ICD-11 PTSD and CPTSD among Chinese adults in the general population. The distinction between PTSD and CPTSD, and their associations with other criterion variables (e.g. depression and anxiety) in Chinese samples also require further investigation. The present study was the first to report the prevalence of ICD-11 PTSD and CPTSD in the general adult Hong Kong population, and examine the validity of ICD-11 model of PTSD and CPTSD using the Chinese ITQ in a representative sample of Chinese adults.

2. Materials and Methods

This descriptive cross-sectional population-based telephone survey included a representative sample of 1,070 non-institutionalized permanent Hong Kong residents ages 18-64 years. Chinese adults who were currently residing in Hong Kong, and able to speak Cantonese and provided research consent were eligible to participate. A dual-frame telephone survey design with random digit dialing was used to recruit participants via landline telephone numbers and mobile phone numbers. When contact was successfully established with a target household, one person was selected from all those who were eligible and present using the "next birthday" method. Data was collected by trained interviewers using Webbased Computer Assisted Telephone Interview (Web-CATI); ten interviewers completed a half-day training on questionnaire content, sampling procedures, and interviewing techniques before study commencement. The institutional review board of the first author's serving university approved this study.

The telephone survey was conducted between September and October of 2021. A total of 4,800 telephone numbers were randomly sampled, of which 2,103 were valid and 1,070 eligible participants provided verbal consent and were successfully interviewed. The invalid telephone numbers consisted fax/data lines (21%), non-residence lines (30%), and non-working lines (49%); interviews were not achieved from valid telephone numbers due to household refusal (17%), target respondent refusal or drop out (51%), or non-contact (32%). The overall response rate of this telephone survey was 50.9%. The average time to complete the interview was 23 minutes. The final sample (46.1% male; 59.7% married) had a mean age of 41.8 years (SD=13.06, *Mdn*=42). The highest educational attainment for most people was completing secondary school (50.4%), 15.3% did not complete secondary school, 11.0% completed an associate degree, and 23.3% had a undergraduate or postgraduate university degree. The majority were working full-time (68.9%), 7.7% were working part-time or self-

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employed, 20.9% were students, homemakers, or retired, and 2.5% were unemployed. No incentives were given for participation.

2.1 Study measures

The International Trauma Questionnaire (ITQ) (M. Cloitre et al., 2018) is a selfreport measure of ICD-11 PTSD and CPTSD. There are six items measuring PTSD and DSO symptoms, respectively. Additionally, three items are used to measure functional impairment associated with both sets of symptoms. Participants were asked to respond to the questions based on the most distressing event in their lives. For the PTSD symptoms, respondents indicated how much each symptom has bothered them in the past month using a 5-point Likert scale from "0-Not At all" to "4-Extremely." DSO symptoms used the same response options, but were answered based on how respondents typically feel. Diagnostic criteria for PTSD requires a score of ≥ 2 ('Moderately' or above) for at least one of two symptoms from each symptom cluster for "Re-experiencing" (Re), "Avoidance" (Av), and "Sense of Threat" (Th), as well as for functional impairment. The diagnostic criteria for CPTSD include satisfying PTSD criteria in addition to scoring ≥ 2 ('Moderately' or above) for at least one symptom from each symptom cluster on "Affective Dysregulation" (AD), "Negative Self-Concept" (NSC), and "Disturbed Relationships" (DR), as well as functional impairment associated with these symptoms. Based on the ICD-11 taxonomic structure, a person may only receive a diagnosis of PTSD or CPTSD, but not both. Translation and validation of the Chinese ITQ in a university student sample in Hong Kong (G. W. K. Ho, T. Karatzias, et al., 2019) demonstrated excellent content validity and high internal consistency. The internal reliability of the ITQ in this sample was excellent (α =.95). The Chinese ITQ is available on traumameasuresglobal.com.

The *Adverse Childhood Experiences – International Questionnaire* (ACE-IQ) (World Health Organization, 2016) was used to assess exposure to 13 types of ACEs: physical abuse;

sexual abuse; emotional abuse; physical neglect; emotional neglect; household member substance abuse, incarceration, or mental illness; domestic violence; parental separation or death; bullying; community violence; and collective violence. Individuals' affirmative responses to each ACE were summed to determine their overall ACE score (i.e. total number of ACEs ranging from 0-13). Translation and psychometric evaluation of the Chinese ACE-IQ in a university student sample in Hong Kong (Grace W. K. Ho et al., 2019) demonstrated good item and scale validity, and good internal consistency. The internal reliability of the ACE-IQ in this sample was very good (α =.89).

