

Lifetime traumatic stressors and adverse childhood experiences uniquely predict concurrent PTSD, complex PTSD, and dissociative subtype of PTSD symptoms whereas recent adult non-traumatic stressors do not: results from an online survey study

Paul Frewen , Jenney Zhu  and Ruth Lanius 

Department of Psychiatry, Western University, London, Canada

ABSTRACT

This retrospective survey study compared the differential risk of lifetime traumatic stressors, so-called “non-traumatic stressors” experienced over the past year, referring to life events that do not meet the criteria for A1 traumatic events, and adverse childhood experiences (ACE) on severity of DSM-5 versus ICD-11 PTSD, Complex PTSD (CPTSD), and dissociative subtype of PTSD (D-PTSD) symptoms among 418 participants recruited online. In pairwise analyses, all stress types were associated with all outcomes. However, multiple regression and factor analyses indicated that whereas the number of different lifetime traumatic events participants reported experiencing, together with the number of ACE participants experienced, uniquely predicted DSM-5 PTSD, D-PTSD and ICD-11 PTSD and CPTSD symptoms, the number of non-traumatic stressors they experienced during the last year did not. Moreover, ACE uniquely predicted all outcomes even after accounting for lifetime traumatic stress. These results provide further support for the particularly high risk of lifetime traumatic stressors and ACE in predicting trauma and stressor-related symptoms. Future research directions are discussed.

Los factores estresantes traumáticos durante la vida y las experiencias adversas en la infancia predicen de manera única el TEPT concurrente, el TEPT complejo y los síntomas del subtipo disociativo del TEPT, mientras que los Estrésos No Traumáticos recientes en la adultez no lo hacen: resultados de un estudio de encuesta *online*

Este estudio de encuesta retrospectiva comparó el riesgo diferencial de los factores estresantes traumáticos durante la vida, los llamados “factores estresantes no traumáticos” experimentados durante el último año, refiriéndose a los eventos de la vida que no cumplen con los criterios para eventos traumáticos A1 y las experiencias adversas en la infancia (ACE) sobre la gravedad del TEPT en el DSM-5 frente al ICD-11, el TEPT complejo (TEPT-C) y síntomas del subtipo disociativo del TEPT (TEPT-D) entre 418 participantes reclutados *online*. En los análisis por pares, todos los tipos de estrés se asociaron con todos los resultados. Sin embargo, la regresión múltiple y los análisis factoriales indicaron que, mientras que la cantidad de eventos traumáticos diferentes durante la vida que los participantes reportaron haber experimentado, junto con la cantidad de ACE que los participantes experimentaron, predicen inequívocamente los síntomas concurrentes, no fue así con la cantidad de factores estresantes no traumáticos que experimentaron durante el último año. Además, ACE predijo de forma única todos los resultados incluso después de tener en cuenta el estrés traumático durante la vida. Estos resultados brindan apoyo adicional para predecir el riesgo de síntomas relacionados al trauma y estrés, siendo particularmente alto en estresores traumáticos durante la vida y ACE. Se discuten futuras direcciones de investigación.

终身创伤性压力源和不良儿童经历独特地预测并发性PTSD，复杂型PTSD和PTSD分离亚型，而近期成人非创伤性压力源则没有预测性：来自一个在线调查研究的结果

这个回溯性调查研究通过在线招募的418名被试，比较他们过去一年中所经历的“非创伤性压力源”（指不符合A1创伤事件标准的生活事件）和负性童年经历（ACE），导致DSM-5 v. s. ICD-11 PTSD、复杂型PTSD（CPTSD）和PTSD的分离亚型（D-PTSD）的风险差异。在成对分析中，所有压力类型与所有结果变量相关。然而，多元回归和因子分析表明，被试报告的正在经历的不同终身创伤事件的数量，和被试经历过的ACE的数量，一起独特地预测了并发症。但他们去年经历的非创伤性压力源的数量没有预测作用。此外，甚至在控制了终身创伤性压力之后，ACE也能独特地预测所有结果变量。这些结果进一步支持了终身

ARTICLE HISTORY

Received 2 August 2018
Revised 29 January 2019
Accepted 2 April 2019

KEYWORDS

PTSD; dissociation; trauma; stress; adverse childhood experiences (ACE)

PALABRAS CLAVES

TEPT; disociación; trauma; estrés; experiencias adversas en la infancia

关键词

PTSD; 分离; 创伤; 压力; 负性童年经历

HIGHLIGHTS

Lifetime traumatic stressors and adverse childhood experiences uniquely predicted concurrently measured severity of DSM-5 and ICD-11 PTSD, Complex PTSD (CPTSD), and dissociative subtype of PTSD (D-PTSD) symptoms among 418 participants recruited online. In comparison, so-called “non-traumatic stressors” experienced over the past year, referring to life events that do not meet the criteria for A1 traumatic events, failed to predict any of these outcomes.

创伤性压力源和ACE在预测创伤和压力源相关症状方面显示出特别高的风险性。文中讨论了未来的研究方向。

Determining the types of life events that are associated with the strongest risk for trauma- and stressor-related symptoms and disorders such as post-traumatic stress disorder (PTSD) is a central task for psychotraumatology. According to the DSM-5 A1 criterion, a traumatic life event is defined to involve either exposure to death or threatened death, actual or threatened serious physical injury, or sexual violence, either to the self directly, to another person that one witnesses firsthand, to a loved one even if not witnessed directly, or experienced in the course of professional duties (e.g. first-responders) (American Psychiatric Association, 2013). Approximately 70% of adults worldwide will experience at least one such event within their lifetime (Kessler et al., 2017), with the most frequent being the sudden unexpected death of a loved one and witnessing the death or serious injury of someone close. However, the adequacy of the DSM-5 definition to encompass the range of life experiences that often result in the development of PTSD symptoms has long been debated (e.g. Brewin, Lanius, Novac, Schnyder, & Galea, 2009; Rosen & Lilienfeld, 2008; Weathers & Keane, 2007).

