




BASIC RESEARCH ARTICLE



# The role of anhedonia symptoms in symptomatology of posttraumatic stress disorder and related functional impairments among traumatized Chinese adults

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## ABSTRACT

**Background:** Posttraumatic stress disorder (PTSD) is a mental disorder comprised of heterogeneous clinical symptoms. Various studies have demonstrated that anhedonia is a distinct symptom dimension of PTSD. However, the association between anhedonia dimension and different aspects of PTSD symptomatology remains unclear.

**Objective:** This study examined the associations between anhedonia symptoms and PTSD diagnosis, overall symptom severity, and both psychosocial and physical functional impairments.

**Method:** A total of 1,063 adult survivors of the 2008 Wenchuan earthquake were assessed nine years after the disaster. PTSD symptoms and functional outcomes were measured using the PTSD Checklist for DSM-5 (PCL-5) and the Short Form Health Survey (SF-36). Multiple regression analyses were conducted to examine the associations between anhedonia and key outcomes, controlling for relevant covariates. Partial correlation analyses were used to provide supplementary effect size estimates.

**Results:** Anhedonia symptoms were significantly associated with both PTSD diagnosis and levels of overall symptoms, and specifically associated with psychosocial function impairments rather than physical function impairments. Relative to the other PTSD symptom dimensions anhedonia showed the second highest correlation with PTSD diagnosis and levels of overall symptoms and medium correlation with psychosocial function impairments.

**Conclusions:** These findings suggest that anhedonia may represent an important symptom dimension within PTSD, particularly in relation to symptom severity and psychosocial functioning. The results highlight the potential value of further investigating anhedonia in both PTSD assessment and cross-diagnostic research.

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## PALABRAS CLAVE

Trastorno de estrés postraumático; anhedonia; sintomatología; alteraciones funcionales; desastre natural

## HIGHLIGHTS

- Anhedonia is significantly associated with PTSD diagnosis and symptom severity.
- Anhedonia shows unique links to trauma-related psychosocial functioning.
- Findings support further investigation of anhedonia in PTSD symptom structure.



## El rol de los síntomas de anhedonia en la sintomatología del trastorno de estrés postraumático y en las alteraciones funcionales relacionadas en adultos Chinos traumatizados


**Introducción:** El trastorno de estrés postraumático (TEPT) es un trastorno mental compuesto por síntomas clínicos heterogéneos. Diversos estudios han demostrado que la anhedonia constituye un grupo de síntomas distinto dentro del TEPT. Sin embargo, la relación entre la dimensión de anhedonia y los diferentes aspectos de la sintomatología del TEPT aún no está claramente establecida.

**Objetivo:** Este estudio examinó las asociaciones entre los síntomas de anhedonia y el diagnóstico de TEPT, la gravedad global de los síntomas y las alteraciones funcionales tanto psicosociales como físicas.

**Método:** Un total de 1.063 adultos sobrevivientes del terremoto de Wenchuan de 2008 fueron evaluados nueve años después del desastre. Los síntomas de TEPT y los resultados funcionales se midieron mediante la *Lista de Chequeo para TEPT según el DSM-5* (PCL-5) y la *Encuesta de Salud de Formato Breve* (SF-36). Se realizaron análisis de regresión múltiple para examinar las asociaciones entre anhedonia y los resultados clave, controlando covariables relevantes. Además, se realizaron análisis de correlación parcial para proporcionar estimaciones suplementarias del tamaño del efecto.

**Resultados:** Los síntomas de anhedonia se asociaron significativamente tanto con el diagnóstico de TEPT como con el nivel global de síntomas, y se asociaron específicamente con alteraciones de la función psicosocial, pero no con alteraciones de la función física. En comparación con otros grupos sintomáticos del TEPT, la anhedonia mostró la segunda

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correlación más alta con el diagnóstico de TEPT y el nivel global de síntomas, así como una correlación de magnitud media con las alteraciones de la función psicosocial.