Depression Anxiety Stress Scale (DASS-21) (Taouk et al., 2001) is a 21-item measure on a 4-point Likert-scale ranging from "0-Never" to "3-Almost Always." Each emotional state is assessed with 7 items; possible scores ranging from 0-21 with higher score denoting higher severity. The Chinese version of the scale has demonstrated sound reliability and validity in Chinese settings (Chan et al., 2012), the internal reliability of each subscale in the present sample was very good to excellent (α =.89-.91).

2.2 Analysis

Descriptive statistics were used to report participant characteristics and rates of PTSD and CPTSD. Bivariate associations between participant characteristics (age, gender, and ACE score) and proportion of participants screening positive for PTSD or CPTSD were assessed. The latent structure of the ITQ was tested using confirmatory factor analysis (CFA) based on responses to the 12 core symptom items using the full study sample. Two factor analytic models, the correlated six-factor and two-factor second-order models, were specified and tested based on findings from a systematic review of ITQ symptom structures demonstrating that these were the most commonly supported models (Redican et al., 2021). The correlated six-factor model is based on the ICD-11 specification of three PTSD and three DSO symptom clusters, each measured by their respective indicators. The two-factor second-order model correlated second-order factors (PTSD and DSO) to explain the covariation among the six first-order factors, with Re, Av and Th loading on the PTSD factor and AD, NSC and, DR loading on the DSO factor. Error variances were uncorrelated for both models.

Models were estimated using Mplus 7.0 (Muthén, 2013) and robust maximum likelihood estimation (MLR) (Yuan & Bentler, 2000), which has been shown to produce correct parameter estimates, standard errors and test statistics (Rhemtulla et al., 2012). Model fit was assessed using standard procedures: a non-significant chi-square (χ 2) test; Comparative Fit Index (CFI) and Tucker Lewis Index (TLI) values greater than .90; Root-Mean-Square Error of Approximation with 90% confidence intervals (RMSEA 90% CI); and Standardized Root-Mean-Square Residual (SRMR) values of .08 or less reflect acceptable model fit. The scaled chi-square difference test (Satorra, 2000) and Bayesian Information Criterion (BIC) were used for model comparison. A significant difference in chi-square statistics and smaller BIC value indicate a better fitting model; a BIC value difference greater than 10 is considered a 'significant' difference (Raftery, 1995). Concurrent validity of the best fitting model was further examined by calculating the correlations between latent factors with four criterion variables namely depression, anxiety, stress, and ACE score.

3. Results

Based on the diagnostic algorithm of the ITQ, 5.9% of the sample screened positive for either CPTSD or PTSD, with CPTSD (4.2%; 95% CI=3.2%-5.6%) being more common that PTSD (1.7%; 95% CI=1.1%-2.7%) (see **Table 1**). The proportion of participants who screened positive for PTSD did not significantly differ by age, gender, or ACEs. The proportion of participants who screened positive for CPTSD did not significantly differ by age or gender, but those who screened positive for CPTSD reported significantly higher ACE scores (M=5.93, SD=.40) and were more likely to report having all ACE types except emotional abuse, emotional neglect, bullying, and exposure to community violence.

3.1 Construct validity

Results of the CFA showed that the models with six correlated first-order factors and two correlated second-order factors were acceptable (see Table 2). Although the chi-square statistics were statistically significant, this should not lead to the rejection of the models as the large sample size increased the power of the test (Tanaka, 1987). Comparisons across model fit indices indicated that the first-order correlated 6-factor model to be the best fitting solution given it had the highest CFI and TLI, and lowest RMSEA, SRMR, and BIC. Also, the chi-square was significantly lower for the first-order correlated 6-factor model ($\Delta \chi^2$ = 64.815, Δ df=8, P < .001) based on the scaled chi-square difference test (Satorra, 2000). All items loaded significantly and positively onto factors representative of their respective symptom cluster and significant correlations were found between all factors, ranging between *r*=.614 (Re and DR) to *r*=.921 (Av and Th) (see Table 3).

3.2 Concurrent validity

The symptom cluster summed scores were all positively and significantly correlated with all criterion variables (**see Table 4**). Total number of ACEs significantly associated with all symptom clusters in the expected direction (r= .35-.48). Depression was more strongly associated with DSO symptom clusters (r=.69-.79) than PTSD symptom clusters (r=.56-.69). Anxiety was moderately correlated with all symptom clusters except for Th, which was strong (r=.75). Stress was moderately correlated with all symptom clusters, ranging between r=.60 (Re) to r=.69 (AD and DR).

