



BASIC RESEARCH ARTICLE



## Trauma exposure, prevalence and associated factors of complex PTSD in mainland China: a cross-sectional survey

Kai Li<sup>a</sup>, Yuanyuan Liu<sup>b,c</sup>, Baoliang Zhong<sup>a,d</sup> and Jun Tong<sup>a,d</sup>

<sup>a</sup>Institute of Analytical Psychology, City University of Macau, Macau, People's Republic of China; <sup>b</sup>School of Psychology, Hainan Normal University, Haikou, People's Republic of China; <sup>c</sup>Adolescent Psychological Development and Education Center of Hainan, Haikou, People's Republic of China; <sup>d</sup>Affiliated Wuhan Mental Health Center (Wuhan Hospital for Psychotherapy), Tongji Medical College of Huazhong University of Science and Technology, Wuhan, People's Republic of China

### ABSTRACT

**Background:** The ICD-11 distinguishes Complex Post-Traumatic Stress Disorder (CPTSD) as a separate trauma-related disorder from PTSD. While numerous studies have examined these conditions globally, no nationwide research has yet investigated their one-month prevalence and associated factors in the general population of China.

**Objective:** This study aimed to determine the one-month prevalence of ICD-11 CPTSD and identify associated factors within a general adult sample in mainland China.

**Methods:** A total of 2,115 adults living in mainland China participated in an online survey. PTSD and CPTSD were assessed using the International Trauma Questionnaire (ITQ) based on ICD-11 criteria. Trauma exposure was measured via the International Trauma Exposure Measure (ITEM). Multinomial logistic regression identified associated factors for PTSD and CPTSD.

**Results:** Among participants, 88.2% reported at least one traumatic exposure. The prevalence of PTSD and CPTSD was 4.9% and 4.5%, respectively. Shared predictors for both conditions included a greater number of siblings, broader interpersonal trauma exposure during adolescence, and more frequent and recent index trauma events. Specific predictors for CPTSD included female gender, older age, being left behind by migrant parents, lower socioeconomic status, and broader trauma exposure in adulthood.

**Conclusion:** This study provides the first estimates of ICD-11 PTSD and CPTSD prevalence in the general population of mainland China, revealing relatively high rates compared to other mental disorders. Findings highlight key associated factors and offer intervention recommendations for at-risk groups.

### Exposición a trauma, prevalencia y factores asociados a TEPT complejo en China continental: una encuesta transversal

**Antecedentes:** La CIE-11 distingue el Trastorno de Estrés Postraumático Complejo (TEPT-C) como un trastorno relacionado al trauma distinto del TEPT. Si bien, numerosos estudios han examinado estas afecciones globalmente, hasta la fecha ninguna investigación a nivel nacional ha estudiado su prevalencia mensual y los factores asociados en la población general de China.

**Objetivo:** Este estudio tuvo como objetivo determinar la prevalencia de un mes del TEPT-C según la CIE-11 e identificar los factores asociados dentro de una muestra general de adultos en China continental.

**Métodos:** Un total de 2.115 adultos residentes en China continental participaron en una encuesta en línea. El TEPT y el TEPT-C se evaluaron mediante el Cuestionario Internacional de Trauma (ITQ, por sus siglas en inglés), basado en los criterios de la CIE-11. La exposición a trauma se midió a través de la Medida Internacional de Exposición al Trauma (ITEM, por sus siglas en inglés). Los factores asociados con el TEPT y el TEPT-C fueron identificados mediante regresión logística multinomial.

**Resultados:** Entre los participantes, el 88,2% reportó al menos una exposición traumática. Las prevalencias del TEPT y TEPT-C fueron de 4,9% y 4,5%, respectivamente. Los predictores comunes para ambas condiciones incluyeron un mayor número de hermanos, una mayor exposición a trauma interpersonal durante la adolescencia y eventos traumáticos índice más frecuentes y recientes. Los predictores específicos de TEPT-C incluyeron el sexo femenino, la edad avanzada, el abandono por parte de padres migrantes, un nivel socioeconómico más bajo y una mayor exposición a trauma en la adultez.

**Conclusión:** Este estudio proporciona las primeras estimaciones de la prevalencia del TEPT y el TEPT-C según la CIE-11 en la población general de China continental, revelando tasas relativamente altas en comparación con otros trastornos mentales. Los hallazgos destacan factores asociados clave y ofrecen recomendaciones de intervención para los grupos de riesgo.

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Trauma; CPTSD; prevalence; associated factors; mainland China

### PALABRAS CLAVE

Trauma; TEPT-C; factores asociados; China continental

### HIGHLIGHTS

- This study reports the first nationwide one-month prevalence of PTSD (4.9%) and CPTSD (4.5%) in mainland China's general adult population.
- Shared predictors for PTSD and CPTSD include more siblings, adolescent interpersonal trauma, and frequent/recent index trauma. CPTSD-specific factors include female gender, older age, being left behind by migrant parents, lower SES, and adult trauma exposure.
- Findings highlight cultural risk factors and offer a basis for targeted mental health interventions in China.

