



The relationship between childhood adversities and complex posttraumatic stress symptoms: a multiple mediation model

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ABSTRACT

Background: There is a growing research literature on complex posttraumatic stress disorder (CPTSD), yet studies that focused on Chinese populations are still limited. Accumulating evidence showed that adverse childhood experiences (ACEs) are associated with a higher likelihood of CPTSD symptoms, but potential mediating roles of self-kindness and self-judgement on the ACEs-CPTSD relationship remain understudied.

Objective: The purpose of this study was to first examine the relationship between ACEs and CPTSD among Chinese college students, and then to test the mediating role of self-kindness and self-judgement on the ACEs-CPTSD relationship.

Method: The study included 1361 college students for an online survey in May 2020. Demographic variables (e.g. age, gender, having sibling[s] or not, residence, family structure, and subjective socioeconomic status), ACEs, self-compassion (self-kindness and self-judgement subscales), and CPTSD symptoms were assessed. After controlling for demographic variables, a series of structural equation models tested the mediation hypothesis: indirect effects of self-kindness and self-judgement on the relationship between ACEs and CPTSD symptom.

Results: ACEs of College students were positively associated with more severe CPTSD symptoms (posttraumatic stress disorder and disturbances in self-organization symptoms). Furthermore, these direct pathways were mediated by decreased self-kindness and increased self-judgement.

Conclusions: Findings have substantial theoretical and treatment implications, including the two critical targets (i.e. lowering self-judgement and raising self-kindness) when treating complex PTSD.

La relación entre las adversidades en la infancia y los síntomas de estrés postraumático complejo: un modelo de mediación múltiple

Antecedentes: existe una creciente literatura de investigación sobre el trastorno de estrés postraumático complejo (TEPT-C), sin embargo, los estudios centrados en la población China aún son limitados. La evidencia acumulada mostró que las experiencias adversas de la infancia (ACEs en sus siglas en inglés) están asociadas con una mayor probabilidad de síntomas de TEPT-C, pero los posibles roles mediadores de la bondad hacia uno mismo y auto-juicio propio en la relación ACE-TEPT-C siguen siendo poco estudiados.

Objetivo: El propósito de este estudio fue examinar primero la relación entre ACE y TEPT-C entre estudiantes universitarios chinos, y luego probar el papel mediador de la bondad y el auto-juicio en la relación ACE-TEPT-C.

Método: El estudio incluyó a 1361 estudiantes universitarios para una encuesta en línea en mayo del 2020. Variables demográficas (por ejemplo, edad, sexo, tener hermanos o no, residencia, estructura familiar y estatus socioeconómico subjetivo), ACE, autocompasión (subescalas de auto-bondad y auto-juicio), y se evaluaron los síntomas de TEPT-C. Después de controlar las variables demográficas, una serie de modelos de ecuaciones estructurales probaron la hipótesis de la mediación: los efectos indirectos de la bondad personal y el auto-juicio sobre la relación entre los ACE y los síntomas de TEPT-C.

Resultados: Las ACEs de los estudiantes universitarios se asociaron positivamente con síntomas de TEPT-C más graves (trastorno de estrés postraumático y alteraciones en los síntomas de autoorganización). Además, estas vías directas fueron mediadas por una disminución de la bondad hacia uno mismo y un mayor auto-juicio.

ARTICLE HISTORY

Received 21 December 2020
Revised 19 May 2021
Accepted 19 May 2021

KEYWORDS

Adverse childhood experiences; complex posttraumatic stress symptoms; self-judgement; self-kindness; descriptive survey study

PALABRAS CLAVE

Experiencias adversas en la niñez; Síntomas de estrés postraumático complejo; auto-juicio; Bondad hacia uno mismo; Estudio de encuesta descriptiva

关键词

童年期不良经历; 复杂性创伤后应激症状; 自我评判; 自我善待; 描述性调查研究

HIGHLIGHTS

- College students' ACEs were positively associated with more severe CPTSD symptoms, and these direct pathways were mediated by decreased self-kindness and increased self-judgement.

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Conclusiones: Los hallazgos tienen implicaciones teóricas y de tratamiento sustanciales, incluidos los dos objetivos críticos (es decir, reducir el auto-juicio y aumentar la bondad hacia uno mismo) al tratar el TEPT complejo.

