Journal of Affective Disorders 265 (2020) 169–174

Contents lists available at ScienceDirect

Journal of Affective Disorders

journal homepage: www.elsevier.com/locate/jad

Research paper

The structure of ICD-11 PTSD and Complex PTSD in adolescents exposed to potentially traumatic experiences

Evaldas Kazlauskas[a,*], Paulina Zelviene[a], Ieva Daniunaite[a], Philip Hyland[b], Monika Kvedaraite[a], Mark Shevlin[c], Marylene Cloitre[d,e]

[a] Center for Psychotraumatology, Institute of Psychology, Vilnius University, Ciurlionio 29-203, Vilnius LT-01300, Lithuania
[b] School of Psychology, Maynooth University, Kildare, Ireland
[c] School of Psychology, Ulster University, Coleraine, UK
[d] National Center for PTSD Dissemination and Training Division, Veterans Affairs Palo Alto Health Care System, Palo Alto, CA, USA
[e] Department of Psychiatry and Behavioral Sciences, Stanford University, CA, USA

A B S T R A C T

Background: The recently released 11th edition of International Classification of Diseases (ICD-11) included new definitions of disorders specifically associated with stress. Complex post-traumatic stress disorder (CPTSD) was included in ICD-11 as a new trauma-related disorder which could develop following prolonged or reoccurring traumatic experiences. Research on ICD-11 PTSD and CPTSD validity and epidemiology has, so far, mostly been conducted in adult population. This is the first study to explore the construct validity of the Child and Adolescent version of International Trauma Questionnaire (ITQ-CA) as a measure of ICD-11 CPTSD symptoms.

Methods: The study was based on a sample of 932 adolescents from the general population aged 12–16 (M = 14.25, SD = 1.27) years exposed to various traumatic experiences. We used confirmatory factor analysis (CFA) and latent class analysis (LCA) to test validity of the ITQ-CA scores from adolescents.

Results: The best fitting measurement model included six correlated factors representing the three PTSD and three DSO symptom clusters. LCA analysis revealed four classes whose symptom profiles were reflective of 'CPTSD', 'PTSD', 'DSO only', and 'Baseline'.

Conclusions: Findings of the study provide support for the construct validity of the ICD-11 PTSD and CPTSD among adolescents.

1. Introduction

The recently released 11th edition of International Classification of Diseases (ICD-11) included a chapter '06: Disorders Specifically Associated with Stress' (World Health Organization, 2018). Complex post-traumatic stress disorder (CPTSD) was included in ICD-11 as a new trauma-related disorder which could develop following prolonged or reoccurring traumatic experiences (Brewin, 2019). CPTSD, according to the ICD-11, can be diagnosed if a person is trauma-exposed, meets all diagnostic criteria for PTSD (i.e., symptoms of (1) re-experiencing, (2) avoidance, and (3) sense of threat, and functional impairment associated with these symptoms), and has additional symptoms of disorganized self-organization (DSO) from three symptom clusters; (4) affective dysregulation; (5) negative self-concept and (6) disturbances in relationships, plus impairment in functioning associated with these DSO symptoms (World Health Organization, 2018).

Findings from around the world have provided empirical support for the construct validity of ICD-11 PTSD and CPTSD using multiple methodologies including latent class analysis, confirmatory factor analysis (Brewin et al., 2017), and network analysis (Knefel et al., 2019). Research on the epidemiology and construct validity of ICD-11 PTSD and CPTSD has, so far, primarily been conducted with adult populations (e.g., Ben-Ezra et al., 2018; Cloitre et al., 2019; Ho et al., 2019; Hyland et al., 2017; Kazlauskas et al., 2018; Shevlin et al., 2017). These studies have used the International Trauma Questionnaire (ITQ) (Cloitre et al., 2018; Karatzias et al., 2017) to measure symptoms of PTSD/CPTSD, as per the ICD-11 guidelines. Notably, very few studies have assessed the validity of these constructs among children and adolescents.