**CONTACT** Baoliang Zhong ✉ [zhongbaoliang@cityu.edu.mo](mailto:zhongbaoliang@cityu.edu.mo); Jun Tong ✉ [tongjun@cityu.edu.mo](mailto:tongjun@cityu.edu.mo) ✉ Institute of Analytical Psychology, City University of Macau, Macau 999078, People's Republic of China; Affiliated Wuhan Mental Health Center (Wuhan Hospital for Psychotherapy), Tongji Medical College of Huazhong University of Science and Technology, Wuhan 430010, People's Republic of China

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## 1. Introduction

According to the World Mental Health Survey (WMHS) conducted by the World Health Organization (WHO) in 24 countries, over 70% of people have experienced at least one traumatic event (Benjet et al., 2016). Trauma-related disorders have gained increasing recognition. In 2018, the WHO introduced two key diagnoses in the 11th revision of the International Classification of Diseases (ICD-11): Post-traumatic Stress Disorder (PTSD) and Complex Post-traumatic Stress Disorder (CPTSD), forming a 'twin' diagnostic category that acknowledges the complexity and diversity of trauma's aftermath (WHO, 2018). CPTSD manifests through a variety of interconnected symptoms including emotional dysregulation, disturbances in self-organisation, and disrupted interpersonal relationships (Maercker et al., 2022). This condition is considered more severe than PTSD and is associated with a broader range of mental health difficulties, including heightened dissociation, anger, moral injury, and greater functional impairments, such as sleep disturbances and social isolation (Murphy et al., 2021), and higher suicidal tendencies (Jannini et al., 2023).

In recent years, numerous epidemiological surveys have been conducted across various countries using the self-reported International Trauma Questionnaire (ITQ), which is widely recognised as an effective tool for assessing both PTSD and CPTSD according to the ICD-11 criteria (Redican et al., 2021). Among general adult populations, PTSD prevalence is 5.0% and CPTSD prevalence is 7.7% in Ireland (Hyland et al., 2021), 20.3% for PTSD and 13.7% for CPTSD in Kenya, and 17.6% for PTSD and 13% for CPTSD in Ghana (Ben-Ezra et al., 2020). Among adults with trauma histories, PTSD prevalence is 3.4% and CPTSD is 3.8% in the United States (Cloitre et al., 2019), 2.3% and 4.1%, respectively, in Japan (Kazlauskas et al., 2022) and 5.3% for PTSD and 12.9% for CPTSD in the UK (Hyland et al., 2019a). Studies of specific occupational groups report higher rates, such as 5.6% PTSD and 18.2% CPTSD in UK firefighters (Langtry et al., 2021), 8.0% PTSD and 12.6% CPTSD in police officers (Brewin et al., 2022), and notably high rates in military personnel, with 13.8% PTSD and 54.2% CPTSD among treatment-seeking veterans (Murphy et al., 2021).

In Chinese samples, Ho et al. (2019) found a PTSD prevalence of 4.1% and a CPTSD prevalence of 7.6% among university students ( $N = 314$ ) in Hong Kong. In Beijing, a study involving 1,824 students from 26 universities reported a PTSD prevalence of 6.0% and a CPTSD prevalence of 10.1% (Li et al., 2023). However, no nationwide study on CPTSD prevalence has yet been conducted in China.

Studies on risk factors for CPTSD have identified several demographic characteristics closely associated

with its prevalence, such as being female (Karatzias et al., 2019; Li et al., 2023; Redican et al., 2022) and younger age (Hyland et al., 2021; Murphy et al., 2021). Additionally, family environment and social factors, such as early childhood adversity (Murphy et al., 2021), unemployment (Hyland et al., 2021), and work-related stress (Steel et al., 2021), are all closely associated with an increased risk of having CPTSD. Several East Asian studies have highlighted cultural and contextual factors contributing to CPTSD. A study across mainland China, Hong Kong, Japan, and Taiwan links childhood adversities to higher CPTSD risk (Ho et al., 2020). In Japan, loneliness, social support, and family economic hardship are also significant risk factors (Kazlauskas et al., 2022).

In addition, trauma characteristics are particularly significant risk factors for CPTSD. Research confirms a strong association between cumulative trauma and the development of CPTSD (Kazlauskas et al., 2022; Redican et al., 2022). Interpersonal trauma (e.g. physical assault, attacks involving weapons, sexual abuse, captivity) plays a critical role in the onset of CPTSD. Among these, sexual trauma has a particularly severe impact on CPTSD (Redican et al., 2022).

In summary, CPTSD, as a newly recognised mental disorder, is characterised by significant severity and high prevalence, with its occurrence being influenced by various factors. However, global epidemiological research on CPTSD remains insufficient, and existing studies have mostly focused on Western populations, which may not be directly applicable to China due to cultural and trauma differences.