童年期逆境与复杂性创伤后应激症状之间的关系:一个多重中介模型

背景: 关于复杂性创伤后应激障碍 (CPTSD) 的研究文献不断增加, 但关注中国人群的研究仍然有限。越来越多的证据表明, 童年期不良经历 (ACE) 与有CPTSD症状的更高可能性相关, 但是, 对ACE-CPTSD关系的自我善待和自我评判的潜在中介作用仍欠缺研究。

目的: 本研究旨在首次考查中国大学生的ACE与CPTSD之间的关系, 然后检验自我善待和自我评判对ACE-CPTSD关系的中介作用。

方法: 研究纳入了2020年5月在线调查的1361名大学生。评估了人口统计学变量 (例如, 年龄, 性别, 是否有同胞, 居住, 家庭结构和主观社会经济地位), ACE, 自我同情 (自我善待和自我评判分量表) 和CPTSD症状。在控制了人口统计学变量之后, 一系列的结构方程模型检验了中介假设: 自我善待和自我评判对ACE与CPTSD症状之间关系的间接影响。

结果: 大学生的ACE与更严重的CPTSD症状 (创伤后应激障碍和自我组织障碍症状) 呈正相关。此外, 这些直接路径由减少自我善待和增加自我评判中介。

结论: 研究结果具有重要的理论和治疗意义, 包括在治疗复杂性PTSD时的两个关键目标 (即降低自我评判和提高自我善待)

1. Introduction

Individuals with sustained, repeated and/or multiple forms of traumatic experience or exposure (e.g. childhood sexual abuse, emotional and physical abuse, and severe domestic violence) are at greater risk for developing classic PTSD symptoms (e.g. re-experiencing, avoidance, and hyperarousal symptoms) as well as features of 'complex PTSD' (CPTSD), including disturbances in self-organization (DSO) such as affect dysregulation, negative self-concept, and relationship difficulties (Karatzias et al., 2017). Individuals with CPTSD have more severe functional impairment in social and psychosomatic aspects as compared to those with non-complex PTSD symptoms (Karatzias et al., 2017; Palic et al., 2016; Zerach, Shevlin, Cloitre, & Solomon, 2019). In recognition of this distinct and debilitating clinical profile, CPTSD was recently added to the International Classification of Diseases, 11th revision (ICD-11) (Cloitre, 2020; World Health Organization, 2018).

Previous PTSD studies have identified adverse childhood experiences (ACEs) to be significantly associated with an increased risk of developing PTSD symptoms (Hsieh et al., 2016; Schalinski et al., 2016). These linkages are explained by a variety of theories of psychopathology. For example, the vulnerability-stress model purports that major negative events like ACEs may make people more vulnerable to mental health difficulties (Colodro-Conde et al., 2018; Zubin & Spring, 1977). ACEs occurred in a sensitive life period of development, when children may not have enough resources to cope with. Victims of ACEs were more prone to develop pervasive toxic stress, becoming hypervigilant in later life (Shonkoff & Garner, 2012). Poole, Dobson, and Pusch (2018) found ACEs predicted affect dysregulation and interpersonal problems in adulthood in a sample of 4006 primary care

patients. Previous studies found the dose-response relationship between cumulative trauma and the severity and complexity in symptomatology, suggesting more ACEs may lead to severe PTSD and DSO symptoms (Fox, Perez, Cass, Baglivio, & Epps, 2015; Straussner & Calnan, 2014). Based on this, the present study hypothesized that ACEs might have a direct effect on CPTSD symptoms. Critically, the time of adolescence and young adulthood is a period of great shaping of personality and self-regulation capacities that may make one more susceptible to developing or prolonging CPTSD symptoms (Cloitre et al., 2009). Thus, greater attention should be paid to identifying the risk factors of CPSTD and its associated potential mechanisms in this population.

According to Gilbert's social mentality theory, self-soothing behaviours (e.g. self-kindness) associated with the mammalian contentment and safeness system (parasympathetic nervous system), which can down-regulate the activated threat system. Yet self-judgement, which is an inherent threat, may stimulate the threat-defence system (sympathetic nervous system) (Gilbert, 2005; Porges, 2017), leading to stress responses. A growing body of researches has explored the potential mediation of self-kindness on ACEs and mental health. For example, Samios, Raatjes, Ash, Lade, and Langdon (2020) found psychological abuse decreased individuals' ability to self-kindness, leading to psychological maladjustment. Likewise, Stallman et al. observed (2018) students with ACEs (e.g. poor nurturing and unstable environments) may have difficulties treating themselves kindly, leading to some DSO symptoms (e.g. affect dysregulation). Among trauma-exposed individuals, Thompson and Waltz (2008) observed that self-kindness was linked to fewer PTSD symptoms by less engaging in avoidance

behaviour. As a healthy coping strategy for stress, self-kindness may reduce the vulnerability to psychopathology (Stallman, Ohan, & Chiera, 2018). For the literature and theoretical argumentation reviewed above, we hypothesized the effect of ACEs on PTSD and DSO symptoms mediated by self-kindness.