In particular, there exists other stressful life circumstances that do not meet the DSM-5 criteria for traumatic events that nevertheless have also previously been identified as risk factors for the development of PTSD symptoms (e.g. reviews by Larson & Pacella, 2016; Rosen & Lilienfeld, 2008). These non-traumatic stressors include events related to housing, employment, finances, marriage, and illness. For example, certain studies have suggested that non-traumatic stressors could lead to PTSD symptoms even to the same extent as traumatic stressors (Mol et al., 2005). However, a meta-analysis of 22 study samples conducted by Larson and Pacella (2016) found that while so-called “non-traumatic” life stressors were indeed associated with PTSD symptom severity, a somewhat stronger association existed between traumatic events and PTSD symptoms (Hedges $g = .18$, small effect size). Although the previously discussed research suggests each of traumatic and non-traumatic events can lead to the development of PTSD symptoms, at least four significant limitations in this literature remain to be addressed.

First, studies comparing groups exposed to traumatic versus non-traumatic stressors have tended to utilise between-groups designs. In these studies, participants are often placed into a “trauma” group if they have experienced at least one event meeting the A1 criterion or are instead placed into a “stress” group if they have not. An alternative approach involves asking participants to self-report their “most traumatic event” which is then

coded as either traumatic or non-traumatic by researchers and the association with PTSD symptoms is assessed. This approach comparing PTSD symptom responses in individuals who have experienced traumatic stressors or non-traumatic stressors, as illustrated in the extant literature, fails to account for the fact that exposure rates to traumatic and non-traumatic stressors are typically correlated. In other words, individuals who have experienced traumatic events are likely to have increased experience of non-traumatic stressors as well (e.g. Irwin, 1999). As such, results of the comparison of individuals who have histories of traumatic and non-traumatic events may be affected by the fact that experience of traumatic and non-traumatic events are positively correlated. Therefore, a limitation of the existing research includes a lack of assessment as to whether exposure rates to both traumatic and non-traumatic stressors are each *uniquely* predictive of PTSD symptoms when assessed *within the same individuals*, for example, using multiple regression.

A second limitation of the existing literature includes the developmental timing of trauma and stressor exposure, specifically whether occurring during childhood or experienced across the lifespan, which has rarely been considered within such studies. Individuals who have experienced adverse childhood experiences (ACE) are more likely to experience stress and trauma later in life as well (Arata, 2002; Cloitre, Tardiff, Marzuk, Leon, & Portera, 1996; Widom, Czaja, & Dutton, 2008). Furthermore, given that the timing of trauma experienced during childhood has previously been demonstrated to be particularly impactful (Ehring & Quack, 2010), a multiple regression approach is better suited to assess the relative impact of traumatic and stressful life events experienced across the lifespan in comparison with adverse childhood experiences.

A third limitation of existing literature includes understanding how best to conceptualise PTSD symptoms, which remains a hotly debated question to date (e.g. Brewin et al., 2009; Cloitre et al., 2009; Shevlin et al., 2018; Maercker et al., 2013; Van Hooff, McFarlane, Baur, Abraham, & Barnes, 2008). Several alternative proposals to defining symptoms of PTSD have been made besides the 20 symptoms of DSM-5. Among these alternative proposals include the International Classification of Diseases (ICD-11) PTSD and Complex PTSD (CPTSD) diagnoses (Brewin et al., 2017; Maercker et al., 2013), and the two (derealisation and depersonalisation) symptoms of the DSM-5 dissociative subtype of PTSD (D-PTSD; e.g. Lanius, Brand, Vermetten, Frewen, & Spiegel, 2012). As each of these proposals defines PTSD using different symptoms, it is relevant to understand whether traumatic

vs. non-traumatic stressors pose a differential risk for each of these PTSD-related outcomes. Specifically, whether the stronger risk potentially accorded to traumatic stress exposure vs. non-traumatic stress exposure in predicting DSM-5 PTSD symptoms also holds for these other trauma- and stressor-related symptom domains remains unknown.

A final limitation may include the potential artificiality of distinguishing between traumatic vs. non-traumatic stressors which, surprisingly, has not been well validated to date. Further validation of the conceptual distinction between traumatic vs. non-traumatic stressors could be found through factor analysis of endorsement rates across both traumatic and non-traumatic stressors. In other words, if an independent statistical procedure such as latent variable modelling tends to empirically validate the conceptual distinction between traumatic vs. non-traumatic stressors, greater validity for the distinction is brought to bear as a risk factor for PTSD symptoms.

The objective of the present study was, therefore, to contribute to our further understanding of the role of traumatic vs. non-traumatic stressors as risk factors for trauma- and stressor-related symptoms and address the aforementioned limitations in the extant literature. Specifically, our study accounted for the likelihood that individuals with histories of traumatic stress exposure are also likely to have experienced non-traumatic stress by using a multiple regression and factor analytic approach. Furthermore, the present study assessed not only lifetime traumatic events in addition to recent adult non-traumatic stressors but also examined ACE as risk factors for trauma- and stressor-related symptoms. As such, we assessed the relative risk of lifetime trauma exposure and ACE as compared to adult recent non-traumatic stress exposure for DSM-5 PTSD. The present study also compared ICD-11 PTSD, ICD-11 CPTSD, and DSM-5 D-PTSD symptoms in a general population sample of convenience to compare various different outcomes associated with different diagnostic criteria. Moreover, in an exploratory factor analysis, we examined the latent constructs potentially underlying exposure rates to different kinds of life stressors to identify whether the common conceptual distinction between traumatic vs. non-traumatic stressors could be validated.

1. Method

1.1. Participants

A sample of $N = 418$ participants (48.33% male; $M_{\text{age}} = 36.47$, $SD = 12.62$) were recruited online via CrowdFlower (now Figure Eight Inc.), an online crowdsourcing platform. Although San Francisco based, an inclusion criterion for participation was that

participants were presently residing in Canada at the time of the study. Inclusion criteria further mandated that participants were at least 18 years of age; there were no exclusion criteria. A slight majority of individuals in the present sample self-identified their ethnicity as Caucasian (52.63%), although the sample was ethnically diverse, with the next most frequently endorsed ethnicities including Native American (15.07%) and South East Asian (6.22%). The majority of participants had completed post-secondary education (i.e. College diploma, undergraduate or graduate university degree) (59.57%); 21.29% had completed some college or university courses, 17.46% had completed high school only, and 1.67% had not completed high school. The majority of participants were either married (41.15%), in common law relationships (5.98%) or were single (39.95%); 5.98% were divorced, 2.87% were separated and 1.20% were widowed; 1.67% indicated 'other' and 1.19% declined to answer the question. Although the majority of participants reported that they were not currently suffering from a psychological disorder as diagnosed by a physician or psychologist at the time of participation (63.63%), 17.70% reported that they were suffering as such at the time of participation, while 14.59% of the participants reported that they had received such a diagnosis sometime in the past but were not currently suffering (a small number of participants declined to answer this question [4.07%]).