China's unique sociocultural context warrants particular attention in CPTSD research. First, the country's rapid urbanisation has resulted in millions of rural migrant workers, leading to widespread parent-child separation and the emergence of a distinctive population known as left-behind children (LBC). Left-behind children (LBC) are defined as minors under the age of 16 who remain in rural areas while one or both parents migrate for work, with their number estimated at approximately 9.02 million in rural regions (China's State Council, 2016). Unlike children who experience direct maltreatment or family abuse, LBC primarily face early adversity characterised by chronic emotional neglect and prolonged separation. Due to a lack of parental support and stable caregiving, they are more likely to exhibit lower psychological resilience and maladaptive coping styles (Li et al., 2020). Such persistent and cumulative stressors constitute chronic trauma that disrupts self-organisation and aligns more closely with CPTSD than PTSD, as CPTSD acknowledges the impact of prolonged or repeated trauma on self-organisation (Maercker et al., 2022). Moreover, the long-term impact of the One-Child Policy has also

altered family structures and resource distribution, with the number of siblings being linked to various mental health outcomes.

These structural and familial dynamics influence trauma exposure in ways that differ markedly from those observed Western contexts. Given these cultural and structural differences, we hypothesise that the prevalence of CPTSD in China is relatively high and merits further investigation. Specifically, we propose that a combination of established risk factors for CPTSD – such as female gender, younger age, and frequent or recent trauma – along with China-specific factors like being left-behind and number of siblings, contribute to the higher prevalence of CPTSD in this population.

## 2. Methods

### 2.1. Participants and procedures

This study utilised a sample of adults from mainland China, recruited through Wenjuanxing, an online survey platform with over 6.2 million registered members nationwide. Ethical approval was granted by the Social Research Ethics Committee of City University of Macau (No. FHW-ER-2425-003). Participants completed the survey via the online platform, accessible on both mobile phones and PCs, with most using mobile phones. Data collection took place between May and June 2024. Participants received a monetary reward of 8 yuan (approximately 1.1 USD).

Inclusion criteria for the study were: (a) residency in mainland China, and (b) age 18 years of age or older at the time of participation. Exclusion criteria included failure to pass embedded validity checks or responses indicating abnormal completion speeds. Validity checks included one instructed item per scale (e.g. ‘I did not pay attention to this survey at all’), for which participants were required to select ‘Strongly disagree.’ Three such checkpoints were distributed throughout the survey. Only participants who answered all validity checks correctly were retained in the final sample. Additionally, responses with an average item completion time of less than 2.5 s were excluded.

A total of 2,786 participants were initially recruited. After applying the quality control measures, 671 participants (24.1%) were excluded, leaving 2,115 participants. Among them, 249 reported no trauma exposure, leaving 1,866 participants (67.0% of the original sample) who had experienced at least one traumatic event.

Participants came from 29 of China’s 34 provincial-level administrative regions. The average age of the sample was 32.9 years ( $SD = 8.1$ , range = 18–67; 49.9% female). Among them, 62.4% ( $n = 1,319$ ) grew up in urban environments. The sample was relatively

well-educated, with 95.1% ( $n = 2,012$ ) holding at least an associate degree. The most common monthly income range was 6,000–10,000 RMB (approximately 827–1,379 USD), accounting for 42.23% of the sample.

### 2.2. Measures

#### 2.2.1. Trauma exposure

Trauma exposure was assessed using the International Trauma Exposure Measure (ITEM) checklist (Hyland et al., 2019b), which includes 21 trauma types (e.g. ‘Physical assault by a parent or guardian’). Participants indicated whether they had experienced each trauma (0 = No, 1 = Yes) during childhood (before primary graduation, or before age 12), adolescence (middle school stage, ages 13–18), and adulthood (after graduation of high school, after age 18). They also identified their ‘index trauma’ (i.e. the most distressing event among those experienced), the number of times it occurred, and the time elapsed since it occurred. Following Hyland et al. (2021), trauma events were categorised into 15 types of interpersonal trauma (e.g. ‘You were physically assaulted by a parent or guardian,’ and ‘You were held captive and/or tortured’) and six types of non-interpersonal trauma (e.g. ‘Someone close to you died in an awful manner’).

#### 2.2.2. ICD-11 PTSD and CPTSD

PTSD and CPTSD symptoms over the past month were assessed using the Chinese version of ITQ (Ho et al., 2019), comprising 18 items. Twelve items evaluate three core PTSD symptoms and three Disturbances in Self-Organization (DSO) symptoms, with two items per symptom. The remaining 6 items assess functional impairment across social, occupational, and other important areas, with one item per domain. Responses were rated items on a 5-point Likert scale (0 = Not at all to 4 = Extremely). A symptom was considered present if the item score was  $\geq 2$ . PTSD diagnosis required evidence of trauma exposure, at least one item rated  $\geq 2$  in each PTSD symptom cluster, and functional impairment in at least one domain. CPTSD diagnosis required meeting PTSD criteria plus at least one item rated  $\geq 2$  in each DSO symptom and additional functional impairment. According to ICD-11, individuals can be diagnosed with either PTSD or CPTSD, but not both. In this study, the internal consistency estimates were .88 for PTSD, .91 for DSO, and .93 overall.

#### 2.2.3. Anxiety, depression and stress

The Chinese version of the Depression Anxiety Stress Scales (DASS-21; Moussa et al., 2001) was employed to assess anxiety and depression over the past week. The DASS-21 consists of 21 items across three subscales: depression, anxiety, and stress (7 items each). Items were rated on a 4-point Likert scale (0 = Not at all to

3 = Most of the time). The internal consistency coefficients were .80 for anxiety, .81 for depression, and .88 for stress.