On the other hand, early trauma, such as childhood maltreatment, is likely to result in self-judgement. Being neglected and abused in the early period of life, individuals may internalize the way their caretaker treated them (Bretherton, 1990; Gilbert & Procter, 2006). Notably, self-judgement may generate stress responses, resulting in more susceptibility to mental illness according to the vulnerability-stress model (Kalamatianos & Canellopoulos, 2019; O'Connor, Rasmussen, & Hawton, 2010). In a large, nationally representative sample of U.S. adults, such self-critical behaviour was significantly associated with PTSD among individuals who had experienced one or more traumatic events (Cox, Fleet, & Stein, 2004). Individuals who judge themselves harshly may experience feelings of unworthiness, shame, failure, and guilt (Durkin, Beaumont, Hollins Martin, & Carson, 2016; McIntyre, Smith, & Rimes, 2018), which belonged to DSO symptoms clusters. Braehler and Neff (2020) observed that self-criticism may be a risk factor for the sustaining of PTSD symptoms among individuals with adversities. Based on these aforementioned findings, we assumed that ACEs positively influenced CPTSD symptoms through the mediating effects of self-judgement. Clinically, self-kindness and self-judgement are important interventions when treating individuals with ACEs (Naismith, Zarate, & Feigenbaum, 2019; Samios et al., 2020) and CPTSD (Karatzias et al., 2019). Empirically, however, the mediating effects of self-kindness and self-judgement on ACEs and CPTSD symptoms have not yet been established.

This study was designed to address two major limitations of the current literature. First, few studies have examined whether there is a unique or shared underlying mechanism connecting ACEs with PTSD and DSO. Among extant studies, there are mixed findings on the centrality of self-compassion in PTSD and DSO symptoms. Additionally, few empirical studies have assessed the mediating role of self-compassion (in this case, self-kindness and self-judgement) between ACEs and CPTSD symptoms in the Chinese population, especially among Chinese young adults. To date, research has largely focused on mostly non-Hispanic white samples in the United States, and it is unclear the extent to which prior literature on risk factors for CPSTD and potential mechanisms (e.g. self-kindness and self-judgement) generalize to a Chinese population. More solid evidence on this topic is urgently needed, with results that can be used by health

professionals to develop early effective interventions for adolescents at risk for CPTSD. Thus, this study aimed to assess whether the relationship between ACEs and CPTSD symptoms is mediated by self-kindness and self-judgement in a large Chinese sample. It was hypothesized that ACEs had shared positive influence on PTSD and DSO symptoms among Chinese college students (Hypothesis 1), and the effect of ACEs on PTSD and DSO symptoms mediated by self-kindness (Hypothesis 2) and self-judgement (Hypothesis 3), respectively.

2. Methods

2.1. Participants

A cross-sectional analytical design was used for data collection, which was conducted on an online survey. Between 13th and 22nd, May in 2020, college students who came from more than 130 universities in China were recruited to participate in this study. Prior to filling out several self-reported questionnaires, all volunteers had signed online consent forms. It took about 15 min to finish the whole survey. Among 1480 students who were initially invited, 1375 students completed the questionnaire (92.9% response rate). Fourteen participants with invalid responses or extremely short response time (<5 min) were excluded, leading to a final sample of 1361 Chinese students (465 male and 896 females).

2.2. Procedure

Students were invited to attend this survey via multiple online platforms including Tencent's QQ, WeChat, and college-related websites (including university association websites and bulletin board system forums). The survey was conducted on WenJuanXin online survey platform (Changsha Ranxing Information Technology Co., Ltd., Changsha, P.R.C.). Participants who clicked the survey link were automatically directed to a questionnaire including demographic information, the Subjective Socio-economic status (SES) Scale, the International Trauma Questionnaire, Self-compassion Scale-Short Form, and the Revised Adverse Childhood Experiences Scale. The online survey was programmed to not proceed to the next page or for submission until all questions were completed on the current page. Therefore, for participants who completed the online survey, there were no missing data. Participants who completed all questionnaires were financially compensated with 10 RMB (equivalent to 1.5 U.S. dollars at the current rate). The study proposal was submitted to the Human Research Ethics Committee (No: 2020005) of Shenzhen University for its approval before it started.