1.2. Materials

1.2.1. Measures of trauma- and stressor-exposure

1.2.1.1. Life experiences survey (LES). Participant experience of non-traumatic life stressors during adulthood was measured using 47 event descriptions taken from the LES (Sarason, Johnson, & Siegel, 1978). In the present study, response options queried whether participants had never experienced the event, experienced it 'at least once', or experienced the event 'many times' within the past year, scored 0, 1, and 2, respectively. Sample life events included 'marriage', 'detention in jail or comparable institution' and 'death of spouse'. This measure has demonstrated adequate test-retest reliability in previous studies (e.g. $\alpha = .63$ and $\alpha = .64$; Sarason et al., 1978).

1.2.1.2. Life events checklist for DSM-5 (LEC-5).

Participant experience of 17 different potentially traumatic events typically experienced during adulthood was assessed using the LEC-5 (Weathers et al., 2013). Sample items from the LEC-5 include 'natural disaster (for example, flood, hurricane, tornado, earthquake)' and 'fire or explosion'. Sufficient reliability for this measure has been demonstrated in prior studies ($r = .82$, $p < .001$; Gray, Litz, Hsu, & Lombardo, 2004). The present study assessed the frequency of lifetime exposure using the same

response options described for the LES to afford direct comparability between endorsement rates.

1.2.1.3. Adverse childhood experiences questionnaire. Participant exposure to 10 different categories of abuse, neglect and caregiver dysfunction experienced during childhood (i.e. before the age of 18) was assessed using the Adverse Childhood Experiences Questionnaire (Felitti et al., 1998). Sample items included ‘Did a parent or other adult in the household often or very often swear at, insult, or put you down?’ and ‘Did a parent or other adult in the household often or very often push, grab, shove, or slap you?’ Participants were asked to indicate the frequency with which they had experienced each category of the event before age 18 using the same response scale used for the LES and LEC-5. This measure has demonstrated acceptable reliability in prior research (e.g. $\alpha = .88$; Murphy et al., 2013).

1.2.2. Measures of trauma- and stressor-symptoms

1.2.2.1. The post-traumatic stress disorder checklist for DSM-5 (PCL-5). PTSD symptoms according to the DSM-5 were assessed using the PCL-5 (Blevins, Weathers, Davis, Witte, & Domino, 2015). This 20-item measure is scored on a 5-point Likert Scale ranging from 0 to 4 using the following response options: ‘Not at all’, ‘A little bit’, ‘Moderately’, ‘Quite a bit’, and ‘Extremely’ over the past month. The PCL-5 has demonstrated high internal consistency in prior research (e.g. $\alpha = .95$; Blevins et al., 2015); in the current study $\alpha = .97$. The PCL-5 was supplemented with two additional items used to assess derealisation and depersonalisation validated by Frewen, Brown, Steuwe, and Lanius (2015). These additional items read as follows: ‘Out of Body Experience – Feeling detached or separated from your body, for example, feeling like you are looking down on yourself from above, or like you are an outside observer of your own body’ (i.e. measuring depersonalisation) and ‘Feeling like what you are experiencing is not real – A change in the way you perceive or experience the world or other people, so that things seem dreamlike, strange, or unreal’ (i.e. measuring derealisation).

1.2.2.2. International trauma questionnaire (ITQ).

PTSD and CPTSD symptoms according to the ICD-11 were assessed using the ITQ (Cloitre, Roberts, Bisson, & Brewin, 2015; Shevlin et al., 2018). Although the original 28-item version of the scale was administered, scoring for the currently recommended 12-item version was followed (Cloitre et al., 2018). Of note, however, participants were only administered the ITQ symptom items and not items assessing functional impairment, and the same 0 (Not at all) to 4 (Extremely) response scale used for the PCL-5 was used to afford direct comparability between endorsement rates. The 28-item ITQ has demonstrated satisfactory internal reliability for the

PTSD and CPTSD items in prior research (e.g. Hyland et al., 2017; reviewed by Brewin et al., 2017). As per current recommendations based on an item response theory analysis (Cloitre et al., 2018), two survey items constituted assessment of each of the ICD-11 PTSD re-experiencing, avoidance, and hyperarousal criteria (i.e. six items in total), while two independent items were used to assess each of the ICD-11 CPTSD symptoms measuring (1) affective dysregulation, (2) negative self-concept, and (3) disturbances in relationships (i.e. six items in total). As a minor revision in order to afford direct comparability to the ITQ PTSD items, CPTSD items that were originally written in the first-person language were re-written in the third-person (e.g. the affective dysregulation item “When I am upset, it takes me a long time to calm down” was rewritten “When upset, taking a long time to calm down”, while the negative self-concept item “I feel like a failure” was rewritten “Feeling like a failure”). Internal reliability has not been reported previously for the newly derived 12-item measure; excellent reliability was demonstrated for both the PTSD ($\alpha = .90$) and CPTSD ($\alpha = .92$) items in the current study.

1.2.2.3. Dissociative subtype of post-traumatic stress disorder scale (DSPS).

In addition to the two items developed by Frewen et al. (2015) for administration with the PCL-5, D-PTSD was also assessed using the DSPS (Wolf et al., 2017). This self-report questionnaire consisted of 15 items that referenced the participant’s self-reported ‘worst’ traumatic experience. Again, the 0 (Not at all) to 4 (Extremely) response scale used for the PCL-5 was utilised for the DSPS to afford direct comparability between endorsement rates. The DSPS demonstrated satisfactory internal reliability in the previous research (e.g. $\alpha = .85$; Wolf et al., 2017); in the current study $\alpha = .98$.

1.3. Procedure

The present study was approved by the research ethics board of the representing institution. Individuals were invited to participate in the present study by viewing an advertisement presented on the recruitment website CrowdFlower (<https://www.figure-eight.com/>) as a strategy effectively equivalent to MTurk which has been used extensively in recent years for psychological research (Chandler & Shapiro, 2016). Interested participants were invited to read a letter of information and provided consent. Afterwards, participants were redirected to the online questionnaire administered by a secure website operated by the principal investigator. Participants were able to skip any survey items they did not wish to answer without penalty or loss of compensation. Compensation for research participation was provided in the amount of \$1.00 (CAD) to each participant’s CrowdFlower account.