#### 2.2.4. Subjective socio-economic status (SES)

Subjective SES was assessed using the MacArthur Scale of Subjective Social Status (Adler et al., 2000). Participants rated both their childhood and current SES using a 10-rung ladder (1 = Lowest, 10 = Highest), reflecting their perceived standing within broader society.

### 2.3. Data analysis

Data were analysed using IBM SPSS Statistics (Version 27). Frequency analyses were used to determine the one-month prevalence of PTSD and CPTSD. Independent samples t-tests were conducted to compare the average number of traumatic life events experienced across childhood, adolescence, adulthood, and the lifetime between male and female participants. Chi-square tests were used to examine gender differences in exposure to each type of traumatic event.

Multinomial logistic regression analyses (Enter method) were conducted to examine both unadjusted and adjusted associations between 17 exogenous factors and diagnostic status (0 = No diagnosis, 1 = PTSD, 2 = CPTSD), using the 'no diagnosis' group as the reference category. Unadjusted odds ratios (ORs) were computed for each predictor variable entered individually, while adjusted odds ratios (AORs) were derived from a model including all predictors simultaneously. The 17 factors included gender (1 = male, 2 = female), age, living background (1 = rural area, 2 = urban area), number of siblings, boarding experience (0 = no, 1 = yes), being left-behind (0 = no, 1 = yes), education level (1 = Primary school or below, 2 = Middle school, 3 = High school, 4 = College, 5 = Bachelor's degree, 6 = Master's degree, 7 = Doctoral degree), childhood SES, current SES, number of interpersonal and non-interpersonal traumas during childhood, adolescence, and adulthood, frequency of exposures to one's index trauma, and the recency of index trauma exposure (1 = one month ago or less, 2 = one to six months ago, 3 = six to twelve months ago, 4 = one to five years ago, 5 = six to ten years ago, 6 = more than ten years ago).

Since PTSD and CPTSD diagnoses require exposure to at least one traumatic event, analyses of associated factors were restricted to the 1,866 trauma-exposed participants.

### 3. Results

In this study, 104 individuals met the diagnostic criteria for past-month PTSD, accounting for 4.9% (95% CI [4.0%, 5.8%]) of the total sample ( $N = 2,115$ ), and the one-month prevalence CPTSD was

4.5% (95% CI [3.6%, 5.4%];  $N = 95$ ). The correlations between PTSD and anxiety, depression, and stress were .39 ( $p < .001$ ), .31 ( $p < .001$ ), and .36 ( $p < .001$ ), respectively. For CPTSD, the correlations with anxiety, depression, and stress were .41 ( $p < .001$ ), .39 ( $p < .001$ ), and .37 ( $p < .001$ ), respectively. These findings indicate a strong comorbidity between these disorders and psychological distress.

A total of 1,866 participants (88.2% of the total sample) reported experiencing at least one trauma event, with an average of 4.7 events per participant ( $M = 4.7$ ,  $SD = 5.2$ ). Table 1 presents the number of trauma events and gender differences in trauma experiences. The most common trauma events were 'Close person had life-threatening illness/accident' (59.0%) and 'Close person died in an awful manner' (46.7%). Table 2 presents conditional PTSD and CPTSD prevalence by trauma type, defined as the proportion of individuals diagnosed with PTSD or CPTSD among those exposed to each event. In our sample, conditional CPTSD prevalence was highest among those who experienced captivity or torture (42.1%, 8 out of 19), followed by sexual assault by a parent or guardian (33.3%, 8 out of 24).

Further gender difference analysis revealed no significant differences in the total number of traumas or trauma experiences across different life stages ( $t_{total\ trauma\ count} = .95$ ,  $p = .34$ ;  $t_{childhood\ trauma} = 1.37$ ,  $p = .17$ ;  $t_{adolescence\ trauma} = 1.50$ ,  $p = .14$ ;  $t_{adulthood\ trauma} = -.60$ ,  $p = .55$ ). Specifically, males reported more frequent experiences of trauma events such as 'life threatened with weapon, physically assaulted by parent/guardian, physically assaulted by others, life-threatening accident, repeatedly bullied, repeated humiliation/insults.' In contrast, females reported experiencing more trauma events related to being 'sexually assaulted by others, sexually harassed, stalked by another person, made to feel unloved/worthless, repeated neglect/rejection.' There were no significant gender differences in other types of trauma events.

The unadjusted and adjusted ORs for the associations between the 17 exogenous factors and meeting the diagnostic requirements for PTSD and CPTSD are presented in Table 3. The adjusted OR multinomial logistic regression model of diagnostic status with all predictor variables was statistically significant ( $\chi^2_{(36)} = 200.86$ ,  $p < .001$ , Cox and Snell  $R^2 = .11$ , Nagelkerke  $R^2 = .19$ , McFadden  $R^2 = .13$ ).