2.3. Instruments

2.3.1. Socio-democratic information

Participants answered questions about their personal information including gender (1 = male, 2 = female), age, having sibling(s) or not (1 = yes, 2 = no), and residence (1 = urban areas, 2 = rural areas). Participants were asked to answer questions about their family characteristics including parental marital status and subjective socioeconomic status (SES) (Adler et al., 2000). For example, participants were asked to select the number that best fits their family's social-economic status on a 1–10 ladder (1 for the worst, 10 for the best).

2.3.2. Adverse childhood experiences

The Revised Adverse Childhood Experiences Scale (Finkelhor, Shattuck, Turner, & Hamby, 2015), a 14-item version was used to assess exposure to adverse experiences in childhood. Each ACE was coded as '1' or '0' based on whether the presence or not of each ACEs. After summing up items that received a positive response, an overall score was created (range = 0–14). This method of ACEs assessment coding is in line with the technique used in previous research (Fox et al., 2015). The Chinese version of the revised Adverse Childhood Experiences Scale demonstrated good psychometric properties in a previous study (Wang, Lin, & Cao, 2018).

2.3.3. CPTSD symptoms

The International Trauma Questionnaire (Cloitre et al., 2018) was used to measure CPTSD, which consists of PTSD and DSO symptoms. Six items measure three PTSD clusters, with 2 items for each symptom cluster: Re-experiencing in the here and now (RE); avoidance of traumatic reminders (internal and/or external; AV); and a sense of current threat (TH). Another six items measure the three DSO factors with two items each subscale: Affective dysregulation (AD); negative self-concept (NSC); and difficulties in relationships (DR). Participants are instructed to answer the PTSD question regarding how each symptom influence them in the past month, and to answer the DSO items concerning how they generally feel, think towards themselves and others. All items are answered on a five-point Likert scale from 0 to 4 (0 = Not at all, 4 = Extremely). After summing up the Likert scores of items for each dimension, a higher score indicates a severe symptom. The Cronbach's alpha coefficients estimated for the both PTSD and DSO indicators were good: RE = .85, AV = .89, and TH = .86; AD = .67, NSC = .91, and DR = .87. The translated Chinese version of ITQ was validated in previous research with good psychometric properties (Ho, Karatzias, Cloitre, Chan, & Shevlin, 2019).

2.3.4. Self-kindness and self-judgement

Two subscales of the Self-Compassion Scale–Short Form were used to measure self-kindness and self-judgement (Raes, Pommier, Neff, & Van Gucht, 2011). There are two items in the self-kindness subscale (i.e. (1) I try to be understanding and patient towards those aspects of my personality that I do not like [self-understanding]; (2) When I'm going through a very hard time, I give myself the caring and tenderness I need [self-caring].), and two items to measure self-judgement (i.e. (1) I'm disapproving and judgemental about my own flaws and inadequacies [self-criticism]; (2) I'm intolerant and impatient towards those aspects of my personality that I don't like [self-intolerance]). All items are rated on a 5-point scale ranging from 1 (almost never) to 5 (almost always) with higher scores reflecting a higher level of self-kindness or self-judgement. Items were translated and then back-translated to assure accuracy. In this study, the internal reliabilities for the two subscales were 0.69 in self-kindness and 0.66 in self-judgement, respectively, indicating acceptable reliability (Loewenthal & Lewis, 2018), given that the value of Cronbach's alpha may be lower for scales with a small number of items (Cronbach, 1951; Spiliotopoulou, 2009).

2.4. Statistical analysis

Mean (M) and standard deviation (SD) for continuous variables, and frequency and percentage for categorical variables were calculated via SPSS 23. Student's *t*-test analyses were used to detect group differences (i.e. sex, having sibling[s] or not, residence, and family structure) of PTSD/DSO symptoms. Pearson correlations were conducted to examine associations between each two key continuous variables (SES, ACEs, PTSD, DSO, self-kindness, and self-judgement). Further statistical analyses were performed with structural equation modelling (SEM) in Mplus 8.0. To examine the mediating role of self-kindness and self-judgement in the relationship between ACEs and PTSD/DSO, a series of structural equation models were built. We first established a direct model from ACEs to PTSD and DSO, and relational paths among PTSD and DSO were added. In the second step, based on the direct model, a multiple indirect model with the mediators (self-kindness and self-judgement) was built inserted between adverse ACEs and PTSD/DSO. The specific mediation pathways were presented as below: ACEs → self-kindness → PTSD/DSO; ACEs → self-judgement → PTSD/DSO. The cumulative risk of ACEs has received greater attention in the present study, rather than the latent construct. Thus, ACEs were treated as observed variables with total scores used during data analysis (Bethell et al., 2017). Parcelling has certain advantages (e.g. reduction of random error), which may allow for a more precise interpretation of the

Table 1. Participant characteristics.

