

# Complex Posttraumatic Stress Disorder in Patients Exposed to Emotional Neglect and Traumatic Events: Latent Class Analysis

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The inclusion of a complex posttraumatic stress disorder (CPTSD) diagnosis in the 11th revision of the *International Classification of Diseases* reflects growing evidence that a subgroup of individuals with PTSD also suffer from disturbances in emotion regulation, interpersonal skills, and self-concept, which together are termed “disturbances in self-organization” (DSO). Although CPTSD is assumed to result from exposure to complex traumatic events, emotional neglect may be an important contributor. This study investigated the presence of CPTSD, defined by endorsement of PTSD and DSO symptoms in a clinical postwar generation sample. The sample consisted of 218 patients who had been exposed to emotional neglect in childhood, a subgroup of whom had also been exposed to potentially traumatic events. Using items from the Harvard Trauma Questionnaire and the Brief Symptom Inventory, a latent class analysis revealed two classes: high endorsement of almost all CPTSD symptoms ( $n = 83$ ; 38.1%) and low endorsement of all CPTSD symptoms ( $n = 135$ ; 61.9%). Contrary to our hypothesis, no DSO-only class was found. The R3step method showed gender and number of traumatic events to be significant predictors of class membership. Compared to the low endorsement class, individuals in the CPTSD class were more likely to be female,  $p = .013$ , and to report a higher number of traumatic experiences,  $p < .001$ . The potential intermediary role of emotional neglect in the development of DSO and CPTSD is discussed.

The optimal classification and etiology of mental disorders associated with traumatic stress will continue to be subject to discussion. In the past several decades, various authors have argued for a separate diagnosis of complex posttraumatic stress disorder (CPTSD; e.g., Cloitre, Garvert, Brewin, Bryant, & Maercker, 2013; Herman, 1992; Van der Kolk, Roth, Pelcovitz, & Spinazzola, 2005; World Health Organization [WHO], 1992). Researchers have pointed out that victims of cumulative interpersonal trauma (e.g., domestic violence, torture, genocide, or

childhood abuse), particularly when experienced in childhood, frequently report a broader constellation of symptoms than those which were captured by the posttraumatic stress disorder (PTSD) criteria in the third (*DSM-III*) and fourth (*DSM-IV*; and text revision, *DSM-IV-TR*) editions of the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association [APA], 1980, 1994, 2000) or the 10th edition of the *International Classification of Diseases (ICD-10*; WHO, 1992). Several studies have lent support to a complex CPTSD diagnosis and have shown that cumulative interpersonal childhood trauma can result in complex posttraumatic symptomatology. This includes PTSD symptoms as well as disturbances in affect regulation (e.g., dissociation), self-perception (e.g., feelings of worthlessness and shame), and interpersonal relationships (e.g., not feeling close to others; Cloitre, Miranda, Stovall-McClough, & Han, 2005; McLean, Toner, Jackson, Drocher, & Stuckless, 2006).

In the fifth edition of the *DSM (DSM-5)*, a number of symptoms regarded as “complex” were incorporated into the

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standard PTSD diagnosis (e.g., persistent and exaggerated negative beliefs or expectations about oneself, others, or the world; persistent negative emotional state; and reckless or self-destructive behavior; APA, 2013; Friedman, 2013). This resulted in a PTSD diagnosis that consists of 20 symptoms, which are divided into the four clusters of intrusion, avoidance, cognition and mood, and arousal and reactivity. In contrast, the WHO proposed the inclusion of separate, streamlined PTSD and CPTSD diagnoses in the *ICD-11* (First, Reed, Hyman, & Saxena, 2015). As such, in the *ICD-11*, the classification of PTSD has been condensed and a CPTSD diagnosis has been added. The resulting PTSD diagnosis consists of three core elements: reexperiencing, avoidance, and sense of current threat (Maercker et al., 2013). The CPTSD diagnosis requires presence of these three core elements as well as three other symptom domains described as *disturbances in self-organization* (DSO; e.g., Knefel, Garvert, Cloitre, & Lueger-Schuster, 2015). Disturbances in self-organization consist of disturbances in affect regulation (e.g., depersonalization, derealization, and emotional numbing), negative self-concept (e.g., persistent negative thoughts about oneself, feelings of guilt and shame), and disturbances in interpersonal relationships (e.g., including difficulties in feeling close to others and maintaining emotional engagement; Maercker et al., 2013).