For PTSD, four variables were significantly associated with meeting diagnostic criteria: number of siblings (AOR = 1.22, 95% CI = 1.06, 1.41), adolescent interpersonal trauma (AOR = 1.19, 95% CI = 1.06, 1.35), index trauma frequency (AOR = 1.26, 95% CI = 1.09, 1.45), recency of index trauma (AOR = .84, 95% CI = .71, 1.00).

For CPTSD, nine variables showed significant and unique associations: gender (AOR = 1.59, 95% CI =



**Table 1.** Frequencies, proportions, and gender differences for each traumatic life event.

Traumatic events	Total (n = 1866)		Males (n = 957)		Females (n = 909)		Gender differences
	n	%	n	%	n	%	
1. Diagnosed with life-threatening illness	214	11.47	118	12.33	96	10.56	1.44
2. Close person died in awful manner	872	46.73	453	47.34	419	46.09	.29
3. Close person had life-threatening illness/accident	1101	59.00	566	59.14	535	58.86	.02
4. Life threatened with weapon	89	4.77	65	6.79	24	2.64	17.69***
5. Physically assaulted by parent/guardian	620	33.23	360	37.62	260	28.60	17.08***
6. Physically assaulted by others	494	26.47	344	35.95	150	16.50	90.55***
7. Sexually assaulted by parent/guardian	24	1.29	10	1.04	14	1.54	.90
8. Sexually assaulted by others	69	3.70	14	1.46	55	6.05	27.55***
9. Sexually harassed	340	18.22	82	8.57	258	28.38	122.83***
10. Exposed to war/combat	35	1.88	19	1.99	16	1.76	.13
11. Held captive/tortured	19	1.02	8	0.84	11	1.21	.65
12. Caused extreme suffering/death	68	3.64	38	3.97	30	3.30	.60
13. Witnessed extreme suffering/death	433	23.20	230	24.03	203	22.33	.76
14. Life-threatening accident	379	20.31	237	24.76	142	15.62	24.08***
15. Exposed to life-threatening natural disaster	403	21.60	205	21.42	198	21.78	.04
16. Exposed to life-threatening human-made disaster	52	2.79	32	3.34	20	2.20	2.25
17. Stalked by another person	305	16.35	124	12.96	181	19.91	16.49***
18. Repeatedly bullied	548	29.37	318	33.23	230	25.30	14.12***
19. Repeated humiliation/insults	453	24.28	264	27.59	189	20.79	11.71***
20. Made to feel unloved/worthless	520	27.87	236	24.66	284	31.24	10.05**
21. Repeated neglect/rejection	531	28.46	248	25.91	283	31.13	6.24*

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

**Table 2.** Frequencies and proportions of diagnostic conditions (No Diagnosis, PTSD, and CPTSD) among individuals who experienced each type of traumatic event.

Traumatic events	Total	No Diagnosis		PTSD		CPTSD	
		n	%	n	%	n	%
1. Diagnosed with life-threatening illness	214	158	73.83	26	12.15	30	14.02
2. Close person died in awful manner	872	740	84.86	71	8.14	61	7.00
3. Close person had life-threatening illness/accident	1101	961	87.28	73	6.63	67	6.09
4. Life threatened with weapon	89	60	67.42	14	15.73	15	16.85
5. Physically assaulted by parent/guardian	620	516	83.23	47	7.58	57	9.19
6. Physically assaulted by others	494	414	83.81	37	7.49	43	8.70
7. Sexually assaulted by parent/guardian	24	14	58.33	2	8.33	8	33.33
8. Sexually assaulted by others	69	50	72.46	7	10.14	12	17.39
9. Sexually harassed	340	254	74.71	44	12.94	42	12.35
10. Exposed to war/ combat	35	22	62.86	4	11.43	9	25.71
11. Held captive/ tortured	19	9	47.37	2	10.53	8	42.11
12. Caused extreme suffering/death	68	40	58.82	13	19.12	15	22.06
13. Witnessed extreme suffering/death	433	352	81.29	42	9.70	39	9.01
14. Life-threatening accident	379	304	80.21	39	10.29	36	9.50
15. Exposed to life-threatening natural disaster	403	335	83.13	38	9.43	30	7.44
16. Exposed to life-threatening human-made disaster	52	35	67.31	8	15.38	9	17.31
17. Stalked by another person	305	237	77.70	37	12.13	31	10.16
18. Repeatedly bullied	548	439	80.11	54	9.85	55	10.04
19. Repeated humiliation/insults	453	357	78.81	44	9.71	52	11.48
20. Made to feel unloved/worthless	520	405	77.88	47	9.04	68	13.08
21. Repeated neglect/ rejection	531	415	78.15	53	9.98	63	11.86

1.00, 2.53), age (AOR = 1.04, 95% CI = 1.01, 1.07), number of siblings (AOR = 1.19, 95% CI = 1.01, 1.40), left-behind experience (AOR = 1.89, 95% CI = 1.16, 3.10), current SES (AOR = .78, 95% CI = .66, .93), adolescent interpersonal trauma (AOR = 1.21, 95% CI = 1.06, 1.38), adult interpersonal trauma (AOR = 1.16, 95% CI = 1.01, 1.34), frequency of index trauma (AOR = 1.35, 95% CI = 1.17, 1.56), recency of index trauma (AOR = .76, 95% CI = .63, .91).