**Conclusiones:** Estos hallazgos sugieren que la anhedonia podría representar una dimensión sintomática importante dentro del TEPT, particularmente en relación con la gravedad de los síntomas y el funcionamiento psicosocial. Los resultados destacan el valor potencial de seguir investigando la anhedonia tanto en la evaluación del TEPT como en la investigación trans-diagnóstica.

## 1. Introduction

Post-traumatic stress disorder (PTSD) is a common mental disorder that occurs after exposure to life-threatening or catastrophic stressors, such as natural disasters (American Psychiatric Association, 2013). According to a World Mental Health (WMH) survey, the global lifetime prevalence of PTSD among individuals exposed to trauma is approximately 5.6% (Koenen et al., 2017). As defined by the DSM-5, PTSD is categorized as a trauma- and stressor-related disorder, characterized by 20 clinical symptoms that are grouped into four symptom dimensions: intrusion, avoidance, negative alterations in cognitions and mood, and alterations in arousal and reactivity (American Psychiatric Association, 2013). For a diagnosis of PTSD, these symptoms must persist for at least one month and result in significant distress or impairment in social, occupational, or other important areas of functioning, which may not necessarily be immediate (Jellestad et al., 2021).

However, an increasing body of research suggested that the DSM-5's identification of PTSD symptom dimensions did not adequately capture the heterogeneity of PTSD clinical symptoms, prompting widespread attention (Gentes et al., 2014; Hafstad et al., 2014; Miller et al., 2013). Numerous investigations have built upon the DSM-5's four-dimensional model to further explore the symptom phenotypes of PTSD (Armour et al., 2015; Bar-Haim et al., 2021; P. Liu et al., 2014; Tsai et al., 2014). A pivotal contribution to this discourse is the differentiation of two distinct symptom dimensions from the negative alterations in cognition and mood: negative affect and anhedonia (P. Liu et al., 2014). Negative affect (comprising traumatic avoidance, negative beliefs, self-blame or blame of others, and trauma-related negative feelings) reflects an exacerbation of negative affect and general distress. In contrast, anhedonia (comprising loss of interest, detachment, and restricted affect) signifies a reduction in positive emotions. A substantial number of confirmatory factor analyses across various trauma-exposed populations, utilizing diverse measurement tools and spanning different age groups, have supported this distinction (Cao et al., 2017; Liu et al., 2016; Wang et al., 2017). The distinction of anhedonia as a separate symptom dimension of PTSD has been incorporated into further refined phenotypic models of the disorder

(Armour et al., 2015; Bar-Haim et al., 2021; Gross et al., 2023). Among these, the seven-factor hybrid model – which includes dimensions such as intrusion, avoidance, and anhedonia – has received substantial empirical support and is widely used in current PTSD research (Armour et al., 2015; Pietrzak et al., 2015).

A substantial body of research has established that the newly distinguished dimension of anhedonia in PTSD holds unique significance relative to other symptom dimensions. Specifically, the anhedonia dimension demonstrates distinct associations with a variety of external variables. For instance, Pietrzak et al. (2015) reported significant correlations between anhedonia and factors such as depression, suicidal ideation, and declines in psychological functioning and quality of life. Furthermore, Chou et al. (2020) found a notable association between anhedonia and elevated suicide risk. In a complementary study, Miller et al. (2024) demonstrated that anhedonia symptoms were the sole PTSD symptom dimension significantly related to decreased quality of life. Recent findings by Stiltner et al. (2024) further corroborated that the anhedonia dimension is closely linked to external clinical measures (including depression, anxiety, suicidal ideation, and PTSD-related distress) and functional measures (including mental, cognitive, and psychosocial functions). Moreover, the anhedonia dimension may possess distinct neurobiological underpinnings that differentiate it from other symptom dimensions. Preliminary neurobiological investigations have revealed a robust association between PTSD-related anhedonia and the reward circuitry (Vinograd et al., 2022). Current research indicates that anhedonia symptoms are significantly correlated with abnormal activation patterns in the ventral striatum/ nucleus accumbens (Li et al., 2021).