Variables	<i>N (%)</i> / <i>M (SD)</i>	PTSD symptoms <i>M (SD)</i>	<i>p</i>	DSO symptoms <i>M (SD)</i>	<i>p</i>
Age	20.73 (1.88)		.051		.092
Gender			.915		.157
Male	465 (34.2%)	11.57 (4.98)		12.25 (5.10)	
Female	896 (65.8%)	11.60 (4.71)		12.67 (5.23)	
Sibling(s)			.571		.230
Only child	445 (32.7%)	11.47 (4.80)		12.28 (5.15)	
Not-only child	916 (67.3%)	11.64 (4.79)		12.64 (5.20)	
Residence			.453		.694
Urban areas	789 (58.0%)	11.52 (4.82)		12.48 (5.29)	
Rural areas	572 (42.0%)	11.70 (4.77)		12.59 (5.04)	
Family structure			.180		.421
Intact	1234 (90.7%)	11.54 (4.80)		12.49 (5.20)	
Non-intact	127 (9.3%)	12.13 (4.77)		12.88 (5.01)	
Subjective social-economic status	4.89 (1.38)		< .001		< .001

p obtained from *t*-test or Pearson correlation.

relationships between the studied variables in SEM models (Little, Cunningham, Shahar, & Widaman, 2002; Matsunaga, 2008). Given that CPTSD included six factors/symptoms clusters (RE, AV, and TH for PTSD, while AD, NSC, and DR for DSO) (Ho et al., 2020), the CPTSD was categorized into six subscales, with each one including two items. Existing literature has not addressed regarding the unidimensionality (the prerequisite for parcelling) of SK and SJ, thus the original items of SK and SJ were retained in the SEM model. Despite little theoretical or empirical evidence supporting the possibility of a reverse mediation, we tested the reverse model (ACEs → PTSD/DSO → SK/SJ) statistically (Chang, Fehling, & Selby, 2020) because of a cross-sectional study. Of note, given that ACEs were retrospective events before 18 years old and current PTSD/DSO and self-kindness/self-judgement status might not have an influence on, models with ACEs as a dependent variable were not tested.

The analysis was performed using the robust weighted least squares estimator (WLSMV) for parameter estimation as it is suitable for categorical items (Muthén & Muthén, 2009). For all pathways, direct, specific indirect, total indirect (standardized and unstandardized effects), and total effects were estimated. Standardized values were reported for all estimations. The 95% bias-corrected bootstrap confidence intervals (CIs) of the indirect effect were calculated on the basis of 5000 bootstrap samples. Goodness of fit was assessed with the following fit indices: comparative fit index (CFI), root mean square error of approximation (RMSEA) and standardized root mean square residual (SRMR). Thresholds were used as follows: for CFI excellent fit > .95 and moderate fit > .90; for RMSEA and SRMR excellent fit < .05 and moderate fit < .08 (Hu & Bentler, 1999).

3. Results

3.1. Participant characteristics

There were 1361 participants included in the analysis, of whom 465 were male, and 896 were

female. The mean age = 20.73; *SD* = 1.88. Specifically, 32.7% of participants were singletons while 67.3% had sibling(s). 58.0% were from urban areas and 42.0% from rural areas. In total, 90.7% of students were from intact families and 9.3% were from non-intact families. The average SES was 4.89 (*SD* = 1.38). The *M* and *SD*, as well as the significance of the *t*-test or Pearson correlation coefficient results of the PTSD and DSO symptoms between different dichotomous demographic variables, are shown in Table 1. Differences of PTSD and DSO symptoms were not statistically significant between groups (*t*-test). SES was significantly correlated with PTSD and DSO symptoms.

3.2. Descriptive statistics and correlations of variables

Mean and *SD* for the five key variables are reported in Table 2. Results from the Pearson's correlations indicated: (1) PTSD was significantly positively correlated with DSO and self-judgement and ACEs (all *ps* < .001), but significantly negatively correlated with self-kindness (all *ps* < .001); (2) DSO had a negative association with self-kindness (all *ps* < .001), but significantly positively correlated with self-judgement and ACEs (all *ps* < .001); (3) self-kindness was significantly negatively correlated with self-judgement and ACEs (all *ps* < .001), whereas self-judgement was significantly positively correlated with ACEs (*p* < .001).