1.4. Scoring and statistical analysis

Questionnaires were scored in accordance with the recommendations of the instrument authors. In addition, to address the potential item overlap between the LES and LEC-5, the LES was also scored after removing all items describing life events that would potentially meet criterion A for PTSD under the DSM-5, as well as those directly overlapping items included on the LEC-5 and thereby deemed potentially traumatic in nature, in agreement among at least two of the three authors providing blind ratings; as such, six LES items were removed, referring to death of i) spouse, ii) a close family member, iii) or close friend, or serious illness or injury to iv) self, v) a close family member, or vi) friend. Moreover, to address the same concern, the LEC-5 was scored without the last item referring to “any other stressful event or experience” in case such might not reference a traumatic life event. Simple pairwise and linear multiple regressions determined the significance of associations between variables. Multicollinearity was investigated among the predictors in multiple regressions with reference to the obtained tolerance and variance inflation factor where values of $<.20$ to $<.10$ and >5 to >10 are commonly interpreted as positive, respectively, acknowledging that such rules of thumb are often false positive (e.g. O’Brien, 2007). To determine whether outcomes (PCL-5, ITQ, DSPS) were more or less strongly correlated with each pairwise risk factor (LES, LEC-5, and ACE), the method recommended by Meng, Rosenthal, and Rubin (1992) was used. Principal axis factor analysis determined whether unique latent variables underlied the raw item endorsements of the LES, LEC-5, and ACE surveys, and predicted scores on each factor were subsequently determined by multiple regression based on item loadings. Latent factors were interpreted in order of obtained eigenvalue if they met two additional constraints decided a priori to ensure interpretability: 1) they explained at minimum 3% unique variance, and 2) they exhibited loadings $>.30$ by a minimum of three items. To reduce the risk of type-1 error,

statistical significance was determined with $p < .01$ (2-tailed) throughout.

2. Results

2.1. Descriptive statistics referring to traumatic and stressful life events and post-traumatic symptoms

Table 1 reports the descriptive statistics referring to each life event risk factor type and outcome variable. Participants experienced up to 44 different kinds of adult LES non-traumatic stressors in the past year ($M = 20.27$, $SD = 10.23$), up to the maximum 17 different kinds of lifetime LEC-5 traumatic stressors measured ($M = 4.23$, $SD = 4.44$), and up to the maximum 10 different kinds of ACE measured ($M = 2.93$, $SD = 3.05$). All but five participants (98%) reported experiencing at least one LES non-traumatic stressor in the past year, 341 participants (82%) reported experiencing at least one lifetime LEC-5 traumatic stressor, and 287 participants (70%) reported experiencing at least one ACE. Of those who experienced at least one LES non-traumatic stressor, 83% ($n = 341$) reported experiencing at least one lifetime LEC-5 traumatic stressor, and 287 participants (70%) reported experiencing at least one ACE. Of those who experienced at least one LEC-5 lifetime traumatic stressor, all reported experiencing at least one LES non-traumatic stressor, and 261 participants (77%) reported experiencing at least one ACE. Finally, of those who reported experiencing at least one ACE, all reported experiencing at least one LES non-traumatic stressor in the past year, and 91% ($n = 261$) reported experiencing at least one lifetime LEC-5 traumatic stressor.

Approximately 23% met probable DSM-5 PTSD diagnosis on the PCL-5 based on DSM-5 criteria where a symptom was considered present if endorsed with at least “moderate” frequency (i.e. an item score of 2; $n = 98$), 42% of whom additionally met probable D-PTSD diagnosis ($n = 41$) as measured by a score of at least three on at least one of the two items developed by Frewen et al. (2015). Further, by the recommended scoring rules for the ITQ, approximately 18% met probable ICD-11 PTSD diagnosis ($n = 75$), 79% of whom additionally met probable ICD-11 CPTSD diagnosis ($n = 59$), giving an overall CPTSD sample prevalence of 14%. Of the 98 participants who met probable DSM-5 PTSD, 59 (60%) met probable ICD-11 PTSD criteria on the ITQ, while 52 (53%) met probable ICD-11 CPTSD criteria on the ITQ. Of the 75 participants who met probable ICD-11 criteria for PTSD, 59 met probable DSM-5 criteria (79%). Finally, of those 59

Table 1. Zero-order correlations.

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1. LES	26.34	15.35							
2. LEC-5	5.39	6.28	.744						
3. ACE	4.08	4.56	.578	.693					
4. PCL-5	21.51	18.82	.473	.576	.633				
5. ITQ-PTSD	5.42	5.58	.514	.605	.615	.898			
6. ITQ-CPTSD	6.50	6.32	.376	.464	.569	.830	.758		
7. DSPS	9.38	13.58	.526	.710	.629	.785	.824	.800	
8. D-PTSD	1.36	2.14	.446	.609	.586	.770	.692	.625	.846

Notes. All correlations are statistically significant at $p < .01$.

participants who met probable ICD-11 criteria for CPTSD, 52 met probable DSM-5 criteria (88%).

2.2. Prediction of Posttraumatic Symptoms from Lifetime Traumatic Stress, ACE, and Stressful Life Events

Table 1 also reports observed correlations between measures; very similar results were found when potential item overlap between the LES and LEC-5 was addressed (see Table S1). Level of exposure to adult recent non-traumatic stress (LES) was correlated with the level of lifetime traumatic exposure (LEC-5; $r = .744$) as well as the level of early exposure to ACE ($r = .578$), the latter two of which were also correlated ($r = .693$). Level of exposure to adult recent non-traumatic stressors correlated moderately with severity of all trauma- and stressor symptom measures ($.376 \leq r \leq .526$), while moderate to strong correlations were observed between symptom severity and the level of lifetime trauma exposure ($.464 \leq r \leq .710$) as well as the level of exposure to ACE ($.569 \leq r \leq .633$). Referring to the PCL-5, PTSD symptoms were more strongly correlated with LEC-5 than LES ($Z = 3.51$), and were more strongly correlated with ACE than LES ($Z = 4.46$), but were not more strongly correlated with ACE than LEC-5 ($Z = 1.93$). Referring to the ITQ, PTSD symptoms were more strongly correlated with LEC-5 than LES ($Z = 3.20$), and were more strongly correlated with ACE than LES ($Z = 2.84$), but were again not more strongly correlated with ACE than LEC-5 ($Z = 0.34$). Further, referring to response to the ITQ, CPTSD symptoms were more strongly correlated with LEC-5 than LES ($Z = 2.78$), and were more strongly correlated with ACE than LES ($Z = 5.80$); moreover, CPTSD symptoms were more strongly correlated with ACE than LEC-5 ($Z = 3.26$). Referring to DSPTS, D-PTSD symptoms were more strongly correlated with LEC-5 than LES ($Z = 6.96$), and were more strongly correlated