4. Discussion

This was the first study to report the prevalence of ICD-11 PTSD and CPTSD in a representative general population adult sample using the Chinese version of the ITQ. Findings showed that CPTSD was more common than PTSD among Hong Kong adults (4.2% versus 1.7%), which corroborates with evidence from local community surveys (Fung et al., 2023; Po et al., 2023) and other nationally representative surveys (Hyland et al., 2021). However, the rate of screening positive for either condition is lower in the present sample (5.9%) compared with previous population-based studies conducted in the U.S. (7.2%) (Cloitre et al., 2019), Lithuania (7.6%) (Kvedaraite et al., 2021), Israel (11.6%) (Ben-Ezra et al., 2018), and Republic of Ireland (12.7%) (Hyland et al., 2021). This was unexpected given the present investigation was conducted against the backdrop of the social unrest in 2019 and the COVID-19 pandemic, both of which have been associated with deteriorating mental health and increased risks for posttraumatic stress response (Ni et al., 2020; Shevlin et al., 2020; S. M. Y. Wong et al., 2021; Wong et al., 2022). Of note, local studies investigating these associations utilized a more generic PTSD risk screener (e.g. Traumatic Screening Questionnaire) and none assessed for trauma reactions in accordance with the diagnostic formulation of ICD-11 PTSD and CPTSD. Therefore, it is possible that the ITQ provides a more specific measure of ICD-11 PTSD and CPTSD diagnosis. Indeed, some evidence suggests ICD-11 provides a narrower definition of PTSD but a better fit in factor structure compared with the DSM-5 model (Garabiles et al., 2023). More cross-cultural research is needed to understand whether and how posttraumatic stress symptoms and their measurement vary across geographical and cultural contexts.

Consistent with prior studies using the Chinese ITQ (Ho et al., 2020; G. W. K. Ho, T. Karatzias, et al., 2019), the CFA findings indicated that the six-correlated first-factor model provided the best fit to the sample data. This is supported by other studies showing the first-order model fitted better in general population samples (Ben- Ezra et al., 2018; Shevlin et al., 2017), whereas the distinctions between PTSD and DSO symptomatology are better reflected via the second-order model in highly traumatized or treatment-seeking samples (M. Cloitre et al., 2018; Vallières et al., 2018). Nonetheless, and in line with other studies (Hyland, Shevlin, Elklit, et al., 2017; Karatzias et al., 2017; Redican et al., 2021), the two-factor second-order

model was also acceptable. Our findings call for continued investigations using clinical and trauma-exposed samples to further evaluate the symptom structure and presentation of complex trauma in Chinese populations.

The Chinese ITQ demonstrated good concurrent validity with four criterion variables, with all six symptom cluster scores positively correlated with cumulative childhood adversity (i.e. total ACEs), depression, anxiety, and stress. Both PTSD and DSO symptom clusters were significantly associated with total ACEs in similar magnitude. Although childhood trauma exposure was expected to be more strongly associated with DSO symptoms given its impacts on developmental processes underlying emotion regulation, relational wellbeing, and self-concept (Cloitre et al., 2011), significant adult-onset trauma can also lead to poorer self-concept and self-regulatory capacities (Nickerson et al., 2016), which was not assessed in this study. However, our results showed the accumulation of childhood adversities was a significant risk factor for CPTSD, but not PTSD, thus underscoring the importance of assessing ACEs in Chinese adults presenting with complex posttraumatic responses.

Separately, correlations between PTSD and DSO symptom cluster scores with depression, anxiety, and stress were consistent with prior findings (Hyland, Shevlin, Brewin, et al., 2017). That is, stress significantly and positively correlated with all symptoms clusters; depression more strongly correlated with DSO than PTSD symptoms; and the strongest correlation was observed between anxiety and persistent sense of threat (Th). These findings provide additional support for the need to design targeted clinical interventions and treatment approaches for PTSD and DSO symptoms as they differentially relate to other clinically relevant exogenous variables (T. Karatzias et al., 2019; Thanos Karatzias et al., 2019).

4.1 Study limitations

Several study limitations are noted. First, the telephone survey relied on participants' self-reports, which may be affected by recall and social desirability biases. Second, our

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response rate (50.9%) may limit generalizability of findings, but it is comparable with recent telephone surveys using similar recruitment strategies in Hong Kong (Luo et al., 2022; M. C. Wong et al., 2021); the age and gender distributions of our sample also closely approximates those of the general Hong Kong population (HKCSD, 2022). Third, adults aged 65 or above were excluded because elderly respondents expressed difficulties recalling their childhood experiences and understanding the survey questions over the telephone during survey piloting. Last, we only measured adversities in childhood and trauma experiences in adulthood were not assessed.

5. Conclusions

This investigation established the prevalence rates of ICD-11 PTSD and CPTSD using a general adult population sample in Hong Kong. Given the comparatively lower rates of either condition identified in this representative sample, additional cross-cultural validation studies are needed to understand potential contextual and cultural differences in how posttraumatic stress symptoms are presented or measured. Continued public health surveillance and more targeted clinical assessments may also be warranted to identify individuals experiencing significant distress after trauma exposure in this cultural context. The Chinese ITQ demonstrated sound factorial validity and concurrent validity in this general adult sample. Future research can further characterize ICD-11 PTSD and CPTSD in subgroups (e.g. treatment-seeking, highly trauma exposed, prison, elderly samples) using the Chinese ITQ.