In summary, Anhedonia has been recognized as an independent PTSD symptom dimension, with increasing evidence supporting its distinct biological basis and unique associations with external psychopathological outcomes such as suicide. However, the associations between anhedonia and different aspects of PTSD symptomatology remain insufficiently explored. To address this gap, the present study explores the relationships between anhedonia and PTSD diagnosis, overall symptom severity, and functional impairment in individuals suffering from a major earthquake.

## 2. Methods

### 2.1. Participants

In July 2017, a psychological survey was carried out in Hanwang Town, Sichuan Province, to assess long-term mental health outcomes nearly a decade after the 2008 Wenchuan earthquake. This region experienced catastrophic destruction during the disaster, with Hanwang Town being one of the hardest-hit areas and suffering massive casualties.

The data analysed in this study were previously reported in a prior study (Li et al., 2018). The survey targeted adult survivors who had resettled in five reconstructed communities established after the earthquake. A stratified random sampling method was applied: from each selected household, one adult member between 16 and 65 years of age was randomly chosen to participate, provided they had directly experienced the 2008 earthquake. Individuals with diagnosed psychotic or organic mental disorders were excluded from participation.

All procedures were conducted by trained teams, including licensed psychologists and psychology trainees. Participants were briefed in person regarding the study's aims and procedures, and written informed consent was obtained. Ethical approval was granted by the Institutional Review Board of the Institute of Psychology, Chinese Academy of Sciences.

Of the 1,074 individuals who completed the survey, 11 were excluded from the present analysis due to excessive (more than 20%) missing data. The final analytic sample comprised 1,063 participants, of whom 32.1% were male and 65.9% were female. Participants had a mean age of 51.1 years ( $SD = 10.0$ ), and the vast majority were of Han ethnicity (98.6%). In terms of educational background, 68.0% had not completed high school. Marital status was predominantly married (85.0%), with the remainder being single, separated, divorced, or widowed. Detailed information on trauma exposure is presented in Table 1.

### 2.2. Measures

PTSD symptoms was measured by the PTSD Checklist (PCL-5; Blevins et al., 2015), a self-report

questionnaire assessing the severity of each 20 symptom criteria of PTSD in DSM-5. The 2008 earthquake was set as an index trauma for the checklist. For each symptom, participants were instructed to rate their experienced symptom severity associated with the index trauma in the past month on a five-point Likert scale from 0 (not at all) to 4 (extremely). The Chinese version of PCL-5 has been well-validated across both clinical and nonclinical samples in China (Cheng et al., 2020; Jiang et al., 2023). Cronbach's  $\alpha$  was 0.95 for the scale in our earthquake survivor sample. Total scores of the PCL-5 were calculated as a measurement of overall symptom severity. A higher score indicates a higher symptom level. Sub-score for each PTSD symptom dimension was calculated respectively following the seven-factor hybrid model of PTSD (Armour et al., 2015), as measurement for severity of symptom dimensions. Probable PTSD diagnostic status was determined by endorsement (ranked 2 or higher) of at least one re-experiencing, one avoidance, two negative alterations in cognitions and mood, and two alterations in arousal and reactivity symptoms (American Psychiatric Association, 2013).

Function impairments were measured by the Medical Outcomes Survey Short Form-36 (SF-36; Ware & Sherbourne, 1992), a self-assessment consisting of eight subscales. The scale has good psychometric properties and has been widely used as a measurement of physical and psychosocial function impairment in the Chinese population (Lin et al., 2020). Scores for the physical functioning, role-physical, bodily pain, and general health subscales were added up as the physical function score. Scores for the role-emotional, social functioning, mental health and fatigue subscales were added up as the psychosocial function score. According to standard scoring procedures, SF-36 scores are typically transformed to a 0–100 scale, with higher scores representing higher function level.