with ACE than LES ($Z = 3.39$), but were more strongly correlated with LEC-5 than ACE ($Z = 3.01$). Contrary to this, however, referring to the two D-PTSD items appended to the PCL-5, while D-PTSD symptoms were again more strongly correlated with LEC-5 than LES ($Z = 5.58$), and were more strongly correlated with ACE than LES ($Z = 3.75$), D-PTSD were not more strongly correlated with LEC-5 than ACE (or vice versa; $Z = 0.77$). Table S2 comprehensively reports the correlation observed between each life event description and all outcomes for exploratory purposes.

Multiple regression equations, including lifetime trauma exposure, ACE, and adult non-traumatic stress as predictors, accounted for between 33% and 54% of the variance in trauma- and stressor-related symptoms (see Table 2). Analysis of tolerance and VIF was not indicative of multicollinearity among the predictors (see Table 2). In all models, only level of ACE, in the case of ITQ-CPTSD, or both lifetime traumatic stressors and ACE, in the case of all other outcomes, were significant predictors, whereas the level of adult recent non-traumatic stressors was not (see Table 2). Very similar results were found when potential item overlap between the LES and LEC-5 was addressed (see Table S3).

2.3. Factor analysis of traumatic and non-traumatic stressful life events

Principal axis factor analysis yielded three interpretable factors collectively accounting for 36% of the variance in lifetime traumatic and recent non-traumatic stress exposure and ACE. Factor loadings are reported in Table S4. In brief, the first factor accounted for 26% of the variance and exhibited high loadings from all event descriptions; it was therefore labelled “combined traumatic and non-traumatic stressors across the lifespan”. The second factor accounted for 6% of the variance and exhibited positive loadings from many adult non-traumatic stressors, but

Table 2. Multiple regression utilising raw score predictors.

Criterion	ΔR^2	Predictor	Unstandardised coefficients		Standardised coefficients		Collinearity statistics	
			<i>b</i>	<i>SE</i>	<i>Beta</i> (β)	<i>t</i>	<i>Tol.</i>	<i>VIF</i>
PCL-5	*.438	LES	.050	.068	.041	0.737	.444	2.252
		LEC-5	.725	.191	.239	3.801*	.346	2.892
		ACE	1.840	.191	.239	8.612*	.514	1.946
ITQ PTSD	*.445	LES	.034	.020	.093	1.672	.440	2.272
		LEC-5	.256	.057	.283	4.519*	.345	2.902
		ACE	.450	.063	.367	7.153*	.516	1.939
ITQ CPTSD	*.333	LES	<.001	.025	<.001	0.004	.435	2.300
		LEC-5	.136	.070	.135	1.958	.341	2.936
		ACE	.660	.078	.475	8.450*	.513	1.950
DSPTS	*.541	LES	-.041	.045	-.046	-0.911	.435	2.300
		LEC-5	1.208	.124	.557	9.729*	.341	2.936
		ACE	.806	.139	.270	5.788*	.513	1.950
D-PTSD	*.426	LES	-.008	.008	-.057	-1.003	.444	2.252
		LEC-5	.149	.022	.428	6.706*	.350	2.853
		ACE	.154	.025	.326	6.239*	.523	1.913

* $p < .01$ (two-tailed). Model constants (B, SE) were as follows: PCL-5 (8.843, 1.455), ITQ PTSD (1.353, 0.430), ITQ CPTSD (3.077, 0.533), DSPTS (0.702, 0.950), and D-PTSD (0.182, 0.168). Tol: Tolerance; VIF: Variance Inflation Factor.

Table 3. Multiple regression utilising factor score predictors.

Criterion	ΔR^2	Predictor	Unstandardised coefficients		Standardised coefficients	
			<i>b</i>	<i>SE</i>	<i>Beta</i>	<i>t</i>
PCL-5	*.459	Factor 1	9.768	.755	.516	12.930*
		Factor 2	-2.503	.783	-.128	-3.198*
		Factor 3	8.471	.814	.416	10.405*
ITQ PTSD	*.415	Factor 1	3.044	.233	.542	13.041*
		Factor 2	-0.799	.242	-.137	-3.302*
		Factor 3	1.919	.252	.317	7.628*
ITQ CPTSD	*.380	Factor 1	2.552	.269	.405	9.481*
		Factor 2	-0.832	.282	-.126	-2.946*
		Factor 3	3.090	.294	.448	10.491*
DSPS	*.446	Factor 1	7.152	.497	.581	14.403*
		Factor 2	-3.515	.521	-.272	-6.750*
		Factor 3	2.454	.543	.182	4.518*
D-PTSD	*.347	Factor 1	0.997	.084	.512	11.904*
		Factor 2	-0.486	.087	-.241	-5.605*
		Factor 3	0.491	.090	.234	5.436*

* $p < .01$ (two-tailed). Factors were labelled as follows: "Combined traumatic and non-traumatic stressors across the lifespan" (Factor 1), "Life events limited to non-traumatic stressors occurring in adulthood" (Factor 2), and "Child traumatic stressors" (Factor 3). Model constants (*B*, *SE*) were as follows: PCL-5 (19.330, 0.731), ITQ PTSD (4.806, 0.226), ITQ CPTSD (5.834, 0.265), DSPS (7.221, 0.488), and D-PTSD (1.078, 0.081).

negative loadings from many lifetime traumatic stressors and ACE; it was therefore labelled "*recent life events limited to non-traumatic stressors occurring in adulthood*". Finally, the third factor accounted for 4% of the variance, exhibiting high loadings specific to ACE and can, therefore, be labelled likewise.