References

- American Psychiatric Association. (1980). *Diagnostic and statistical manual of mental disorders (3rd ed.)*. Author.
- Ben-Ezra, M., Karatzias, T., Hyland, P., Brewin, C. R., Cloitre, M., Bisson, J. I., Roberts, N. P., Lueger-Schuster, B., & Shevlin, M. (2018). Posttraumatic stress disorder (PTSD) and complex PTSD (CPTSD) as per ICD-11 proposals: A population study in Israel. *Depression and Anxiety*, 35(3), 264-274. <u>https://doi.org/https://doi.org/10.1002/da.22723</u>
- Ben-Ezra, M., Karatzias, T., Hyland, P., Brewin, C. R., Cloitre, M., Bisson, J. I., Roberts, N. P., Lueger-Schuster, B., & Shevlin, M. (2018). Posttraumatic stress disorder (PTSD) and complex PTSD (CPTSD) as per ICD-11 proposals: A population study in Israel. *Depression and Anxiety*, 35(3), 264-274.
- Chan, R. C. K., Xu, T., Huang, J., Wang, Y., Zhao, Q., Shum, D. H. K., O'Gorman, J., & Potangaroa, R. (2012). Extending the utility of the Depression Anxiety Stress scale by examining its psychometric properties in Chinese settings. *Psychiatry Research*, 200(2), 879-883. <u>https://doi.org/https://doi.org/10.1016/j.psychres.2012.06.041</u>
- Chien, W. T., & Fung, H. W. (2022). Commentary: The assessment of dissociative pathology in culturally and clinically diverse contexts. *Alpha Psychiatry*, *23*, 104-105. <u>https://doi.org/10.5152/alphapsychiatry.2022.0006</u>
- Cloitre, M., Cohen, L. R., & Koenen, K. C. (2011). *Treating survivors of childhood abuse: Psychotherapy for the interrupted life*. Guilford Press.
- Cloitre, M., Garvert, D. W., Brewin, C. R., Bryant, R. A., & Maercker, A. (2013). Evidence for proposed ICD-11 PTSD and complex PTSD: a latent profile analysis [Complex PTSD; posttraumatic stress disorder; WHO; ICD-11]. 2013. <u>https://doi.org/10.3402/ejpt.v4i0.20706</u>
- Cloitre, M., Hyland, P., Bisson, J. I., Brewin, C. R., Roberts, N. P., Karatzias, T., & Shevlin, M. (2019). ICD-11 Posttraumatic Stress Disorder and Complex Posttraumatic Stress Disorder in the United States: A Population-Based Study. *Journal of Traumatic Stress*, *32*(6), 833-842. <u>https://doi.org/10.1002/jts.22454</u>
- Cloitre, M., Hyland, P., Prins, A., & Shevlin, M. (2021). The international trauma questionnaire (ITQ) measures reliable and clinically significant treatment-related change in PTSD and complex PTSD. *European Journal of Psychotraumatology*, *12*(1), 1930961.
- Cloitre, M., Shevlin, M., Brewin, C. R., Bisson, J. I., Roberts, N. P., Maercker, A., Karatzias, T., & Hyland, P. (2018). The International Trauma Questionnaire: development of a self-report measure of ICD-11 PTSD and complex PTSD. *Acta Psychiatrica Scandinavica*, *138*(6), 536-546. <u>https://doi.org/doi:10.1111/acps.12956</u>
- Cloitre, M., Shevlin, M., Brewin, C. R., Bisson, J. I., Roberts, N. P., Maercker, A., Karatzias, T., & Hyland, P. (2018). The International Trauma Questionnaire: Development of a self-report measure of ICD-11 PTSD and complex PTSD. *Acta Psychiatrica Scandinavica*, *138*(6), 536-546. <u>https://doi.org/10.1111/acps.12956</u>
- Drill, R., Nakash, O., DeFife, J. A., & Westen, D. (2015). Assessment of clinical information: Comparison of the validity of a Structured Clinical Interview (the SCID) and the Clinical Diagnostic Interview. *The Journal of Nervous and Mental Disease*, 203(6), 459-462. https://doi.org/10.1097/NMD.0000000000000000
- Fung, H. W., Wong, E. N. M., Lam, S. K. K., Chien, W. T., Hung, S. L., & Ross, C. A. (2023). The prevalence of dissociative symptoms and disorders: Findings from a sample of community health service users in Hong Kong. *Asian Journal of Psychiatry*, 80, 103351. <u>https://doi.org/https://doi.org/10.1016/j.ajp.2022.103351</u>
- Garabiles, M. R., Mordeno, I. G., & Nalipay, M. J. N. (2023). A comparison of DSM-5 and ICD-11 models of PTSD: Measurement invariance and psychometric validation in Filipino trauma samples. *Journal of Psychiatric Research*, 163, 24-31. <u>https://doi.org/https://doi.org/10.1016/j.jpsychires.2023.05.006</u>