Depressive symptoms were measured using the Patient Health Questionnaire-9 (PHQ-9; Spitzer et al., 1999), a self-administered scale consisting of 9 items that assess the frequency of core depressive symptoms over the past two weeks. Each item is rated on a 4-point scale ranging from 0 ('not at all') to 3 ('nearly every day'), with total scores ranging from 0 to 27. A total score of 10 or above is commonly used to indicate clinically significant depressive symptoms (Kroenke et al., 2001). The Chinese version of the PHQ-9 has demonstrated good reliability and validity and is considered a reliable tool for assessing depressive symptoms in Chinese populations (W. Wang et al., 2014). In the current sample, the internal consistency of the PHQ-9 was high, with a Cronbach's  $\alpha$  of 0.89.

Demographic variables such as age, sex, marital status, and education level were measured by self-report. Earthquake-related trauma exposure was measured by

**Table 1.** Trauma exposure of the participants.

Trauma exposure	Number	%
Was trapped under debris	127	11.9
Sustained injuries during earthquake	149	14.0
Disabled from injury	42	4.0
Helped in rescue efforts	450	42.3
Witnessed the death of somebody	711	66.9
Exposed to mutilated bodies	416	39.1
Lost at least one family member	299	28.1
Family member injured	397	37.3
Lost a neighbour or friend	836	78.6
Lost livelihood due to the earthquake	383	36.0

Note:  $N = 1063$ .

10 questions related to specific traumatic experiences (Li et al., 2018), a total exposure score was calculated by summing the number of endorsed experiences, with higher scores indicating greater severity.

### 2.3. Data analysis

All the data analyses were conducted by SPSS 20.0. To address missing data in the key outcome variables (PCL-5 and SF-36), we used the expectation maximization (EM) algorithm (Dempster et al., 1977). In terms of missingness, 8.1% of participants had 1 missing item on the PCL-5, while 2.4% had 2 or 3 missing items. For the SF-36, 18.9% of participants were missing 1 item, and 8.5% were missing between 2 and 6 items. These missing values were imputed using the EM procedure prior to conducting statistical analyses.

To investigate the association between anhedonia symptoms and PTSD diagnosis, a logistic regression model with anhedonia severity as independent variable and probable PTSD diagnostic status as dependent variable was estimated. Demographic background, trauma exposure, depressive symptoms and overall PTSD level (excluding anhedonia) were entered simultaneously into the models as covariates. The odd ratio and its 95% confidential interval for anhedonia symptoms were calculated as the measurement of effect size. The similar procedure was followed to get effect size estimations for all other six symptom dimensions.

To evaluate the anhedonia-overall PTSD severity association, we estimated a linear regression model with anhedonia symptoms as independent variable and overall symptoms (excluding anhedonia) as dependent variable. Demographic variables, trauma exposure and depressive symptom were controlled as covariates. Partial correlation coefficients between each single symptom dimensions and the overall symptom were calculated as effect size measures.

In terms of function impairments, we also applied linear regression models to evaluate the association between anhedonia symptoms and function levels. Physical and psychosocial were set as independent variables, respectively, in two regression models, with demographics, trauma exposure, depression

and overall PTSD symptoms (excluding anhedonia) added as covariates. Partial correlation coefficients between each single symptom dimension and both function levels were also calculated as effect sizes.

### 3. Results

In terms of PTSD symptoms, the mean PCL-5 total score was 19.00 (SD = 15.36), with 15.9% of participants meeting the criteria for a probable PTSD diagnosis. Regarding functional outcomes, the average total score on the SF-36 was 66.55 (SD = 17.83). For the two composite domains, the mean psychosocial functioning score was 63.06 (SD = 16.70), and the mean physical functioning score was 70.04 (SD = 20.94). The severity of PTSD symptoms in this sample is generally comparable to that found in other community samples following the earthquake (Fu et al., 2013; Xu & Song, 2011). Multicollinearity in all regression analysis were assessed using variance inflation factors (VIFs), and all values were below 5, indicating no multicollinearity concerns among the predictors.

#### 3.1. Anhedonia symptom and overall PTSD

In the logistic regression analysis to PTSD diagnosis (see Table 2), after controlling for covariates, anhedonia symptoms were positively associated with PTSD diagnosis (OR = 2.19, 95% CI: 1.94–2.48,  $p < .001$ ). In the subsequent supplementary regression analysis to PTSD diagnosis, we found that among the seven symptom dimensions of PTSD, anhedonia has the second highest contribution to PTSD diagnosis (aOR = 2.19, 95%CI: 1.94–2.48; see Supplementary Table 1).