Predicted scores on each factor were then regressed on each outcome with results reported in Table 3; correlations among these predicted scores confirm their independence: factor 1 with factor 2, $r = -.007$, factor 1 with factor 3, $r = -.003$, and factor 2 with factor 3, $r = .003$. It can be seen that "*combined traumatic and non-traumatic stressors across the lifespan*" uniquely positively predicted all outcomes, as did "*adverse childhood experiences*", that is, both latent variables were associated with increased symptoms. In striking contrast, "*recent life events limited to non-traumatic stressors occurring in adulthood*" uniquely *negatively* predicted outcomes, that is, were associated with *decreased* symptoms.

3. Discussion

This is the first study to evaluate the relative risk of lifetime traumatic stress and adverse childhood experiences (ACE), on the one hand, and adult recent non-traumatic stress on the other, for trauma- and stressor-related symptoms, specifically DSM-5 PTSD symptoms, ICD-11 PTSD and CPTSD symptoms, and D-PTSD subtype symptoms. When examined independently, all three categories of life events were associated with all four categories of outcomes, although effect sizes varied considerably, whereby all outcomes were more strongly correlated to the level of lifetime traumatic stress and ACE than to non-traumatic stressors experienced over the past year. Further, when examined conjointly via multiple regression, only lifetime traumatic stressors and ACE were uniquely predictive of outcomes, while

non-traumatic stressors experienced over the previous year failed to uniquely account for outcomes. Moreover, when analysed via principal axis factor analysis, the latent variable "*recent life events limited to non-traumatic stressors occurring in adulthood*", in other words, a factor uniquely associated with the endorsement of non-traumatic stressors in the absence of lifetime traumatic stressors or ACE, was associated with a *lower* than average severity of trauma- and stressor-related symptoms, whereas lifetime traumatic stress exposure and ACE predicted increased trauma and stressor-related symptoms.

Taken together, the present results contribute to the ongoing debate surrounding the likelihood of non-traumatic stressors leading to post-traumatic symptoms in a similar fashion to A1 traumatic events (e.g. Larsen & Pacella, 2016). While some previous research has supported the ability of non-traumatic events having an impact similar to A1 traumatic events, the results reported here serve to further validate the conceptual distinction between traumatic and non-traumatic stressors. Whereas a myriad of negative life events involving housing, employment, finances, marriage, and illness clearly represent and contribute to risk factors for trauma- and stressor-related symptoms, the results of the present study suggest that they do so primarily when occurring in the presence of traumatic life events. In other words, such events may not uniquely contribute to the concurrent prediction of post-traumatic symptoms beyond knowledge of the traumatic life events people have experienced or in the absence of traumatic life events. Moreover, the present study found this rule applied generally, whether post traumatic responses were assessed in reference to the symptom criteria of DSM-5 PTSD and D-PTSD or of ICD-11 PTSD and CPTSD. All outcomes appeared to be most predicted by the level of lifetime traumatic stressors and ACE participants had reported having experienced in the

past, rather than the level of so-called non-traumatic stressors they had recently experienced.

Previous research has debated whether non-traumatic stressors differed from traumatic stressors in meaningful ways (e.g. Van Hooff et al., 2008). Results of the present factor analysis demonstrated all tested life events could be categorised into three distinct latent constructs, illustrating that the co-occurrence of traumatic stressors with non-traumatic stressors across the lifespan, the occurrence of non-traumatic stressors in the absence of traumatic stressors, and the occurrence of ACE specifically, each represents fundamentally different measurements of life stress. In fact, results from the factor analysis highlight that so-called “non-traumatic” stressors experienced during adulthood differ in their impact depending on whether they are experienced in the presence (first factor) or absence (second factor) of a lifetime history of traumatic stressors and ACE. Furthermore, the finding that only “*combined traumatic and non-traumatic stressors across the lifespan*” and “*adverse childhood experiences*” uniquely positively predicted all measured post-traumatic outcomes, whereas “*recent life events limited to non-traumatic stressors occurring in adulthood*” uniquely *negatively* predicted all measured outcomes, strongly calls into question previous claims that non-traumatic stressors are likely to lead to post-traumatic responses in the absence of lifetime traumatic stress exposure or ACE.

Our results also serve to further validate the unique developmental significance of ACE. Both multiple regressions utilising raw scores and factor scores showed that ACE uniquely predicted post-traumatic outcomes even beyond knowledge of participants’ lifetime traumatic stress exposure or “*combined traumatic and non-traumatic stressors across the lifespan*”. This finding is consistent with considerable previous research that has found ACE to be particularly impactful on various outcomes in adulthood, including subsequent development of post-traumatic responses (Bremner, Southwick, Johnson, Yehuda, & Charney, 1993; McCutcheon et al., 2010). These findings are especially important in light of the fact that neither the LES or LEC-5 – conventional measures that are routinely administered in stress and trauma research – take any explicit account of ACE, which represents a major limitation of both measures. As such, future practices in trauma assessment should consider taking into account traumatic and stressful life experiences taking place during childhood in an attempt to obtain a more comprehensive understanding of the possible causes and consequences of people’s experience of distress and dissociation. In fact, ICD-11 CPTSD symptoms as measured by the ITQ were predicted only by the ACE questionnaire; an association with the number of lifetime traumatic life events fell short of statistical significance ($p = .051$). Moreover, CPTSD symptoms were more strongly correlated with ACE

than with lifetime traumatic stress exposure, whereas the opposite was true for D-PTSD symptoms as measured by the DSPS.

4. Limitations and future directions

A limitation of the present study includes its retrospective nature. Retrospective recall of participant trauma history could be susceptible to natural memory inaccuracies which may be especially compromised among participants who have experienced ACE (e.g. Danby, Brubacher, Sharman, Powell, & Roberts, 2017). Conduct of longitudinal designs could address this concern. Another study limitation includes the variable and non-specific developmental timing of exposure to traumatic and non-traumatic events. For example, traumatic stressors were assessed for lifetime exposure whereas non-traumatic stressors were assessed for exposure over the past year in accordance with conventions in the literature. Moreover, assessment of ACE was undertaken broadly (i.e. in general before the age of 18) rather than specific to distinct developmental periods. Past research has demonstrated stress encountered during childhood can lead to enduring brain changes that may serve as a risk factor for psychiatric disorders depending on the developmental timing of trauma exposure (e.g. Teicher et al., 2003). More specifically, research has found sensitive periods of development during which ACE experienced during this time is particularly impactful for development of PTSD (e.g. Ogle, Rubin, & Siegler, 2013; Schalinski et al., 2016). An additional limitation includes the lack of inclusion of the ITQ functional impairment items. Future research may wish to include these items to better understand the associations between different types of traumatic and non-traumatic life events and functional impairment. Another limitation of the present study includes the use of a convenience sample obtained via the internet, which may not be fully representative of the general population. Future avenues of research may wish to replicate these results using other samples such as mental health help-seeking individuals. A final consideration is that life event checklist approaches fail to capture contextual information regarding trauma and stressor exposure and are generally considered to be less reliable and valid in comparison with structured interviews (Harkness & Monroe, 2016).