- Gelezelyte, O., Roberts, N. P., Kvedaraite, M., Bisson, J. I., Brewin, C. R., Cloitre, M., Kairyte, A., Karatzias, T., Shevlin, M., & Kazlauskas, E. (2022). Validation of the International Trauma Interview (ITI) for the clinical assessment of ICD-11 posttraumatic stress disorder (PTSD) and complex PTSD (CPTSD) in a Lithuanian sample. *European Journal of Psychotraumatology*, 13(1), 2037905. <u>https://doi.org/10.1080/20008198.2022.2037905</u>
- Guo, T., Huang, L., Hall, D. L., Jiao, C., Chen, S.-T., Yu, Q., Yeung, A., Chi, X., & Zou, L. (2021). The relationship between childhood adversities and complex posttraumatic stress symptoms: a multiple mediation model. *European Journal of Psychotraumatology*, 12(1), 1936921. <u>https://doi.org/10.1080/20008198.2021.1936921</u>
- Heim, E., Karatzias, T., & Maercker, A. (2022). Cultural concepts of distress and complex PTSD: Future directions for research and treatment. *Clinical Psychology Review*, 93, 102143. <u>https://doi.org/https://doi.org/10.1016/j.cpr.2022.102143</u>
- HKCSD. (2022). *Population by Sex, Age and Year*. Retrieved September from <u>https://www.census2021.gov.hk/en/main_tables.html</u>
- Ho, G. W., Karatzias, T., Cloitre, M., Chan, A. C., Bressington, D., Chien, W. T., Hyland, P., & Shevlin, M. (2019). Translation and validation of the Chinese ICD-11 International Trauma Questionnaire (ITQ) for the Assessment of Posttraumatic Stress Disorder (PTSD) and Complex PTSD (CPTSD). *European Journal of Psychotraumatology*, 10(1), 1608718.
- Ho, G. W. K., Chan, A. C. Y., Chien, W.-T., Bressington, D. T., & Karatzias, T. (2019). Examining patterns of adversity in Chinese young adults using the Adverse Childhood Experiences— International Questionnaire (ACE-IQ). *Child Abuse and Neglect, 88*, 179-188. <u>https://doi.org/https://doi.org/10.1016/j.chiabu.2018.11.009</u>
- Ho, G. W. K., Chan, A. C. Y., Shevlin, M., Karatzias, T., Chan, P. S., & Leung, D. (2019). Childhood Adversity, Resilience, and Mental Health: A Sequential Mixed-Methods Study of Chinese Young Adults. J Interpers Violence, 886260519876034. https://doi.org/10.1177/0886260519876034
- Ho, G. W. K., Hyland, P., Shevlin, M., Chien, W. T., Inoue, S., Yang, P. J., Chen, F. H., Chan, A. C. Y., & Karatzias, T. (2020). The validity of ICD-11 PTSD and Complex PTSD in East Asian cultures: findings with young adults from China, Hong Kong, Japan, and Taiwan. *European Journal of Psychotraumatology*, *11*(1), 1717826-1717826. https://doi.org/10.1080/20008198.2020.1717826
- Ho, G. W. K., Karatzias, T., Cloitre, M., Chan, A. C. Y., Bressington, D., Chien, W. T., Hyland, P., & Shevlin, M. (2019). Translation and validation of the Chinese ICD-11 International Trauma Questionnaire (ITQ) for the Assessment of Posttraumatic Stress Disorder (PTSD) and Complex PTSD (CPTSD). *Eur J Psychotraumatol*, *10*(1), 1608718. <u>https://doi.org/10.1080/20008198.2019.1608718</u>
- Hyland, P., Shevlin, M., Brewin, C. R., Cloitre, M., Downes, A. J., Jumbe, S., Karatzias, T., Bisson, J. I., & Roberts, N. P. (2017). Validation of post-traumatic stress disorder (PTSD) and complex PTSD using the International Trauma Questionnaire. *Acta Psychiatrica Scandinavica*, 136(3), 313-322. <u>https://doi.org/10.1111/acps.12771</u>
- Hyland, P., Shevlin, M., Elklit, A., Murphy, J., Vallieres, F., Garvert, D. W., & Cloitre, M. (2017). An assessment of the construct validity of the ICD-11 proposal for complex posttraumatic stress disorder. *Psychological Trauma: Theory, Research, Practice and Policy, 9*(1), 1-9. https://doi.org/10.1037/tra0000114
- Hyland, P., Vallières, F., Cloitre, M., Ben-Ezra, M., Karatzias, T., Olff, M., Murphy, J., & Shevlin, M. (2021). Trauma, PTSD, and complex PTSD in the Republic of Ireland: prevalence, service use, comorbidity, and risk factors. *Social Psychiatry and Psychiatric Epidemiology*, *56*(4), 649-658. https://doi.org/10.1007/s00127-020-01912-x
- Karatzias, T., Hyland, P., Bradley, A., Cloitre, M., Roberts, N. P., Bisson, J. I., & Shevlin, M. (2019). Risk factors and comorbidity of ICD-11 PTSD and complex PTSD: Findings from a trauma-exposed