In both diagnostic manuals, PTSD arises from exposure to potentially traumatic events, including actual or threatened death, serious injury, or sexual violence. According to the *ICD-11*, CPTSD “may develop after exposure to an event or series of events of an extreme and prolonged or repetitive nature, that is experienced as extremely threatening or horrific, and from which escape is difficult or impossible” (WHO, 2018). Such events, also known as “complex traumas,” may include childhood sexual or physical abuse, genocide campaigns, war, and torture (Courtois & Ford, 2009). However, many survivors of repeated traumatic events do not develop CPTSD (e.g., Ter Heide, Mooren, & Kleber, 2016), and survivors of single traumatic events at a later age can also report disturbances in the regulation of affect, self-perception, and interpersonal functioning (e.g., Ford, Stockton, Kaltman, & Green, 2006). In short, individuals with CPTSD symptomatology do not always report a history of complex trauma exposure, which suggests that other factors may contribute to the development of CPTSD.

An important topic of interest in the CPTSD literature is whether a lack of “facilitative relationships with caregivers” (Ford, 2009, p. 45) or emotional neglect make an essential contribution to the development of CPTSD and, in particular, to DSO (Scheeringa & Zeanah, 2001; Van Ee, Sleijpen, Kleber, & Jongmans, 2013). Experiences such as war or domestic violence may be accompanied by the absence of a secure environment and the emotional availability of caregivers, which can lead to emotional neglect. Also, parents’ trauma-related mental disorders (such as PTSD, depression, or general anxiety disorder) can lead to psychological problems through

dysfunctional child–parent interactions, when parents become emotionally and functionally unavailable to their children (Davidson & Mellor, 2001; Schechter et al., 2010). Several studies have suggested that experiences of emotional neglect in particular contribute to DSO by limiting opportunities for children to learn emotion regulation and interpersonal skills and develop healthy self-perceptions (Cloitre et al., 2005; Dvir, Ford, Hill, & Frazier, 2014; Schechter et al., 2010).

Knowing whether or not emotional neglect contributes to the development of CPTSD is crucial, as this information may inform the appropriate treatment strategy. For the treatment of PTSD symptoms, trauma-focused treatments, such as prolonged exposure therapy, are the current treatments of choice (APA, 2017). However, DSO symptoms are often conceptualized as deficits in emotion regulation and interpersonal skills that may not be alleviated by trauma-focused treatment alone and thus may need supplemental skills training (Cloitre et al., 2012). Hence, for accurate diagnosis, treatment, and prevention of CPTSD, it is important to investigate whether or not emotional neglect contributes to the development of CPTSD symptomatology.

Latent class analyses (LCAs) have frequently been used to examine the co-occurrence of *ICD-11* CPTSD symptoms in trauma-exposed individuals, and some of these analyses have included an examination of experiences of emotional neglect. In a study by Karatzias et al. (2017) of trauma-exposed, treatment-seeking individuals, LCA revealed two classes: CPTSD and PTSD. Comparisons of the two groups showed that all types of childhood trauma (i.e., physical abuse, physical neglect, sexual abuse, emotional abuse, and emotional neglect) were reported significantly more frequently in the CPTSD class compared to the PTSD class, but effect sizes were highest for emotional neglect and emotional abuse. Similarly, in a sample of women exposed to childhood abuse, Cloitre, Garvert, Weiss, Carlson, and Bryant (2014) found that, out of four classes (CPTSD, PTSD, borderline personality disorder, and low symptoms), a history of emotional neglect was marginally more prevalent in the CPTSD class although this difference was not statistically significant. Thus, two LCAs have pointed to a meaningful connection between CPTSD and emotional neglect in trauma-exposed samples. However, given that these studies were conducted with samples characterized primarily by trauma exposure and only secondarily by emotional neglect, the question remains as to whether emotional neglect in itself suffices for the development of DSO or whether trauma exposure is a prerequisite for the development of such symptoms. In order to investigate this question, the present study conducted an LCA with a sample characterized primarily by childhood emotional neglect.