## 4. Discussion

The primary aim of this study was to conduct the first nationwide epidemiological survey investigating trauma exposure and the one-month prevalence of ICD-11 PTSD and CPTSD in the general adult population in China. Additionally, the study explored gender differences in the one-month prevalence of PTSD and CPTSD as well as types of trauma exposure. We also examined the demographic characteristics of individuals meeting the diagnostic criteria for PTSD and CPTSD, and identified factors associated with these diagnoses within Chinese cultural context.

### 4.1. One-month prevalence of ICD-11 PTSD and CPTSD

Our survey revealed a one-month prevalence of 4.9% for PTSD and 4.5% for CPTSD among Chinese adults. In a nationwide survey of 32,552 participants, the most common mental disorders in China were found to be depressive disorders (3.6%) and anxiety disorders (5%; Huang et al., 2019). Although the methodologies for measuring these disorders vary (e.g. clinical interviews vs. self-report surveys), our findings suggest that

**Table 3.** Unadjusted and adjusted odds ratios for the associations between each associated factor and PTSD and CPTSD ( $N = 1,866$ ).

Risk factors	PTSD		CPTSD	
	Unadjusted ORs (95% CI)	Adjusted ORs (95% CI)	Unadjusted ORs (95% CI)	Adjusted ORs (95% CI)
Gender (1 = male, 2 = female)	1.21 (0.812,1.81)	1.31 (.86,2.00)	1.36 (0.90,2.07)	1.59 (1.00,2.53)*
Age	1.00 (0.98,1.03)	1.01 (.98,1.04)	1.00 (0.97,1.02)	1.04 (1.01,1.07)*
living background (1 = rural, 2 = urban)	.93 (0.62,1.40)	.87 (.55,1.39)	1.40 (0.92,2.11)	1.13 (.70,1.85)
Number of siblings	1.27 (1.13,1.43)	1.22 (1.06,1.41)**	1.18 (1.03,1.34)	1.19 (1.01,1.40)*
Experiences of boarding (0 = no, 1 = yes)	2.15 (1.41,3.27)***	1.56 (.99,2.46)	1.50 (.98,2.28)	.91 (.56,1.46)
Experiences of being left-behind (0 = no, 1 = yes)	1.03 (1.36,3.03)**	1.29 (.81,2.04)	2.84 (1.87,4.31)***	1.89 (1.16,3.10)*
Education level	.99 (.74,1.32)	.99 (.72,1.36)	.89 (.67,1.18)	1.11 (.80,1.54)
Childhood SES	.96 (.85,1.08)	.98 (.84,1.15)	.75 (.66,.87)***	.98 (.82,1.16)
Current SES	1.14 (.99,1.30)	1.14 (.96,1.35)	.75 (.66,.86)***	.78 (.66,.93)**
Childhood interpersonal trauma	1.20 (1.10,1.31)***	.98 (.86,1.12)	1.27 (1.18,1.38)***	.94 (.82,1.07)
Childhood non-interpersonal trauma	1.40 (1.14,1.71)**	1.06 (.81,1.39)	1.61 (1.34,1.93)***	1.23 (.93,1.61)
Adolescent interpersonal trauma	1.35 (1.24,1.47)***	1.19 (1.06,1.35)**	1.42 (1.31,1.54)***	1.21 (1.06,1.38)**
Adolescent non-interpersonal trauma	1.62 (1.36,1.93)***	1.25 (1.00,1.58)	1.67 (1.40,1.99)***	1.17 (.91,1.51)
Adulthood interpersonal trauma	1.26 (1.15,1.39)***	1.00 (.86,1.17)	1.37 (1.26,1.50)***	1.16 (1.01,1.34)*
Adulthood non-interpersonal trauma	1.30 (1.10,1.54)**	1.04 (.83,1.31)	1.39 (1.18,1.64)***	.90 (.71,1.16)
Index trauma frequency	1.00 (1.00,1.00)	1.26 (1.09,1.45)**	1.00 (1.00,1.00)	1.35 (1.17,1.56)***
Recency of index trauma	.82 (.71,.96)	.84 (.71,1.00)*	.73 (.62,.84)	.76 (.63,.91)***

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

PTSD and CPTSD may be emerging as significant mental health concerns in China.

The prevalence rates observed in our study are higher than those reported in regions such as the United States (Cloitre et al., 2019) and Japan (Kazlauskas et al., 2022), and lower than rates reported in the UK (Hyland et al., 2019a), Ireland (Hyland et al., 2021), Kenya, and Ghana (Ben-Ezra et al., 2020). These cross-national differences in PTSD and CPTSD prevalence are likely influenced by variations in trauma exposure types and intensity, which vary significantly by region (Benjet et al., 2016). These disparities are often linked to regional economic inequalities. For example, adverse childhood experiences are more prevalent in low- and lower-middle-income countries (Le et al., 2018), and there is a negative correlation between national GDP per capita and the prevalence of childhood physical neglect (Viola et al., 2016). Economic limitations also contribute to the ‘scarcity, inequity, and inefficiency’ of mental health support resources (Saxena et al., 2007).