Table 2. Descriptive statistics and correlation analyses among DSO, PTSD, ACEs, self-kindness and self-judgement.

Variables	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. PTSD	11.59	4.80	1				
2. DSO	12.53	5.19	.61*	1			
3. Self-kindness	3.60	0.74	-.30*	-.39*	1		
4. self-judgement	2.89	0.81	.25*	.35*	-.14*	1	
5. ACEs	0.95	1.64	.34*	.38*	-.19*	.15*	1

* *p* < .001.

3.3. Indirect effect analysis

First, we established a direct effect model from ACEs to PTSD and DSO symptoms. This model fit the data well, $\chi^2 = 140.01$, $df = 12$, $p < .001$, CFI = .98; RMSEA = .09, 95% CI [.08, .10], SRMR = .03, which indicated that ACEs had a direct effect on PTSD and DSO symptoms, while PTSD had a relational path to DSO. After controlling for SES which showed significant correlation with dependent variables in previous analyses, results indicated a better fit index, $\chi^2 = 149.91$, $df = 24$, $p < .001$, CFI = .98, RMSEA = .06, 95% CI [.05, .07], SRMR = .03. The structural equation model analysis showed that ACEs was positively associated with PTSD ($\beta = .33$, 95% CI [.27, .40], $p < .001$) and DSO symptoms ($\beta = .35$, 95% CI [.28, .42], $p < .001$). This indicated that ACEs was a common factor in PTSD and DSO symptoms.

Next, the mediators (self-kindness and self-judgement) were inserted between ACEs and CPTSD, again controlling for SES. Results from the indirect effect model indicated good fit indices, $\chi^2 = 187.87$, $df = 43$, $p < .001$, CFI = .98; RMSEA = .05, 95% CI [.04, .06], SRMR = .04. All paths were statistically significant: (1) ACEs were significantly negatively related to PTSD and DSO by one 1-step indirect paths of self-kindness; (2) ACEs were significantly positively related to PTSD and DSO by one 1-step indirect paths of self-judgement (Figure 1). The estimated indirect effects with 95% CI's based on bootstrapped standard errors are shown in Table 3. These findings suggested that self-kindness and self-

judgement mediated the relationship from ACEs to PTSD and DSO, and further suggested that the mechanism underlying the association of ACEs with PTSD and DSO may be similar.

For the reverse mediation model, in which ACEs were the antecedent, PTSD/DSO as mediators, and self-kindness and self-judgement as the dependent variables, the same procedure was performed as above. The model fit indices of the reverse mediation model were: $\chi^2 = 227.77$, $df = 43$, $p < .001$, CFI = .97, RMSEA = .06, 95% CI [.05, .06], SRMR = .07. The model fit, although acceptable, is slightly worse than the proposed model. Besides, one out of two indirect paths of the reverse model was not significant. Specifically, the effect of the indirect path (ACEs \rightarrow PTSD \rightarrow SK) was $\beta = -.00$ (95% CI [-.02, .02], $p = .871$), and the indirect path (ACEs \rightarrow PTSD \rightarrow SJ) was $\beta = -.07$ (95% CI [-.02, .02], $p = .646$) indicating that PTSD did not have a mediating effect on the association between ACEs and SK/SJ. The effect of indirect path (ACEs \rightarrow DSO \rightarrow SK/SJ) was $\beta = -.07$ (95% CI [-.10, -.05], $p < .001$) and .06 (95% CI [.04, .09], $p < .001$), respectively, indicating that DSO may play a mediating role in the association between ACEs and SK/SJ.

4. Discussion

In the present study, a multiple mediation model was constructed to analyse the mechanism underlying the association between ACEs and CPTSD symptoms. Results showed a significant direct effect of ACEs on