In this study, we aimed to investigate the endorsement of CPTSD symptoms in a sample of patients who had been exposed to emotional neglect in childhood, some of whom had also been exposed to one or more traumatic events. Our goal was to examine whether or not we would find distinct classes of individuals with a shared set of either only DSO symptoms, only PTSD symptoms, or all CPTSD symptoms, as have

other researchers (Elklit, Hyland & Shevlin, 2014; Karatzias et al., 2017; Perkonig et al., 2015), and whether or not class membership could be predicted by the presence and number of traumatic events. Emotional neglect is assumed to play a role in the development of DSO and, thus, in an emotionally neglected sample, we expected that patients who had not been or were minimally exposed to traumatic events would endorse DSO but not PTSD symptoms and that patients exposed to multiple traumatic events would endorse both DSO and PTSD symptoms. Consequently, we expected that we would not find a class of individuals who would report PTSD symptoms without DSO symptoms. Thus, we expected to find two classes that differed in severity and form (CPTSD vs. DSO only) and that multiple traumatic events would emerge as a significant predictor in CPTSD class membership.

## Method

### Procedure and Participants

Data were collected at Foundation Center '45, a mental health center in the Netherlands that specializes in diagnosing and treating the psychosocial consequences of war, persecution, profession-related traumatic events, and other complex traumatic events. The current sample consisted of 218 individuals who sought treatment for psychological problems they attributed to having been raised by caregivers traumatized by war, such as World War II. Patients participated in a treatment program specifically developed for the so-called "postwar generation." In a prior study conducted with this population, the majority of patients were described at intake as emotionally neglected (Stolwijk, 2015). These findings echo the general description of the postwar generation as being emotionally neglected (e.g., Krell, Suedfeld, & Soriano, 2004). As part of the routine diagnostic procedure, all individuals referred to the treatment program filled out several questionnaires. Informed consent was signed by those who were willing to share their results for research purposes. Upon consultation, the medical ethics committee of Foundation Center '45 stated that no review of the ethical merits of the study was needed because assessments were conducted primarily for diagnostic purposes within the institution and only secondarily for data analysis. Data were collected between 2007 and 2014, and complete data were available for 218 individuals.

The mean age of participants was 53.2 years ( $SD = 7.4$ ; range: 30.5–68.2 years), and 114 participants were women (52.3%). The majority of individuals ( $n = 179$ ; 82.1%) were born in the Netherlands. Regarding trauma history, 155 participants (71.1%;  $n = 9$  with missing data) reported having experienced or witnessed one or more traumatic events, with an average number of 3.4 events ( $SD = 3.7$ ) for the total sample. The events most frequently reported were being close to death ( $n = 73$ ; 33.5%), rape or sexual abuse ( $n = 54$ ; 24.8%), and unnatural death of a family member or friend ( $n = 49$ ; 22.5%).

## Measures

**Trauma exposure.** The Harvard Trauma Questionnaire (HTQ; Mollica et al., 1992) is an extensively validated self-report instrument that assesses traumatic experiences and PTSD symptoms based on the *DSM-IV* criteria. In the first part of the HTQ, respondents are asked whether they have experienced, witnessed, or heard of 20 types of traumatic events. The second part consists of 16 items that assess the presence and severity of PTSD symptoms in the past week, which respondents rate on a 4-point scale ranging from 1 (*not at all*) to 4 (*extremely*). Internal consistency of the scale in the present study was high (Cronbach's  $\alpha = .91$ ). For each individual, a total number of traumatic event types (range: 0–20) was calculated by counting the number of event types that were self-experienced or witnessed.

**Psychological symptoms.** The Brief Symptom Inventory (BSI; Derogatis, & Spencer, 1993) is a well-validated 53-item self-report clinical rating scale (De Beurs & Zitman, 2005). The BSI comprises nine symptom subscales: Somatization, Obsessive–Compulsive Symptoms, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation, and Psychoticism. Items are scored on a 5-point Likert scale ranging from 0 (*not at all*) to 4 (*extremely*). Internal consistency of the scale was high in the present study (Cronbach's  $\alpha = .96$ ).

**ICD-11 diagnoses.** Items from the HTQ and BSI were used to investigate the presence of PTSD and DSO symptoms according to *ICD-11* criteria. Item selection for PTSD and DSO symptomatology was based on Cloitre et al. (2013) and Knefel and Lueger-Schuster (2013). The selected items are depicted in Table 1.