Cultural norms further shape trauma perception and help-seeking behaviours. According to Heim et al. (2022), cultural factors may influence how certain traumatic experiences are associated with CPTSD symptomatology. In China, while trauma exposure tends to be moderate with fewer interpersonal traumas (Benjet et al., 2016), the country’s high cultural tightness (i.e. having strong social norms and low tolerance of deviant behaviour; Gelfand et al., 2011) may amplify the psychological impact of trauma. Together, these factors likely contribute to China’s moderate levels of PTSD and CPTSD compared with other regions. Additionally, differences in sampling methods (e.g. household surveys or online sampling), research methods, and diagnostic tools may also account for variations in prevalence across studies.

#### 4.2. Associated factors of PTSD and CPTSD

In this study, we identified several factors associated with meeting the diagnostic criteria for PTSD and CPTSD. Four factors were found to be related to both PTSD and CPTSD: (1) having more siblings, (2) experiencing a broader range of interpersonal traumas during adolescence, (3) higher frequency of index trauma occurrences, and (4) more recent index trauma. Additionally, five factors were specifically associated with CPTSD but not PTSD: (1) being female, (2) older age, (3) having a history of being left behind, (4) current subjective SES, and (5) a broader range of interpersonal traumas during adulthood.

Having more siblings may indicate relatively less parental attention and increased competition for caregiving, potentially resulting in heightened vigilance and stress within the sibling dynamic. In families with limited resources or weak social support networks, this competition may intensify psychosocial disadvantage. Furthermore, sibling relationships themselves may involve conflict or even physical abuse, adding additional psychological stress. Research in both China and the United States has shown a negative correlation between the number of siblings and mental health outcomes (Downey & Cao, 2023). Only children tend to report lower anxiety scores compared to those with siblings (Yao et al., 2015), which was also observed during the COVID-19 pandemic (Cao et al., 2021). These findings suggest that only children may have greater psychological resilience. Research on Sichuan earthquake survivors found that having siblings was linked to higher risks of PTSD and depression (Jin et al., 2019), suggesting that sibling relationships may expose individuals to secondary trauma through vicarious experiences or family-wide stressors.

Interpersonal trauma, particularly when experienced during childhood and adolescence, often has a profound impact on health and well-being. Such trauma can hinder a child's ability to manage essential developmental tasks, such as emotion regulation and forming secure attachments (Cicchetti & Lynch, 1995). Additionally, it disrupts the maturation of neurobiological systems that are critical for controlling arousal, emotional responses, stress reactions, and reward mechanisms (McLaughlin et al., 2011). Studies have indicated that childhood interpersonal trauma, such as sexual abuse, may lead to a lasting vulnerability, and intensifying tendencies towards social withdrawal, disconnection, and isolation, all of which are closely linked to the onset of traumatic stress (Johnson et al., 2003).

Our study found that the more frequently the index trauma event occurred and the more recent its occurrence, the more likely an individual was to be diagnosed with PTSD or CPTSD. This finding aligns with prior research showing a strong relationship between recent trauma exposure and the likelihood of PTSD development, with prevalence decreasing over time (Diamond et al., 2022).

Our study found no significant gender differences in PTSD, which contrasts with previous studies associating female gender with higher PTSD risk (e.g. Hyland et al., 2021; Karatzias et al., 2019; McGinty et al., 2021), but aligns with findings from East Asia, including mainland China, Hong Kong, Taiwan, and Japan, where gender differences in PTSD appear less pronounced (Ho et al., 2020; Kazlauskas et al., 2022). This may be influenced by cultural factors, such as the stigma surrounding trauma stigma (Tavrow et al., 2023), which can obscure gender disparities in PTSD prevalence.

In contrast, we observed a marginal gender association with CPTSD ( $p = .048$ ), suggesting that while gender differences in PTSD may be weaker, gender still plays a role in trauma outcomes. A prior review (Olf, 2017) suggested that females may be more vulnerable to trauma-related disorders, due to differences in trauma exposure, neurobiological mechanisms (e.g. heightened HPA axis sensitivity), and stress responses and coping strategies (e.g. greater use of emotion-focused coping and greater social support seeking). While Olf's review focused on PTSD, it was conducted prior to the formal introduction of CPTSD as a distinct diagnosis and likely included individuals with CPTSD-like symptomatology. These mechanisms, therefore, may also help to explain the gender differences in CPTSD observed in our sample.

Age is an important factor in trauma research. In this study, older age was associated with a higher risk of CPTSD. However, this finding contrasts with studies suggesting that younger individuals are at greater risk for CPTSD (Hyland et al., 2021; Murphy

et al., 2021), and that older adults generally report fewer symptoms of PTSD and CPTSD (Fox et al., 2022). This discrepancy may reflect methodological differences or sample characteristics. For example, Fox et al.'s results were based on age group comparisons, while our sample was largely composed of individuals aged 25–44, with relatively few older participants, potentially introducing sampling bias. Moreover, as noted by McGinty et al. (2021), the influence of age on CPTSD prevalence remains inconsistent across samples, suggesting that age may not be a stable risk factor and warrants further investigation.