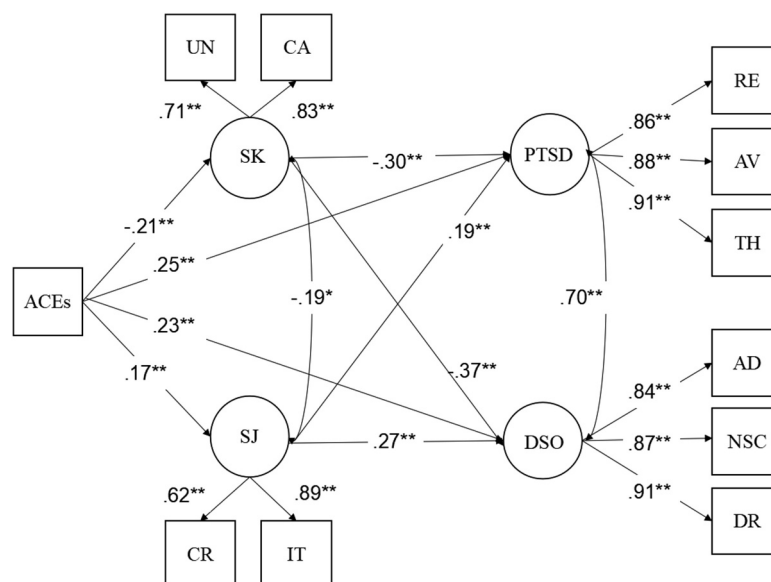


Figure 1. The model of mediating roles of self-kindness and self-judgement in the relationship between adverse childhood experiences and PTSD/DSO symptoms. ACEs = Adverse childhood experiences, SK = Self-kindness, UN = Self-understanding, CA = Self-caring, SJ = self-judgement, CR = Self-criticism, IT = Self-intolerance, PTSD = Posttraumatic stress disorders, DSO = Disturbance in self-organization. RE = Re-experiencing, AV = Avoidance, TH = Threat hypervigilance, AD = Affect dysregulation, NSC = Negative self-concept, DR = Disturbances in relationships. All path coefficients were standardized coefficients. SES included as covariate which was not shown in the figure. * $p < .01$, ** $p < .001$.

Table 3. Indirect effect statistics with bootstrap 95% CI.

Indirect effect	B	95% CI	β	95% CI
Dependent variable: PTSD				
Total indirect	0.05*	[.04, .07]	.10*	[.07, .13]
Specific indirect 1	0.03*	[.02, .05]	.06*	[.04, .09]
Specific indirect 2	0.02*	[.01, .03]	.03*	[.02, .06]
Dependent variable: DSO				
Total indirect	0.07*	[.05, .09]	.12*	[.09, .16]
Specific indirect 1	0.04*	[.03, .06]	.08*	[.05, .11]
Specific indirect 2	0.03*	[.01, .04]	.05*	[.03, .07]

$N = 1361$. Bootstrap sample size = 5,000. * $p < .001$. B: Unstandardized coefficients; β : Standardized coefficients.

Total indirect: ACEs \rightarrow PTSD/DSO; Specific indirect 1: ACEs \rightarrow self-kindness \rightarrow PTSD/DSO; Specific indirect 2: ACEs \rightarrow self-judgement \rightarrow PTSD/DSO.

PTSD and DSO symptoms among Chinese college students, which supported Hypothesis 1, and was consistent with previous western studies with similar age groups (Brockie, Dana-Sacco, Wallen, Wilcox, & Campbell, 2015; Frewen, Zhu, & Lanius, 2019). In line with the vulnerability-stress model, traumatic events such as ACEs, which usually and repeatedly occur during sensitive developmental periods, play a major aetiological role in causing and/or exacerbating psychological disorders in later life (Barker, Gumley, Schwannauer, & Lawrie, 2015). Mirroring such models and previous studies, the present study indicates that the negative effects of childhood maltreatment are pervasive and enduring (Poole et al., 2018; Suzuki & Tomoda, 2015), which needs particular attention.

In addition, the mediation path was significant after the addition of mediation variables (i.e. self-kindness and self-judgement). These findings supported our Hypothesis 2 and 3. That is, the effect of ACEs on PTSD and DSO can be partially explained by mediating variables. Specifically, self-kindness mediated the path from ACEs to PTSD and DSO symptoms as we predicted. These results reflect the study of Reffi, Boykin, and Orcutt (2019) who also found that Individuals who have been maltreated in childhood showed a lower degree of self-kindness, which may result affect dysregulation. Our findings support Gilbert's social mentality theory (Gilbert, 2005) and stress-vulnerability model (Masten & Garmezy, 1985). It indicated that being more kind to oneself may reduce the negative influence of childhood adversities, with healthier management of stress, the lesser activity of the threat system, and thus may reduce CPTSD symptoms. A possible explanation for this is that the base cortisol level among individuals with ACEs may be relatively high (Aas et al., 2019). Self-kindness could generate the mammalian care system to release oxytocin, which increases people's sense of security, and thus may reduce CPTSD symptoms (Longe et al., 2010; Neff, 2012). Such findings are important for health experts to develop the self-kindness ability among ACEs individuals to prevent CPTSD symptoms.