To enable an LCA, item scores from the BSI and HTQ were recoded into symptom presence (1) or absence (0). As described in studies by Cloitre et al. (2013) and Knefel and Lueger-Schuster (2013), a BSI symptom was classified as present when it was rated 2 (*moderately*) or higher, and an HTQ symptom was classified as present when it was rated 3 (*quite a bit*) or higher. To endorse PTSD symptoms according to *ICD-11*, respondents needed to report intrusions, flashbacks, or nightmares (HTQ Items 1, 2, or 3) accompanied by a strong physical or emotional reaction (HTQ Item 16), avoidance of internal or external reminders (HTQ Items 11 or 15), and sense of threat (HTQ Items 6 or 9). For CPTSD, respondents needed to endorse the criteria for PTSD as well as at least one symptom from all three DSO elements: affect dysregulation (HTQ Item 10 or BSI Items 13 or 20), negative self-concept (BSI Items 50 or 52), and interpersonal problems (HTQ Item 4 or BSI Item 44). For DSO only, respondents needed to endorse one symptom of all three DSO elements but not meet criteria for PTSD. The variables for PTSD and DSO should be treated as proxies because our dataset contained no variables that assessed functional

**Table 1**  
*Items Representing Posttraumatic Stress Disorder (PTSD) and Disturbances in Self-Organization (DSO)<sup>a</sup>*

Construct and Cluster	Items
<b>PTSD</b>	
Reexperiencing	HTQ 1: Intrusive memories HTQ 2: Flashbacks HTQ 3: Nightmares HTQ 16: Emotional/physical reaction
Avoidance	HTQ 11: Avoiding external reminders HTQ 15: Avoiding internal reminders
Sense of threat	HTQ 6: Enhanced startle HTQ 9: Feeling on guard
<b>DSO</b>	
Affect dysregulation	HTQ10: Irritable/Anger outbursts BSI 13: Temper outbursts BSI 20: Feelings easily hurt
Negative self-concept	BSI 50: Worthlessness BSI 52: Guilt
Interpersonal problems	HTQ 4: Feeling detached from others BSI 44: Never feeling close

*Note.* HTQ = Harvard Trauma Questionnaire; BSI = Brief Symptom Inventory.  
<sup>a</sup>Complex PTSD is the summation of PTSD and DSO symptoms.

impairment, the presence of which is required for classification of an *ICD-11* CPTSD diagnosis.

### Data Analysis

First, we used SPSS (Version 23.0) to examine how many participants endorsed criteria for PTSD only, CPTSD, and DSO only, following the algorithm for *ICD-11*. Second, using Mplus (Version 7.2; Muthén & Muthén, 1998–2012), an LCA of PTSD and DSO symptoms was performed. We chose LCA rather than another method of data analysis for three main reasons: (a) to enable a comparison of findings with those reported in previous LCAs of CPTSD symptoms; (b) to increase clinical relevance—LCA is one of the few analyses that is person-centered rather than symptom-centered, and it is based on categorical variables using only clinically relevant severity levels; and (c) to enable the inclusion of a larger number of variables than is common in latent profile analysis.

To avoid local likelihood maxima, 1,000 and 100 random sets of starting values were requested in the first and second steps of optimization, respectively, and 50 initial stage iterations were used. In LCA, the most parsimonious (one-class) model was initially fitted, followed by models with increasing numbers of

classes to determine the number of latent classes that best fit the data. A comparative model fit was assessed using the following indices: Akaike information criterion (AIC), Bayesian information criterion (BIC), and sample size–adjusted Bayesian information criterion (SS-BIC). For each of these statistics, a lower value would indicate a better data fit. Furthermore, the bootstrapped likelihood ratio test (BLRT) and the entropy index were used. A significant BLRT indicates that the computed model has better data fit than the model with one fewer class. To avoid local likelihood maxima in each bootstrap sample, 500 bootstrap samples with 50 and 20 sets of starting values were requested in the first and second step of optimization, respectively. The entropy statistic was used to evaluate the overall quality of classification, which is considered adequate when entropy values are greater than .80 (Celeux & Soromenho, 1996; Geiser, 2013; Van der Schoot, Sijbrandij, Winter, Depaoli, & Vermunt, 2017). Final latent class structure was determined based on the abovementioned statistics, clarity of interpretation, and model parsimony (Geiser, 2013; Little, 2013; Van der Schoot et al., 2017). Local independence of the “best” model was examined using the TECH 10 command and calculating the percentage of bivariate residuals that exceeded 1.96. Based on the final model, for each individual, a score was calculated to represent his or her most likely latent class membership.