In linear regression analysis to PTSD overall symptoms (excluded anhedonia), anhedonia symptom demonstrated significant positive association with PTSD symptom severity ( $\beta = 0.615$ ,  $p < .001$ ; see Table 2). Also, In the subsequent supplementary partial correlation analysis to PTSD overall symptoms, anhedonia has the second highest partial correlation with PTSD severity after controlling for covariates among all seven symptom dimensions (Partial correlation coefficient = 0.679; see Supplementary Table 2).

**Table 2.** Associations between anhedonia symptom and PTSD diagnosis/overall symptom.

	PTSD diagnosis				PTSD symptom severity*				
	<i>B</i>	SE( <i>B</i> )	<i>p</i>	OR (95% CI)	<i>B</i>	SE( <i>B</i> )	$\beta$	<i>t</i>	<i>p</i>
Gender	0.614	0.277	<b>.026</b>	1.85 (1.08–3.18)	3.388	0.524	0.12	6.469	<b>&lt;.001</b>
Age	0.016	0.016	.321	1.02 (0.98–1.05)	0.092	0.031	0.07	3.009	<b>.003</b>
Education level	−0.035	0.135	.793	0.97 (0.74–1.26)	−0.605	0.246	−0.056	−2.456	<b>.014</b>
Marital status	0.288	0.354	.415	1.33 (0.67–2.67)	0.097	0.705	0.003	0.138	.891
Earthquake trauma	0.138	0.055	<b>.012</b>	1.15 (1.03–1.28)	0.821	0.114	0.133	7.202	<b>&lt;.001</b>
Depression symptom	0.063	0.025	<b>.011</b>	1.07 (1.02–1.12)	0.534	0.054	0.201	9.916	<b>&lt;.001</b>
Anhedonia symptom	0.785	0.063	<b>&lt;.001</b>	2.19 (1.94–2.48)	3.315	0.111	0.615	29.746	<b>&lt;.001</b>

Note: *N* = 1063.

\*Anhedonia symptoms were excluded when calculating the total symptom score.



### 3.2. Anhedonia symptom and function levels

In linear regression analysis to different function levels, after controlling for covariates and other PTSD symptoms (see Table 3), higher anhedonia symptom was uniquely associated with lower psychosocial function ( $\beta = -0.088, p = .02$ ) but not with physical function ( $\beta = .013, p = .732$ ). In the subsequent supplementary partial correlation analysis to psychosocial and physical function impairments, compared with other PTSD symptom dimensions, anhedonia symptom has a medium correlation with psychosocial function impairments and a relative low correlation with physical function impairments (see Supplementary Table 3). Although partial correlation analyses indicated a small but significant association between anhedonia and physical functioning, this relationship did not remain significant in the regression model after controlling for covariates.

## 4. Discussion

The present study examined the relationship between anhedonia symptoms and PTSD diagnosis, overall PTSD severity, and functional impairment in individuals exposed to an earthquake. The results indicate that, after controlling for covariates, anhedonia was significantly associated with both PTSD diagnosis and overall PTSD severity. Furthermore, the strength of these associations ranked second among all PTSD symptom dimensions. Additionally, anhedonia was significantly correlated with trauma-related psychosocial functional impairment. Our findings underscore the association of anhedonia with overall PTSD symptomatology and provide empirical evidence for its critical importance in PTSD.

The findings on the association between anhedonia symptoms and PTSD diagnosis and overall symptom severity suggest that individuals with more severe anhedonia are more likely to meet PTSD diagnostic criteria and exhibit higher overall symptom levels compared to those with other symptom dimensions. This result aligns with previous research; for instance, an item response theory (IRT) analysis based on DSM-5 criteria indicated that the three items of anhedonia symptom dimension had the highest discriminatory

power for PTSD severity in both university and community samples (Silverstein et al., 2020). Our findings suggested that even after adjusting for confounding variables, such as depression, anhedonia symptoms maintain a strong association with both PTSD diagnosis and overall severity, surpassing most other symptom dimensions. These results support the view that anhedonia is an important clinically relevant feature of PTSD, particularly in relation to overall symptom.