population based sample of adults in the United Kingdom. *Depression and Anxiety*, *36*(9), 887-894. <u>https://doi.org/10.1002/da.22934</u>

- Karatzias, T., Murphy, P., Cloitre, M., Bisson, J., Roberts, N., Shevlin, M., Hyland, P., Maercker, A., Ben-Ezra, M., Coventry, P., Mason-Roberts, S., Bradley, A., & Hutton, P. (2019). Psychological interventions for ICD-11 complex PTSD symptoms: systematic review and meta-analysis. *Psychological Medicine*, 1-15. <u>https://doi.org/10.1017/S0033291719000436</u>
- Karatzias, T., Shevlin, M., Fyvie, C., Hyland, P., Efthymiadou, E., Wilson, D., Roberts, N., Bisson, J. I., Brewin, C. R., & Cloitre, M. (2017). Evidence of distinct profiles of posttraumatic stress disorder (PTSD) and complex posttraumatic stress disorder (CPTSD) based on the new ICD-11 trauma questionnaire (ICD-TQ). *Journal of Affective Disorders*, 207, 181-187.
- Khorramdel, L., & von Davier, M. (2014). Measuring response styles across the Big Five: A multiscale extension of an approach using multinomial processing trees. *Multivariate Behavioral Research*, *49*(2), 161-177. <u>https://doi.org/10.1080/00273171.2013.866536</u>
- Kvedaraite, M., Gelezelyte, O., Kairyte, A., Roberts, N. P., & Kazlauskas, E. (2021). Trauma exposure and factors associated with ICD-11 PTSD and complex PTSD in the Lithuanian general population. *International Journal of Social Psychiatry*, 00207640211057720.
- Li, J., Wang, W., Hu, W., Yuan, Z., Zhou, R., Zhang, W., & Qu, Z. (2021). Validation of posttraumatic stress disorder (PTSD) and complex PTSD in Chinese children as per the ICD-11 proposals using the International trauma questionnaire. *European Journal of Psychotraumatology*, 12(1), 1888525. <u>https://doi.org/10.1080/20008198.2021.1888525</u>
- Luo, S., She, R., Lau, M. M. C., & Lau, J. T. F. (2022). Would Illness Representations of COVID-19 and COVID-19 Fears During Clinic Visits Promote or Reduce Behavioral Intention to Seek Medical Consultations for Flu Symptoms? A Random Telephone Survey in Hong Kong, China. Front Public Health, 10, 903290. <u>https://doi.org/10.3389/fpubh.2022.903290</u>
- Maercker, A. (2021). Development of the new CPTSD diagnosis for ICD-11. *Borderline personality disorder and emotion dysregulation*, *8*(1), 7. <u>https://doi.org/10.1186/s40479-021-00148-8</u>
- Mueller, A. E., & Segal, D. L. (2014). Structured versus semistructured versus unstructured interviews. *The Encyclopedia of Clinical Psychology*, 1-7. https://doi.org/10.1002/9781118625392.wbecp069
- Muthén, L. K., Muthén, B. O. (2013). Mplus. In (Version 7.0)
- Nagulendran, A., & Jobson, L. (2020). Exploring cultural differences in the use of emotion regulation strategies in posttraumatic stress disorder. *European Journal of Psychotraumatology*, *11*(1), 1729033. <u>https://doi.org/10.1080/20008198.2020.1729033</u>
- Ni, M. Y., Yao, X. I., Leung, K. S. M., Yau, C., Leung, C. M. C., Lun, P., Flores, F. P., Chang, W. C., Cowling, B. J., & Leung, G. M. (2020). Depression and post-traumatic stress during major social unrest in Hong Kong: a 10-year prospective cohort study. *The Lancet*, 395(10220), 273-284. <u>https://doi.org/https://doi.org/10.1016/S0140-6736(19)33160-5</u>
- Nickerson, A., Cloitre, M., Bryant, R. A., Schnyder, U., Morina, N., & Schick, M. (2016). The factor structure of complex posttraumatic stress disorder in traumatized refugees. *European Journal of Psychotraumatology*, 7(1), 33253.
- Po, B. S. K., Lam, S. K. K., Chen, Y. J., Chien, W. T., Wong, E. N. M., Wang, E. K., & Fung, H. W. (2023). Persistence and outcomes of ICD-11 complex PTSD in the community: A nine-month longitudinal investigation in Hong Kong. *Asian Journal of Psychiatry*, 87, 103696.
- Raftery, A. E. (1995). Bayesian model selection in social research. *Sociological Methodology*, 111-163.
- Redican, E., Nolan, E., Hyland, P., Cloitre, M., McBride, O., Karatzias, T., Murphy, J., & Shevlin, M. (2021). A systematic literature review of factor analytic and mixture models of ICD-11 PTSD and CPTSD using the International Trauma Questionnaire. *Journal of Anxiety Disorders*, 79, 102381. <u>https://doi.org/https://doi.org/10.1016/j.janxdis.2021.102381</u>