Third, we investigated whether exposure to a traumatic event (yes or no) and the number of traumatic events could predict class membership while controlling for age and gender. Such analyses are usually conducted by combining the LCA with multinomial regression analysis. However, such an approach can be flawed because covariates may affect the latent class formation. Therefore, this analysis was carried out using the R3step method in Mplus, which includes a multinomial regression and enables the user to conduct all analyses at once in one model without the LCA losing its formation and meaning due to the influence of the covariates (Asparouhov & Muthén, 2013; Zhu, Steele, & Moustaki, 2017). In the first step, the final latent class model was predicted, without covariates. Second, the most likely latent class membership variable was created using the posterior distribution of Step 1. Finally, the most likely latent class membership variable was regressed on the covariates (exposure, number of traumatic events, age, and gender) which were included as auxiliary variables.

## Results

### Descriptive Statistics

When the *ICD-11* algorithm for PTSD was followed (i.e., the presence of the three core elements), 68 individuals (31.2 %) met criteria for PTSD. Of this group, 52 (23.9%) individuals also endorsed all DSO criteria and therefore met criteria for CPTSD; the remaining 16 individuals in this group (7.3%) met criteria for PTSD only. Among the individuals who did not meet the criteria for CPTSD or PTSD only, 43 (19.7%) endorsed all

Table 2  
Fit Indices for Best Fit Model Latent Class Analysis

Model	Log-likelihood	BIC	SS-BIC	AIC	BLRT <i>p</i>	VLMRT <i>p</i>	Entropy
1 class	-2,085.72	4,252.21	4,202.67	4,201.44			
2 class	-1,776.93	3,720.79	3,622.55	3,615.87	< .001	< .001	0.92
3 class	-1,738.38	3,729.83	3,580.89	3,570.76	< .001	.022	0.88
4 class	-1,704.92	3,749.07	3,549.43	3,535.85	< .001	.184	0.87

Note. BIC = Bayesian information criterion; SS-BIC = sample size-adjusted BIC; AIC = Akaike information criterion; BLRT = bootstrapped likelihood ratio test; VLMRT = Vuong-Lo-Mendell-Rubin adjusted likelihood ratio test.

three DSO criteria. The remaining 107 (49.1%) individuals did not endorse full criteria of any cluster.

### Latent Class Analysis

Table 2 presents the fit indices of the tested models. Only the two- and three-class solutions had both significant BLRT and VLMRT values. Moreover, when we tested models with four, five, or six classes, the fit indices worsened. Therefore, solutions after four classes were not further considered. Of the models with one-to-three classes, the two-class solution had higher entropy and lower BIC whereas the three-class solution had lower SS-BIC and AIC values; BIC tends to select more parsimonious models in comparison to AIC, as it uses a larger penalization term. Due to the minimal statistical differences between these models, the decision to use the two-class model was based on model parsimony and interpretative clarity. The three-class model did not result in clearly defined classes because two classes were interpretatively similar to one another. The four-class model was not chosen because the model was even less parsimonious and yielded an increasing BIC statistic and nonsignificant VLMRT (for graphs of the three-class and four-class models, please see Supplementary Figures S1 and S2). The two-class model revealed odds ratios (*ORs*) of item endorsement that were greater than 5.4 for all items except BSI Item 44 (not feeling close; *OR* = 2.8), which meant the classes were homogeneous, as well as classification prob-

abilities of greater than 0.98, which meant the classes were well-separated. An examination of local independence showed that 6.7% of the standard residuals were significant, indicating correlation of a small number of item pair endorsements.