Future avenues of research may wish to separately compare trauma experienced across various developmental periods during childhood as risk factors for post-traumatic responses beyond PTSD, for example for CPTSD and D-PTSD. Assessment of participant experience of neglectful parenting and attachment style presents another avenue for future studies. Parenting practices play an important role in the development of child attachment styles (Bowlby, 1980) and prior research has demonstrated anxious, avoidant, and disorganised attachment styles were positively

associated with a number of trauma experiences and dissociative symptoms (Nilsson, Holmqvist, & Jonson, 2011).

5. Conclusions

The present study compared lifetime trauma, ACE, and adult non-traumatic stressors as risk factors for DSM-5 PTSD and D-PTSD as well as ICD-11 PTSD and CPTSD. Analysis of raw score predictors indicated both ACE alone, or ACE together with lifetime trauma, independently predicted all outcomes, whereas recent adult non-traumatic stressors did not uniquely predict any outcome, and were associated with an overall lower correlation effect size with all outcomes. Moreover, factor analysis identified three distinct factors, specifically *combined traumatic and non-traumatic stressors across the lifespan*, *life events limited to non-traumatic stressors occurring in adulthood*, and *adverse childhood experiences*, providing evidence that these categories of life events are fundamentally different. In contrast to life events limited to recent non-traumatic stressors occurring in adulthood, which alone were associated with an overall lower severity of trauma- and stressor-related symptoms, the present study provides support for combined traumatic and non-traumatic stressors across the lifespan, and ACE, as being uniquely and particularly impactful on the development of symptoms associated with trauma and stressor-related disorders.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This work was supported by the Canadian Institutes of Health Research (CIHR), Institute of Neurosciences, Mental Health and Addiction [366867].

ORCID

Paul Frewen  <http://orcid.org/0000-0003-3578-4776>

Jenny Zhu  <http://orcid.org/0000-0001-8589-5322>

Ruth Lanius  <http://orcid.org/0000-0002-3758-1393>

References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: American Psychiatric Association.
- Arata, C. M. (2002). Child sexual abuse and sexual revictimization. *Clinical Psychology: Science and Practice*, 9(2), 135–164.
- Blevins, C. A., Weathers, F. W., Davis, M. T., Witte, T. K., & Domino, J. L. (2015). The posttraumatic stress disorder checklist for DSM-5 (PCL-5): Development and initial psychometric evaluation. *Journal of Traumatic Stress*, 28(6), 489–498.
- Bowlby, J. (1980). *Attachment and loss: Loss, sadness and depression* (Vol. 3). New York, NY: Basic Books.
- Bremner, J. D., Southwick, S. M., Johnson, D. R., Yehuda, R., & Charney, D. S. (1993). Childhood physical abuse and combat-related posttraumatic stress disorder in vietnam veterans. *American Journal of Psychiatry*, 150(2), 235–239.
- Brewin, C. R., Cloitre, M., Hyland, P., Shevlin, M., Maercker, A., & Bryant, R. A., ... Reed, G. M. (2017). A review of current evidence regarding the ICD-11 proposals for diagnosing PTSD and complex PTSD. *Clinical Psychology Review*, 58, 1–15
- Brewin, C. R., Lanius, R. A., Novac, A., Schnyder, U., & Galea, S. (2009). Reformulating PTSD for DSM-V: Life after criterion A. *Journal of Traumatic Stress*, 22(5), 366–373.
- Chandler, J., & Shapiro, D. (2016). Conducting clinical research using crowdsourced convenience samples. *Annual Review of Clinical Psychology*, 12, 53–81.
- Cloitre, M., Roberts, N. P., Bisson, J. I., & Brewin, C. R. (2015). *The International Trauma Questionnaire (ITQ)*. Unpublished Measure.
- Cloitre, M., Shevlin, M., Brewin, C. R., Bisson, J. I., Roberts, N. P., & Maercker, A., Karatzias, T & Hyland, P. (2018). The international trauma questionnaire: Development of a self-report measure of ICD-11 PTSD and complex PTSD. *Acta Psychiatrica Scandinavica*, 138(6), 536–546
- Cloitre, M., Stolbach, B. C., Herman, J. L., Kolk, B., Pynoos, R., Wang, J., & Petkova, E. (2009). A developmental approach to complex ptsd: Childhood and adult cumulative trauma as predictors of symptom complexity. *Journal of Traumatic Stress*, 22(5), 399–408.
- Cloitre, M., Tardiff, K., Marzuk, P. M., Leon, A. C., & Portera, L. (1996). Childhood abuse and subsequent sexual assault among female inpatients. *Journal of Traumatic Stress*, 9(3), 473–482.
- Danby, M. C., Brubacher, S. P., Sharman, S. J., Powell, M. B., & Roberts, K. P. (2017). Children's reasoning about which episode of a repeated event is best remembered. *Applied Cognitive Psychology*, 31(1), 99–108.
- Ehring, T., & Quack, D. (2010). Emotion regulation difficulties in trauma survivors: The role of trauma type and PTSD symptom severity. *Behavior Therapy*, 41(4), 587–598.
- Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., ... Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experience (ACE) study. *American Journal of Preventive Medicine*, 14, 245–258.
- Frewen, P. A., Brown, M. F. D., Steuwe, C., & Lanius, R. A. (2015). Latent profile analysis and principal axis factoring of the DSM-5 dissociative subtype. *European Journal of Psychotraumatology*, 6(1), 26406–26416.
- Gray, M. J., Litz, B. T., Hsu, J. L., & Lombardo, T. W. (2004). Psychometric properties of the life events checklist. *Assessment*, 11(4), 330–341.
- Harkness, K. L., & Monroe, S. M. (2016). The assessment and measurement of adult life stress: Basic premises, operational principles, and design requirements. *Journal of Abnormal Psychology*, 125(5,7), 727–745.
- Hyland, P., Murphy, J., Shevlin, M., Vallières, F., McElroy, E., Elklit, A., ... Cloitre, M. (2017). Variation