The findings regarding anhedonia and functional impairment indicate a significant association between anhedonia symptoms and trauma-related psychosocial functional impairment, while no significant association was found with physical functional impairment. Our results suggest that anhedonia symptoms of PTSD may more specifically reflect impairments in psychosocial function domains like role-emotional, social functioning, mental health, and fatigue, rather than physical domains, such as physical functioning, role-physical, bodily pain, and general health. This pattern may be explained, in part, by the nature of the anhedonia symptom dimension in PTSD. Some of the items used to assess anhedonia (feeling distant or cut off from other people) are directly related to social functioning, reflecting the interpersonal and social disengagement aspects of anhedonia. As such, this dimension may be more strongly associated with psychosocial rather than physical functioning. Additionally, anhedonia may reflect impairments in reward processing – such as diminished positive affect and reduced motivation for pleasurable activities – which are closely linked to interpersonal relationships, occupational performance, and overall emotional well-being. These features of anhedonia may help explain its specific relevance to psychosocial functional impairment in individuals with PTSD, rather than physical functional impairment. In addition, these findings are consistent with previous findings. For example, a longitudinal study of US military personnel found that anhedonia was a stronger predictor of future psychosocial functional impairment than other PTSD dimensions (May et al., 2022). Another study of US veterans similarly identified anhedonia as an important factor closely associated with psychosocial functional impairment (Stiltner et al., 2024). Taken together with prior evidence, our

**Table 3.** Associations between anhedonia symptom and function levels.

	Physical function					Psychosocial function				
	<i>B</i>	<i>SE(B)</i>	$\beta$	<i>t</i>	<i>p</i>	<i>B</i>	<i>SE(B)</i>	$\beta$	<i>t</i>	<i>p</i>
Gender	6.99	4.64	0.039	1.506	.132	5.845	3.603	0.041	1.623	.105
Age	−1.186	0.267	−0.142	−4.446	<.001	−0.191	0.207	−0.029	−0.924	.356
Education level	4.943	2.145	0.072	2.304	.021	5.911	1.666	0.108	3.549	<.001
Marital status	−0.48	6.12	−0.002	−0.078	.938	−0.8	4.752	−0.004	−0.168	.866
Earthquake trauma	1.101	1.015	0.028	1.085	.278	−0.393	0.788	−0.013	−0.499	.618
Depression symptom	−7.42	0.489	−0.443	−15.161	<.001	−6.218	0.38	−0.464	−16.363	<.001
Anhedonia symptom	0.451	1.319	0.013	0.342	.732	−2.386	1.024	−0.088	−2.331	.02
Other PTSD symptoms	−1.134	0.27	−0.18	−4.2	<.001	−0.663	0.21	−0.132	−3.16	.002

Note: *N* = 1063.

findings suggest that anhedonia may be an important symptom dimension associated with psychosocial functional outcomes in PTSD.

Although the present study focuses on anhedonia symptoms in PTSD, anhedonia is widely recognized as a transdiagnostic symptom that spanning multiple forms of psychopathology, including depression, schizophrenia, substance use disorders, and PTSD (Pizzagalli, 2022). Notably, a recent meta-analysis indicates that the severity and expression of anhedonia may vary across diagnostic categories (Trøstheim et al., 2020). Future research may benefit from directly comparing anhedonia across clinical populations – such as those with PTSD, major depressive disorder, or substance use disorders – to examine whether its symptom presentation, severity, and functional correlates differ by diagnosis. Such cross-diagnostic comparisons could enhance our understanding of whether anhedonia reflects a shared underlying mechanism across disorders, or whether its impact is shaped by disorder-specific contexts.