A recent study in Germany used archival data from 155 children and adolescents and found evidence of separate groups of children and adolescents whose symptoms were consistent with the distinction between PTSD and CPTSD (Sachser et al., 2017). More recently, Haselgruber et al. (2020) analyzed data from 136 Austrian foster adolescents who completed the adult version of the ITQ. Consistent with Sachser et al.'s results, distinct groups of adolescents with PTSD and CPTSD symptoms were identified (Sachser et al., 2017). Additionally, and in line with much of the adult literature (Brewin et al., 2017), the latent structure of the ITQ was best explained by two second-order factors (PTSD and DSO) explaining covariation between six first-order

* Corresponding author.
E-mail address: evaldas.kazlauskas@fsf.vu.lt (E. Kazlauskas).

https://doi.org/10.1016/j.jad.2020.01.061
Received 10 November 2019; Received in revised form 4 January 2020; Accepted 14 January 2020
Available online 15 January 2020
0165-0327/

factors (Re-experiencing, Avoidance, Threat, Affective Dysregulation, Negative Self-Concept, and Disturbed Relationships). To facilitate additional research with children and adolescents, a Child and Adolescent version of International Trauma Questionnaire (ITQ-CA) has been developed (Cloitre et al., 2018).

This is the first study to explore the factor structure of the ITQ-CA in a sample of adolescents from the general population. We used confirmatory factor analysis (CFA) to test four alternative models of the latent structure of the ITQ-CA based on findings from previous studies with the ITQ. We hypothesized that the latent structure of the ITQ-CA would be best explained by one of the two models that are consistently supported in the adult ITQ literature: either a correlated six factor model or a two factor higher-order model, both of which capture the distinction between PTSD and DSO symptoms. Second, we hypothesized consistent with the ICD-11 PTSD and CPTSD studies that distinct groups of adolescents would be identified with symptom profiles consistent with the distinction between PTSD and CPTSD.

2. Method

2.1. Participants and procedures

Data for this study was from the first wave of the longitudinal study *Stress and Resilience in Adolescence* (STAR-A) conducted by the Center for Psychotraumatology at Vilnius University in Lithuania. The STAR-A study was approved by the Ethics Committee for Psychological Research at Vilnius University. The data were collected using self-report measures from adolescents in 15 randomly selected public schools from four different regions across the country in Lithuania between March and June, 2019. In total, 1299 adolescents participated in the study.

Invitations to participate in the study were distributed to all 12 to 16-year-old adolescents and their parents from the selected schools. Written informed consent from at least one parent and the adolescent was obtained prior to data collection. In total, 56.8% of invited parents agreed to participate, 28.3% did not respond, and 14.9% declined the invitation. Adolescents were given options for participating in the study or declining. None of the adolescents with parental consent for enrolment in the study refused to participate. No incentives were offered for participation.

Data were collected by two experienced clinical psychologists with the assistance of six clinical psychology master program students who were trained and supervised during the data collection process. Data collection and coding were managed in a way that ensured the protection of participants' identity. None of the research team members or school staff could identify the respondent. Adolescents returned enclosed questionnaires into sealed envelopes without identifying information after filling in printed questionnaires marked with randomly assigned ID's. Data collectors were strictly instructed to ensure they did not see responses of participants' during data collection. All participants received printed leaflets with information about counseling services at their school and in their local community.

Participants were selected for data analysis if they met the inclusion criteria for this study: (1) aged 12–16 years, (2) reported exposure to at least one traumatic event, and (3) completed the ITQ-CA. In total, 934 adolescents (71.9%) reported exposure to at least one lifetime potentially traumatic event. Two of these participants were excluded because of missing data on all the ITQ-CA items.

The final sample of 932 adolescents include 56.8% girls (n = 529), with a mean age of 14.25 (SD = 1.27) years. The majority of participants were born in Lithuania (98.4%, n = 917) and were of Lithuanian nationality 93.1% (n = 869). Around two thirds (69.4%, n = 647) were from two-parent families, 29.5% (n = 275) were from single-parent families and 1.1% (n = 10) reported living with other relatives or were in foster care. Financial difficulties in families were reported by 42.6% (n = 396) of the sample; maternal unemployment was reported by 9.4% (n = 88); and paternal unemployment was reported by 5.0% (n = 47). Around one-third of the adolescents reported that at least one parent had a university degree (32.2%, n = 300), and 37.7% (n = 351) reported that both parents had a university degree.

2.2. Measures

International Trauma Questionnaire. The ITQ-CA (Cloitre et al., 2018) is a revision of the adult version of ITQ (Cloitre et al., 2018) in consultation with experts in child and adolescent trauma assessment. The ITQ-CA resembles the ITQ adult version in that it includes the same number of items, and the scoring scheme is the same. However, the formulation of the ITQ-CA items differs from the ITQ adult version in order to make items comprehensible to children and adolescents.