Our study found that individuals with a history of being left behind are more likely to be diagnosed with CPTSD. The extended absence of parental care, coupled with the early assumption of additional family responsibilities, exerts considerable pressure on these children. The lack of social connections and support can hinder their interpersonal skills, making them more susceptible to self-organisation disorders, such as difficulties in emotional regulation and relationships (Hu et al., 2014). Research has shown that adverse life events in left-behind adolescents negatively affect resilience and self-esteem, leading to maladaptive coping styles (Li et al., 2020).

In our study, we also found that individuals with lower SES have a higher risk of developing CPTSD. In our study, we found that lower SES was associated with a higher risk of developing CPTSD but not PTSD. This contrasts with previous research, which has generally shown that SES is related to both PTSD and CPTSD (Kazlauskas et al., 2022). However, in our sample, the overall income level was relatively high compared to national averages, which may have masked the effect of SES on PTSD. This finding aligns with the trends observed by Kazlauskas et al. (2022), which suggest that the influence of SES on CPTSD may be stronger than its impact on PTSD. It is possible that the higher income levels in our sample reduced the observable effect of SES on PTSD, while the association with CPTSD remained more apparent.

Furthermore, experiencing a greater variety of interpersonal traumas in adulthood was an associated factor for CPTSD in our study, consistent with Rácz et al. (2023). We propose that interpersonal traumas in adulthood may reactivate earlier traumatic memories, amplifying distress and increasing the likelihood of CPTSD. Notably, factors like childhood and adolescent trauma, both interpersonal and non-interpersonal, initially seemed related to PTSD in unadjusted analyses. However, when CPTSD was separated and all variables were included in a multivariate regression, these factors were found to be exclusively associated with CPTSD. This suggests that while these factors appear linked to PTSD in unadjusted models, their true significance lies in their association with CPTSD when controlling for other factors.

Although CPTSD is generally understood as resulting from cumulative trauma, examining conditional prevalence by trauma type (Table 2) provides valuable insights for comparative and clinical purposes. CPTSD was most prevalent among individuals who experienced captivity or torture (42.1%, 8 out of 19). A comparable rate (42.4%) was reported in a 24-year longitudinal study of former prisoners of war (Zerach et al., 2019), highlighting its cross-cultural relevance. The second highest CPTSD prevalence was observed among individuals exposed to sexual assault by a parent or guardian (33.3%, 8 out of 24), consistent with evidence identifying early sexual trauma as a strong predictor of CPTSD (e.g. Hyland et al., 2017).

The findings of this study provide valuable insights for designing targeted interventions for PTSD and CPTSD. Prevention strategies should prioritise these high-risk groups. For instance, targeted trauma screenings and psychological support should be implemented for individuals in multi-sibling families and among left-behind children, focusing on emotional and relational vulnerabilities rooted in disrupted family bonds. Schools and communities should promote group therapies and trauma-informed education for adolescents, aiming to mitigate the long-term impact of early interpersonal trauma. Furthermore, individuals from low SES backgrounds and those recently exposed to trauma should receive timely psychological support and financial assistance to improve access to mental health services. Aligning interventions with these identified factors could enhance the effectiveness of trauma-informed care in China.

#### 4.3. Limitations and future directions

This study is the first nationwide investigation of the one-month prevalence and associated factors of ICD-11 PTSD and CPTSD in China's general adult population. Covering 29 regions across 34 provinces, it provides essential data on PTSD and CPTSD prevalence, contributing to global epidemiological understanding. It also identifies associated factors within China's cultural and socio-economic context, offering valuable insights into cross-cultural trauma research and enhancing the global field of trauma psychology.

However, the study has limitations. The online data collection process may have overrepresented individuals with greater internet access, leading to a sample biased towards those with younger age, higher education, and from economically developed regions. Sample representativeness is constrained by platform user demographics, necessitating multimodal data collection (e.g. telephone interviews) in future studies. Additionally, the exclusion criteria primarily focused on mechanical and functional aspects of responding, which may contribute to sampling bias. Reliance on self-report measures could introduce diagnostic

inaccuracies. The overlap between emotional regulation symptoms and depressive symptoms in the ITQ may be difficult to distinguish via self-report measures, and self-reports tend to overestimate symptoms. The study also did not examine participants' engagement in psychiatric treatment or psychological services, which is crucial for developing effective service plans.

Future research should focus on obtaining more random and representative samples, with a balanced age distribution, to ensure broader applicability. It should also consider the varying impacts of different trauma types by weighing their severity when calculating cumulative trauma. As diagnostic tools improve, incorporating interview-based assessments could reduce the limitations of self-reports. Future studies should also include mental health service utilisation data for CPTSD diagnoses to inform service planning. Besides, future research should further explore the role of cultural factors, such as collectivistic resilience and trauma disclosure stigma, in shaping trauma responses across different populations. This would help elucidate the complex relationship between gender, trauma, and cultural influences, particularly in East Asian contexts.

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#### Data availability statement

Data can be requested from the corresponding author.

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