Figure 1 provides an overview of the estimated symptom prevalence of PTSD and DSO symptoms in both classes. Class 1 (CPTSD class) included 83 (38.1%) individuals characterized by high probabilities of having both PTSD and DSO symptoms. Only nightmares (PTSD symptom) and the two affect dysregulation items that measure temper outbursts (DSO symptom) were relatively unlikely to occur among individuals within this class. The majority ( $n = 51$ ; 61.4%) of participants endorsed full criteria for CPTSD or full criteria for either PTSD ( $n = 9$ ; 10.8%) or DSO ( $n = 16$ ; 19.3%). A small group of individuals ( $n = 7$ ; 8.4%) endorsed some symptoms of PTSD or DSO but not enough to meet one of these clusters according to *ICD-11*.

Class 2 (low endorsement class) included 135 (61.9%) individuals and was characterized by low probabilities of symptoms. This class consisted mostly of individuals who had some PTSD or DSO symptoms but not enough to meet criteria for PTSD, CPTSD, or the DSO cluster ( $n = 100$ ; 74.1%). The second-largest group of individuals in Class 2 met criteria for DSO only ( $n = 27$ ; 20%), and a very small group of individuals met criteria for CPTSD ( $n = 1$ ; 0.7%) or PTSD ( $n = 7$ ; 5.2%).

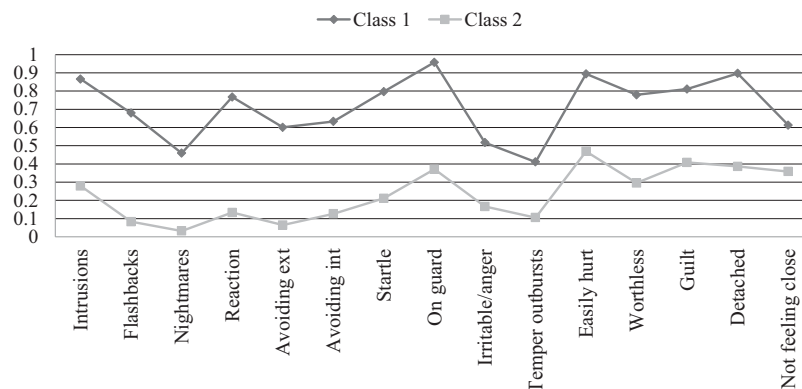


Figure 1. Estimated symptom prevalence for the two-class solution.

Table 3  
R3 Step Method

Variable	<i>B</i>	<i>SE</i>	95% CI	<i>p</i>
Sociodemographic predictors				
Gender	0.88	0.35	[0.16, 1.60]	.013
Age	0.01	0.02	[−0.03, 0.05]	.636
Trauma history				
Exposure (yes/no)	−0.05	0.51	[−1.11, 1.01]	.921
Number of traumatic events	0.26	0.07	[0.12, 0.40]	.000

We labelled Class 1 the CPTSD class because almost all PTSD and DSO symptoms had a high probability of being endorsed. Class 2 was labelled the low endorsement class because in this class, all symptoms had a low probability of endorsement. The two classes differed from each other only regarding symptom severity and not regarding form.

### Multinomial Regression

Table 3 shows the results of the multinomial regression using the R3step method. The R3step method in Mplus showed that when we controlled for all other variables, gender was a significant predictor for class membership. In the CPTSD class, individuals were more likely to be female,  $OR = 0.88$ , 95% CI [0.16, 1.60],  $p = .013$ . In this class, 60.2% of individuals were female, compared to 47.4% in the low endorsement class. The number of traumatic experiences an individual had faced also predicted class membership; individuals in the CPTSD class reported a higher number of traumatic experiences ( $M = 5.1$ ) compared to individuals in the low endorsement class ( $M = 2.4$ ),  $OR = 0.26$ , 95% CI [0.12, 0.40],  $p < .001$ . Age was not a predictor of class membership nor was exposure to a traumatic event.