- in post-traumatic response: The role of trauma type in predicting ICD-11 PTSD and CPTSD symptoms. *Social Psychiatry and Psychiatric Epidemiology*, 52(6), 727.
- Irwin, H. J. (1999). Violent and nonviolent revictimization of women abused in childhood. *Journal of Interpersonal Violence*, 14(10), 1095–1110.
- Kessler, R. C., Aguilar-Gaxiola, S., Alonso, J., Benjet, C., Bromet, E. J., Cardoso, G., ... Koenen, K. C. (2017). Trauma and PTSD in the WHO world mental health surveys. *European Journal of Psychotraumatology*, 8 (sup5), 1353383.
- Lanius, R. A., Brand, B., Vermetten, E., Frewen, P. A., & Spiegel, D. (2012). The dissociative subtype of posttraumatic stress disorder: Rationale, clinical and neurobiological evidence, and implications. *Depression and Anxiety*, 29(8), 701–708.
- Larsen, S. E., & Pacella, M. L. (2016). Comparing the effect of DSM -congruent traumas vs. DSM -incongruent stressors on PTSD symptoms: A meta-analytic review. *Journal of Anxiety Disorders*, 38, 37–46.
- Maercker, A., Brewin, C. R., Bryant, R. A., Cloitre, M., van Ommeren, M., Reed, G. M., ... Reed, G. M. (2013). Diagnosis and classification of disorders specifically associated with stress: Proposals for ICD-11. *World Psychiatry: Official Journal of the World Psychiatric Association (WPA)*, 12, 198–206
- McCutcheon, V. V., Sartor, C. E., Pommer, N. E., Bucholz, K. K., Nelson, E. C., Madden, P. A. F., & Heath, A. C. (2010). Age at trauma exposure and PTSD risk in young adult women. *Journal of Traumatic Stress*, 23 (6), 811–814.
- Meng, X.-L., Rosenthal, R., & Rubin, D. B. (1992). Comparing correlated correlation coefficients. *Psychological Bulletin*, 111(1), 172–175.
- Mol, S. S. L., Arntz, A., Metsemakers, J. F. M., Dinant, G., Vilters-Van Montfort, P. A. P., & Knottnerus, J. A. (2005). Symptoms of post-traumatic stress disorder after non-traumatic events: Evidence from an open population study. *The British Journal of Psychiatry*, 186(6), 494–499.
- Murphy, A., Steele, M., Dube, S. R., Bate, J., Bonuck, K., Meissner, P., ... Steele, H. (2013). Adverse childhood experiences (ACEs) questionnaire and adult attachment interview (AAI): Implications for parent child relationships. *Child Abuse & Neglect*, 38(2), 224–233.
- Nilsson, D., Holmqvist, R., & Jonson, M.; Närsjukvården i centrala Östergötland, Linköpings universitet, Filosofiska fakulteten, Barn- och ungdomspsykiatriska kliniken. (2011). Self-reported attachment style, trauma exposure and dissociative symptoms among adolescents. *Attachment & Human Development*, 13(6), 579–595.
- O'Brien, R. M. (2007). A caution regarding rules of thumb for variance inflation factors. *Quality & Quantity*, 41, 673–690.
- Ogle, C. M., Rubin, D. C., & Siegler, I. C. (2013). The impact of the developmental timing of trauma exposure on PTSD symptoms and psychosocial functioning among older adults. *Developmental Psychology*, 49(11), 2191–2200.
- Rosen, G. M., & Lilienfeld, S. O. (2008). Posttraumatic stress disorder: An empirical investigation of core assumptions. *Clinical Psychology Review*, 28, 837–868.
- Sarason, I. G., Johnson, J. H., & Siegel, J. M. (1978). Assessing the impact of life changes: Development of the life experiences survey. *Journal of Consulting and Clinical Psychology*, 46(5), 932–946.
- Schalinski, I., Teicher, M. H., Nischk, D., Hinderer, E., Müller, O., & Rockstroh, B. (2016). Type and timing of adverse childhood experiences differentially affect severity of PTSD, dissociative and depressive symptoms in adult inpatients. *BMC Psychiatry*, 16, 295.
- Shevlin, M., Hyland, P., Roberts, N. P., Bisson, J. I., Brewin, C. R., & Cloitre, M. (2018). A psychometric assessment of disturbances in self-organization symptom indicators for ICD-11 complex PTSD using the international trauma questionnaire. *European Journal of Psychotraumatology*, 9(1), 1419749.
- Shevlin, M., Hyland, P., Vallières, F., Bisson, J., Makhshvili, N., Javakhishvili, J., ... Roberts, B. (2018). A comparison of DSM-5 and ICD-11 PTSD prevalence, comorbidity and disability: An analysis of the ukrainian internally displaced person's mental health survey. *Acta Psychiatrica Scandinavica*, 137(2), 138–147.
- Teicher, M. H., Andersen, S. L., Polcari, A., Anderson, C. M., Navalta, C. P., & Kim, D. M. (2003). The neurobiological consequences of early stress and childhood maltreatment. *Neuroscience and Biobehavioral Reviews*, 27(1), 33–44.
- Van Hooff, M., McFarlane, A. C., Baur, J., Abraham, M., & Barnes, D. J. (2008). The stressor criterion-A1 and PTSD: A matter of opinion? *Journal of Anxiety Disorders*, 23(1), 77–86.
- Weathers, F. W., Blake, D. D., Schnurr, P. P., Kaloupek, D. G., Marx, B. P., & Keane, T. M. (2013). The life events checklist for DSM-5 (LEC-5). *Instrument available from the National Center for PTSD*. Retrieved from www.ptsd.va.gov
- Weathers, F. W., & Keane, T. M. (2007). The criterion A problem revisited: Controversies and challenges in defining and measuring psychological trauma. *Journal of Traumatic Stress*, 20, 107–121.
- Widom, C. S., Czaja, S. J., & Dutton, M. A. (2008). Childhood victimization and lifetime revictimization. *Child Abuse & Neglect*, 32(8), 785–796.
- Wolf, E. J., Mitchell, K. S., Sadeh, N., Hein, C., Fuhrman, I., Pietrzak, R. H., & Miller, M. W. (2017). The dissociative subtype of PTSD scale: Initial evaluation in a national sample of trauma-exposed veterans. *Assessment*, 24(4), 503–516.