- Rhemtulla, M., Brosseau-Liard, P. É., & Savalei, V. (2012). When can categorical variables be treated as continuous? A comparison of robust continuous and categorical SEM estimation methods under suboptimal conditions. *Psychological Methods*, *17*(3), 354.
- Satorra, A. (2000). Scaled and Adjusted Restricted Tests in Multi-Sample Analysis of Moment Structures. In R. D. H. Heijmans, D. S. G. Pollock, & A. Satorra (Eds.), *Innovations in Multivariate Statistical Analysis: A Festschrift for Heinz Neudecker* (pp. 233-247). Springer US. <u>https://doi.org/10.1007/978-1-4615-4603-0_17</u>
- Shevlin, M., Hyland, P., & Karatzias, T. (2020). Is Posttraumatic Stress Disorder Meaningful in the Context of the COVID-19 Pandemic? A Response to Van Overmeire's Commentary on Karatzias et al. (2020). *Journal of Traumatic Stress*, 33(5), 866-868. <u>https://doi.org/https://doi.org/10.1002/jts.22592</u>
- Shevlin, M., Hyland, P., Karatzias, T., Fyvie, C., Roberts, N., Bisson, J. I., Brewin, C. R., & Cloitre, M. (2017). Alternative models of disorders of traumatic stress based on the new ICD-11 proposals. *Acta Psychiatrica Scandinavica*, *135*(5), 419-428.
- Tanaka, J. S. (1987). "How big is big enough?": Sample size and goodness of fit in structural equation models with latent variables. *Child Development*, 134-146.
- Taouk, M., Lovibond, P. F., & Laube, R. (2001). *Psychometric properties of a Chinese version of the short Depression Anxiety Stress Scales (DASS21)*. Cumberland Hospital.
- Tian, Y., Wu, X., Wang, W., Zhang, D., Yu, Q., & Zhao, X. (2020). Complex posttraumatic stress disorder in Chinese young adults using the International Trauma Questionnaire (ITQ): A latent profile analysis. *Journal of Affective Disorders*, 267, 137-143. https://doi.org/10.1016/j.jad.2020.02.017
- Vallières, F., Ceannt, R., Daccache, F., Abou Daher, R., Sleiman, J., Gilmore, B., Byrne, S., Shevlin, M., Murphy, J., & Hyland, P. (2018). ICD-11 PTSD and complex PTSD amongst Syrian refugees in Lebanon: the factor structure and the clinical utility of the International Trauma Questionnaire. Acta Psychiatrica Scandinavica, 138(6), 547-557.
- Wong, M. C., Wong, E. L., Huang, J., Cheung, A. W., Law, K., Chong, M. K., Ng, R. W., Lai, C. K., Boon, S. S., Lau, J. T., Chen, Z., & Chan, P. K. (2021). Acceptance of the COVID-19 vaccine based on the Health Belief Model: a population-based survey in Hong Kong. *Vaccine*. https://doi.org/https://doi.org/10.1016/j.vaccine.2020.12.083
- Wong, S. M. Y., Hui, C. L. M., Wong, C. S. M., Suen, Y. N., Chan, S. K. W., Lee, E. H. M., Chang, W. C., & Chen, E. Y. H. (2021). Prospective prediction of PTSD and depressive symptoms during social unrest and COVID-19 using a brief online tool. *Psychiatry Research*, 298, 113773. <u>https://doi.org/https://doi.org/10.1016/j.psychres.2021.113773</u>
- Wong, S. M. Y., Wong, C. W. C., Hui, C. L. M., Chan, S. K. W., Lee, E. H. M., Chang, W. C., Suen, Y. N., & Chen, E. Y. H. (2022). Stressful events as correlates of depressive and PTSD symptoms in Hong Kong women during social unrest and COVID-19 pandemic. *Journal of Affective Disorders*, 300, 263-268. <u>https://doi.org/https://doi.org/10.1016/j.jad.2022.01.002</u>
- World Health Organization. (1992). *The ICD-10 Classification of Mental and Behavioral Disorders. Clinical description and diagnostic guidelines*. Author.
- World Health Organization. (2016). Adverse Childhood Experiences International Questionnaire (ACE-IQ).

www.who.int/violence_injury_prevention/violence/activities/adverse_childhood_experienc es

- World Health Organization. (2018). *The ICD-11 Classification of Mental and Behavioral Disorders. Clinical description and diagnostic guidelines*. Author.
- Yuan, K. H., & Bentler, P. M. (2000). Three likelihood-based methods for mean and covariance structure analysis with nonnormal missing data. *Sociological Methodology*, *30*(1), 165-200.