On the other hand, results indicated that ACEs have a positive association with PTSD and DSO

through the increased self-judgement. These results are in accord with recent studies indicating that self-criticism mediates the link between ACEs (e.g. emotional abuse) and psychopathology (Carvalho, Sousa, Da Motta, & Cabral, 2019; Crapolicchio, Vezzali, & Regalia, 2020; Naismith et al., 2019). For instance, Lassri, Luyten, Cohen, and Shahar (2016) found DSO symptoms such as interpersonal difficulties were linked to a history of ACEs through self-criticism. Being one of the most common symptoms in people with ACEs, self-criticism can stimulate stress response, leading to more CPTSD symptoms (Feinson & Hornik-Lurie, 2016; Lassri, Luyten, Fonagy, & Shahar, 2018). Self-judgement activates the amygdala area of the brain, increasing adrenaline and cortisol hormones (Longe et al., 2010), which may generate more CPTSD symptoms (e.g. hypervigilance) among individuals with ACEs. Another possible explanation is ACEs may have a negative impact on self-concept, such as shame (Spinazzola, der Kolk, & Ford, 2018). With that distorted self-concept, individuals with ACEs may have a high level of self-judgement to avoid feelings of shame. However, this may maintain and exacerbate CPTSD symptoms (Braehler & Neff, 2020). These findings provide practical implications for health professionals to decrease self-judgement among ACEs individuals for the reduction of CPTSD symptoms.

Besides, ACEs were not statistically related to SK/SJ via PTSD, but DSO mediated the path from ACEs to SK/SJ. The latter path was inconsistent with a similar study, which indicated that psychopathology is not predictive of self-compassion based on a cross-lagged analysis (Krieger, Berger, & Holtforth, 2016). One possibility to explain the mediation is that DSO, which refers to the disturbance of the self-system, may elicit individual's toxic shame, contributing to more self-judgement and less self-kindness. However, given the limited research, further longitudinal studies are needed to confirm or refute this observation.

Some limitations of the research need to be acknowledged. First, participants were asked to self-report childhood events, however, sometimes subjective memories could be unclear, which might have an influence on the validity. For example, the memories of ACEs back in time might be repressed or exaggerated, resulting in biased reporting. Most of the participants are from universities on the southeast coast of China, therefore the generalization of the results to other places should be made with caution. Furthermore, even though the hypotheses of the present study were supported by theoretical, empirical, and statistical evidence, given it is a cross-sectional design, results are unable to render causal inference. Longitudinal studies and more constrained experimental designs to investigate the relationships between self-kindness/self-judgement and CPTSD symptoms are needed in order to clarify

directionality. Third, whether different kinds of ACEs manifest various influences on the CPTSD symptoms is less known in the study. Future researches can explore relationships between self-judgement, self-kindness and CPSTD from a longitudinal perspective, and specific paths from different ACEs and self-kindness and self-judgement. Besides, other assessment tools, such as assessment by a clinician can be added to improve the accuracy of the assessment of ACEs and CPTSD symptoms. These efforts may further clarify the mechanism of association between ACEs and CPSTD.

Notwithstanding these limitations, this study examined the mediating role of self-kindness and self-judgement in the relationship between ACEs and CPTSD symptoms. These results enrich existing literature on ACEs and CPTSD and have certain theoretical significance. For clinical applications, this also encourages researchers, counsellors, and educators to understand and further explore possible mechanisms behind youths with CPTSD symptoms and discover potential treatments. Greater attention is also needed to pay to the relationship the youth have with themselves. Being more kind to themselves, rather than judge themselves harshly, may help reduce the negative influence of childhood adversities.

Disclosure statement

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Funding

This work was supported by the National Natural Science Foundation of China [grant number 31871115]; Guangdong Basic and Applied Basic Research Foundation [grant number 2021A1515011330].

Author contributions

Conceptualization: T.G. and L.H.; Methodology: L.H.; Investigation: T.G. and L.H.; Data Curation: L.H.; Formal analysis: T.G., L.H., and X.C.; Writing - original draft preparation: L.H.; Writing - review and editing: T.G., D.L.H, C. J., S.C., Q.Y., A.Y., X.C., and L.Z. Funding acquisition: T. G. and X.C.

Ethical approval

This research project was approved by the Ethics Committee of Shenzhen University (No:2020005). All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Informed consent

Informed consent was obtained from all individual participants included in the study.

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Data availability statement

The Data are part of an ongoing project. For privacy or ethical restrictions, primary data are not publicly available. The data supporting the findings of this study are available from the corresponding author, X.C. (xinlichi@126.com) upon request <https://osf.io/6dp4m/>.

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