This study holds significant theoretical implications for understanding the role of anhedonia in PTSD. Building on previous research, our findings provide additional evidence that anhedonia symptoms are closely associated with PTSD diagnosis, overall symptom severity, and trauma-related psychosocial impairment. These results suggest that anhedonia may be an important component of the PTSD symptom profile. Future longitudinal and clinical studies are needed to further clarify how anhedonia may contribute to the development and maintenance of PTSD symptoms.

The present study also holds potential practical implications. First, our findings may inform PTSD assessment by emphasizing the relevance of anhedonia in the symptom of PTSD. The significant associations between anhedonia and both PTSD diagnosis and overall symptom severity imply that anhedonia may be an important dimension to consider in PTSD symptom assessment. Notably, several widely used PTSD screening tools, such as the Primary Care PTSD Screening Scale (PC-PTSD-5; Prins et al., 2016) and the Global Psychotrauma Screen (GPS, Olf et al., 2020), already include items aligned with the anhedonia dimension. Our results provide empirical support for the inclusion of anhedonia-related items in PTSD assessment tools and suggest that such items be retained or even prioritized in future PTSD diagnostic and screening instrument development. Second, given the strong associations observed between anhedonia, PTSD symptom severity, and psychosocial functioning, the present study suggest that future research may explore whether anhedonia symptoms could serve as a meaningful indicator of overall symptom burden in clinical contexts. Longitudinal studies are especially needed to determine whether changes in anhedonia over time reflect broader

symptom progression or functional outcomes. Third, the association between anhedonia and psychosocial function impairment imply that anhedonia symptoms may be relevant to interventions focus on individual's psychosocial functional impairment. For example, interventions targeting anhedonia, such as Positive Affect Treatment (Craske et al., 2016), may potentially improve psychosocial functioning among individuals with elevated anhedonia symptoms. However, as this study did not evaluate intervention effects, future clinical research is needed to examine whether targeting anhedonia could effectively reduce functional impairment.

This study may also have important policy implications. The new International Classification of Diseases-11 (ICD-11) PTSD diagnostic criteria omit anhedonia-related symptoms, retaining only the dimensions of re-experiencing, avoidance, and sense of threat (World Health Organization, 2018). However, our findings show that anhedonia is significantly associated with both PTSD diagnosis and trauma-related psychosocial impairment. These results imply that future revisions of PTSD diagnostic standards may benefit from reconsider the inclusion of anhedonia, as this symptom dimension may represent an important symptom dimension.

This study has several limitations. First, the sample was limited to individuals from a Chinese population exposed to a single type of trauma (earthquake), which may restrict the generalizability of our findings. The results may be different in different trauma type (e.g. interpersonal trauma like assault). Future research should involve samples from diverse cultural backgrounds and with different types of trauma exposure to enhance the results' applicability. Second, PTSD symptoms were assessed via self-report measures, which may introduce bias. Future studies should incorporate clinical assessments to strengthen these findings. Third, as our findings are based on cross-sectional data, establishing causality between anhedonia and PTSD symptomatology is challenging. Longitudinal studies are needed to clarify the impact of anhedonia on PTSD symptom trajectories over time. Fourth, although PTSD symptoms were anchored to the Wenchuan earthquake, data were collected nine years after the event. Participants may have experienced other traumatic events before or after the earthquake (e.g. childhood trauma or later life stressors), which were not assessed in this study. These unmeasured exposures may have influenced the results of present study. Future research should include more comprehensive trauma histories to better isolate the effects of specific trauma types.

Despite its limitations, the present study contributes to ongoing research on the role of anhedonia in PTSD by examining its associations with diagnosis, symptom severity, and psychosocial functioning in a large

trauma-exposed community sample. The findings show that anhedonia symptoms are significantly associated with overall PTSD symptomatology and functional impairment. The results of present study underscore the relevance of anhedonia within the broader PTSD symptomatology, further research is needed to explore its potential implications for clinical assessment and symptom monitoring, as well as to clarify its role in the development and maintenance of PTSD.

## Disclosure statement

No potential conflict of interest was reported by the author(s).

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## Data availability statement

The participants of this study did not give written consent for their data to be shared publicly, so due to the sensitive nature of the research supporting data is not available.

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