	Full Sample	No Diagnosis	PTSD	CPTSD
	(n=1,070,	(n=1,007,	(n=18,	(n=45,
	100%)	94.11%)	1.68%)	4.21%)
Age (mean, SD)	41.78 (13.06)	41.74 (13.05)	39.44	43.51 (13.16)
			(13.65)	
Female (n, %)	577 (53.93)	544 (54.02)	9 (50)	24 (53.33)
ACE score (mean, SD)	1.64 (2.06)	1.43 (1.80)	2.22 (2.37)	5.93 (2.70)*
ACE type (n, %)				
Physical abuse	144 (13.46)	109 (10.82)	3 (16.67)	32 (71.11)*
Emotional abuse	207 (19.35)	191 (18.97)	3 (16.67)	13 (28.89)
Sexual abuse	100 (9.35)	64 (6.36)	4 (22.22)	32 (71.11)*
Physical neglect	90 (8.41)	81 (8.04)	0 (0)	9 (20.00)*
Emotional neglect	159 (14.86)	148 (14.70)	5 (27.78)	6 (13.33)
Family substance misuse	90 (8.41)	64 (6.36)	1 (5.56)	25 (55.56)*
Family mental illness	98 (9.16)	74 (7.35)	1 (5.56)	23 (51.11)*
Family incarceration	53 (4.95)	27 (2.68)	3 (16.67)	23 (51.11)*
Parental separation/ death	360 (33.64)	324 (32.17)	6 (33.33)	30 (66.67)*
Domestic violence	217 (20.28)	176 (17.48)	5 (27.78)	36 (80.00)*
Bullying	45 (4.21)	41 (4.07)	2 (11.11)	2 (4.44)
Community violence	83 (7.76)	75 (7.45)	3 (16.67)	5 (11.11)
Collective violence	105 (9.81)	70 (6.95)	4 (22.22)	31 (68.89)*

Table 1. Prevalence of ICD-11 PTSD and CPTSD and Participant Characteristics

Note. *=Significant difference between those who did and did not screen positive for CPTSD at p<0.05; No significant differences in age, gender, or ACEs between those who did and did not screen positive for PTSD; ACE=Adverse Childhood Experiences.

Table 2. Model fit statistics for alternative models of ICD-11 CPTSD based on the ITQ

								· ·
Model	χ^2	df	р	CFI	TLI	RMSEA	SRMR	BIC
						(90% CI)		
6-factor	85.114	39	<.001	.990	.983	0.033	.021	19772.640
						(.024043)		
2 nd Order	142.240	47	<.001	.979	.970	0.044	.033	19838.110
						(.035052)		

Note. $\chi 2$ = Chi-square Goodness of Fit statistic; df = degrees of freedom; p = probability value; CFI = Comparative Fit Index; TLI = Tucker Lewis Index; RMSEA (90% CI) = Root-Mean-Square Error of Approximation with 90% confidence intervals; SRMR = Standardized Square Root Mean Residual; BIC = Bayesian Information Criterion

	2	1				
Item	Re	Av	Th	AD	NSC	DR
Re1	.826					
Re2	.880					
Av1		.867				
Av2		.891				
Th1			.904			
Th2			.872			
AD1				.753		
AD2				.814		
NSC1					.920	
NSC2					.906	
DR1						.898
DR2						.892
Av	.915					
Th	.857	.921				
AD	.733	.821	.794			
NSC	.625	.700	.763	.826		
DR	.614	.701	.740	.908	.863	

Table 3. Standardised Factor Loadings and Correlations for Correlated 6-factor Model ofPTSD and CPTSD Symptoms.

Note: All loading and correlations statistically significant (p < .001). Re1 to Th2 are the PTSD items and AD1 to DR2 are the DSO items

ITQ Symptom	Total ACEs	Depression	Anxiety	Stress
Clusters		-	-	
Re	.357	.559	.608	.598
Av	.440	.634	.669	.650
Th	.423	.687	.748	.677
AD	.441	.694	.660	.687
NSC	.469	.761	.677	.675
DR	.477	.720	.668	.687

Table 4. Correlations between the ITQ symptom clusters with Adverse Childhood Experiences (ACEs), Depression, Anxiety, and Stress.

Note: All correlations significant (p<.001)