### Discussion

In this sample of treatment-seeking individuals who had been exposed to emotional neglect during childhood, most of whom had also been exposed to potentially traumatic events, LCA revealed two classes. One class was characterized by a high probability of endorsement of symptoms of PTSD and DSO—together known as CPTSD—and one class was characterized by a low probability of endorsement of these symptoms, with a higher percentage of female participants and a higher number of traumatic experiences in the CPTSD class. These findings did not confirm our hypothesis that emotional neglect plays a pivotal part in the development of DSO. Based on the assumption that DSO can result from emotional neglect, we expected to find DSO symptoms without PTSD symptoms in a group of individuals who had been emotionally neglected and had not been physically or sexually abused. In this sample, we found DSO symptoms in one class only. This class was characterized by a high probability of all CPTSD symptoms (i.e., both PTSD and DSO). We did not find a class in which only DSO criteria

were endorsed and characterized by few or no traumatic events. This suggests that emotional neglect in itself is insufficient to lead to problems in self-esteem, emotion regulation, and interpersonal relationships, but rather, it is more likely that exposure to trauma interferes with the development of these faculties. It is, however, quite possible that emotional neglect plays a secondary role in the development of DSO by increasing the odds of DSO after trauma exposure in individuals who have been emotionally neglected. This has been supported in studies by Karatzias et al. (2017) and Cloitre et al. (2014), which point to a substantial influence of emotional neglect on the development of CPTSD in trauma-exposed individuals. In addition, the potential role of neglect also is suggested by the meta-analytical finding that lack of social support is the second strongest predictor of posttraumatic stress symptoms (Brewin, Andrews, & Valentine, 2000; Ozer, Best, Lipsey, & Weiss, 2003).

A similar pattern of two classes characterized by high probability of CPTSD versus low probability of CPTSD symptoms was found in a factor mixture model conducted by Wolf and colleagues (2015) using a sample of trauma-exposed military veterans. These researchers suggested that the two classes reflected the level of symptom severity rather than pointing to relevant symptom patterns. Following this line of reasoning, several researchers have argued that individuals do not develop discrete clinical disorders (Byllesby et al., 2017; Ruscio, Ruscio, & Keane, 2002). According to the network perspective, symptom associations within and between disorders are regarded as pairwise associations, with symptoms causing each other and being a byproduct of dimensional communality. The co-occurrence of PTSD and DSO symptoms is considered a set of direct associations between symptoms of distinct disorders. The connections between disorders are considered “bridges” in the comorbid network structure (Byllesby et al., 2017; Ruscio et al., 2002).

Building on this perspective, an alternative explanation for not finding a DSO-only class could be that the presence of DSO symptoms increased the risk of developing PTSD symptoms. Studies of predictors of PTSD have revealed that each of the three DSO criteria (i.e., disturbances in self-concept, interpersonal skills, and emotion regulation) are in and of themselves predictors of PTSD. For example, Bryant and Guthrie (2007) showed that negative appraisals about the self served as a risk factor for PTSD and accounted for 20% of the variance in PTSD



severity. Similarly, in meta-analyses on predictors of PTSD, problems with social relationships and emotion regulation have been found to be significant predictors of the development and maintenance of PTSD (Brewin et al., 2000; Ozer et al., 2003). In short, the overall high endorsement of DSO symptoms in the current sample might have put participants at an increased risk for the development of PTSD symptoms, thus rendering a DSO-only class unobservable.

The two-class solution found in this study differed from the three-class solution found by Elklit, Hyland, and Shevlin (2014) and the four-class solution found by Perkonig et al. (2015), which derived from samples characterized primarily by trauma exposure. Both of these studies supported the distinction between the PTSD diagnosis and CPTSD diagnosis, conforming to the *ICD-11* criteria. In our study, we did not find distinct symptom patterns of PTSD, CPTSD, and DSO. Interestingly, the fact that we did not find a PTSD-only class supports the idea that, when raised in a context of emotional neglect, individuals are more at risk of developing CPTSD than PTSD after exposure to a traumatic event.

In the current study, endorsement of all CPTSD symptoms was predicted by female gender and a history of exposure to a higher number of traumatic events. A gender effect between classes was also found in a study by Knefel et al. (2015), which revealed four classes (CPTSD, PTSD, DSO, and low symptoms). A gender effect was only found in the CPTSD and low symptoms classes, with female participants having significantly higher odds of being in the CPTSD class and lower odds of being in the low symptoms class in comparison to male participants. Knefel et al. (2015) suggested that the higher likelihood of reporting CPTSD among women may be comparable to the frequently reported gender differences in PTSD rates overall (e.g., Tolin & Foa, 2006). The effect of the number of traumatic events on class membership corresponds to the *ICD-11* literature which states that the recurrence of trauma exposure increases the risk of developing CPTSD. The same, however, may be said for PTSD given that recurrent trauma exposure has also been found to increase the risk of developing PTSD symptoms (Silove et al., 2014).

Among its strengths, this was the first study that investigated how symptom patterns conform to the *ICD-11* classifications of PTSD and CPTSD (PTSD and DSO) in a sample characterized by a history of emotional neglect. The study's setting (Foundation Center '45) provided a unique opportunity to examine the association between emotional neglect and CPTSD in a relatively homogeneous and large sample. Building on previous LCA studies of CPTSD, we used the statistically advanced R3Step method to investigate possible predictors of class membership.

The study design was limited by the small number of sociodemographic and clinical characteristics we had at our disposal; for example, we did not measure variables such as age and frequency of trauma exposure. It has been suggested that cumulative exposure to childhood interpersonal trauma increases the risk of developing symptoms of CPTSD as

compared to symptoms of PTSD (Hyland et al., 2017), but these were variables for which the current study did account. Emotional neglect was not determined in a structured way other than an intake interview nor could we apply any categorization that distinguished emotional neglect from emotional abuse or identified levels of severity of emotional neglect. Additionally, the operationalization of PTSD and CPTSD was limited by the use of items derived from different questionnaires that did not account for functional impairment, one of which (the BSI) is not explicitly trauma-related.

In sum, our study showed that emotional neglect in itself does not sufficiently account for the development of DSO. Further research should elaborate on this finding. It is especially important to conduct studies that elucidate the interplay between DSO and PTSD symptoms and the mediating role of emotional neglect: Does emotional neglect directly contribute to the development of CPTSD symptoms after trauma exposure, or does it contribute to the development of DSO which, in turn, increases the chance of developing CPTSD after trauma exposure? An important avenue for future research will be to examine the co-development of PTSD and DSO symptoms over time, using appropriate dynamic methods. Additionally, network analyses are needed to investigate the mutual causal associations between DSO and PTSD, focusing on the question of whether symptoms are caused by other symptoms rather than being reflective of latent classes. For a better understanding of the contribution of emotional neglect to the endorsement of CPTSD, future research may need to control for severity levels and symptom presence due to comorbid disorders. Co-occurring borderline personality disorder, for example, can explain high endorsement of DSO items (Cloitre et al., 2014). Although the prevalence of CPTSD in the postwar generation has never been examined using a clinical interview, it would be worthwhile to do so given that self-report measures tend to overestimate the prevalence of psychiatric disturbance (Richardson, Frueh, & Acierno, 2010). Finally, our sample size was small in relation to the number of indicators used, and we therefore recommend replication of our study in larger samples.

Altogether, in a sample of treatment-seeking patients with a history of childhood emotional neglect, we did not find a class of individuals with a high probability of having only DSO symptoms without PTSD symptoms. However, our findings do suggest that emotional neglect may put children at risk for developing CPTSD after trauma exposure, either because they lack the necessary emotional support to help them process traumatic experiences or because emotional neglect has prevented them from developing the necessary skills to do so. When exposed to traumatic situations, emotionally neglected children are less able to handle stressors, have more trouble finding interpersonal contact or support, and may have a disturbed self-concept, all important predictors for posttraumatic stress symptoms (Foa, Huppert, & Cahill, 2006; Vranceanu, Hobfoll, & Johnson, 2007). In an attempt to prevent CPTSD, providing emotional support to trauma-exposed children is crucial. Family emotional support may be supplemented by emotional support

provided through schools. In times of war, aid programs could focus not only on treating traumatic experiences but also on teaching children how to deal with feelings and emotions. Furthermore, when traumatized parents seek treatment for PTSD, therapists should pay attention to their developing children and their needs as well as to their patients' parenting skills.

In addition, because childhood emotional neglect may contribute to the development of CPTSD, alleviation of DSO symptoms may require additional interventions that target affect regulation, self-perception, and interpersonal skills. Guidelines for the treatment of PTSD in adults recommend that first-line treatment should be trauma-focused (International Society for Traumatic Stress Studies [ISTSS], 2015). However, in addition to or following trauma-focused treatment, patients may need to be offered interventions that promote healthy emotion regulation, self-perception, and interpersonal skills, which may need to be explicitly taught rather than assumed to spontaneously developing in patients once they are less burdened by posttraumatic stress.

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