The ITQ-CA items were translated into Lithuanian and then back-translated into English and reviewed by the authors of the original measure. The ITQ-CA includes 12 symptom indicators. The three PTSD symptom clusters are assessed with six items as follows: (1) re-experiencing (Re) (2 items), (2) avoidance (Av) (2 items), and (3) sense of threat (SoT) (2 items). The three symptom clusters of self-organization (DSO) are measured with 6 items: affective dysregulation (AD) (2 items), negative self-concept (NSC) (2 items), and disturbances in relationships (DR) (2 items). Items of the ITQ-CA are presented in Table 1. All items are answered using a five-point Likert scale from 0 ('Never') to 4 ('Almost always') how much have they been bothered by each of the symptoms during the past month. Functional impairment items were listed twice following the PTSD symptoms, and the DSO symptoms, and participants were asked to indicate on a binary yes/no scale if both sets of symptoms were associated with problems in any of these areas (1) friends, (2) family, (3) school, (4) other important areas, such as hobbies, and (5) general happiness. The internal reliability of the total ITQ-CA scores was good (α = 0.87), as were the internal reliability estimates for the PTSD (α = 0.79) and DSO (α = 0.86) subscale scores.

Lifetime trauma exposure. Lifetime traumatic exposure was assessed using the 14-item traumatic events checklist from the Child and Adolescent Trauma Screen (CATS) (Sachser et al., 2017). The checklist assesses exposure to events such as physical or sexual violence, exposure to death or injury, sudden or violent death of a close one, etc. (see Table 2). Participants were considered exposed to traumatic events if they disclosed experiencing at least one of the events from the checklist. A summed total score of exposure to multiple traumatic life events was calculated with potential scores ranging from 0 to 14.

2.3. Data analysis

The CFA and LCA models were conducted using Mplus 8.2, and IBM SPSS Statistics 25 was used for all other data analyses.

We tested four models using CFA. Model 1 is a one-factor model where the 12 items in the ITQ-CA loaded onto a CPTSD latent factor. Model 2 is a correlated six factor model (Re, Av, SoT, AD, NSC, DR). Model 3 is a second-order model in which the covariation between the six first-order factors from Model 2 is explained by one second-order factor of CPTSD. Model 4 is a correlated two factor second-order model where a second-order PTSD factor accounts for the covariation between the Re, Av, and SoT factors and a second-order DSO factor accounts for the covariation between the AD, NSC, and DR factors (see Fig. 1).

These CFA models were estimated using the robust weighted least square mean and variance adjusted estimator (WLSMV). Model fit assessed using the chi-square test, the root-mean-square error of approximation (RMSEA), the comparative fit index (CFI), Tucker Lewis index (TLI), and the standardized root mean square residual (SRMR) indices. RMSEA and SRMR values of 0.08 and below, CFI and TLI values above 0.90, and a non-significant chi-square result indicate acceptable model fit (Kline, 2011). To determine the optimal fitting model, we relied on changes in the RMSEA value (ΔRMSEA), where a ΔRMSEA ≥ 0.015 is considered evidence of a meaningful difference in the fit of the respective models (Chen, 2007).

Table 1
Standardized factor loadings and standard errors for the first-order six factor model (Model 2).

First-order latent factors	Re	Av	SoT	AD	NSC	DR
ITQ-CA items	Factor loadings (standard error)					
1. Bad dreams reminding me of what happened (Re1)	.78 (0.02)					
2. Pictures in my head of what happened. Feels like it is happening right now (Re2)	.82 (0.02)					
3. Trying not to think about what happened. Or to not have feelings about it (Av1)		.57 (0.04)				
4. Staying away from anything that reminds me of what happened (people, places, things, situations, talks) (Av2)		.74 (0.04)				
5. Being overly careful (checking to see who is around me) (SoT1)			.45 (0.03)			
6. Being jumpy (SoT2)			.91 (0.03)			
7. Having trouble calming down when I am upset (angry, scared or sad) (AD1)				.71 (0.02)		
8. Not being able to have any feelings or feeling empty inside (AD2)				.69 (0.02)		
9. Feeling like a failure (NSC1)					.81 (0.02)	
10. Thinking I am not a good person (NSC2)					.69 (0.02)	
11. Not feeling close to other people (DR1)						.80 (0.02)
12. Having a hard time staying close to other people (DR2)						.80 (0.02)

First-order latent factors	Correlations (standard error)					
1. Re-experiencing (Re)	–					
2. Avoidance (Av)	.57 (0.04)	–				
3. Sense of threat (SoT)	.65 (0.04)	.50 (0.05)	–			
4. Affective dysregulation (AD)	.71 (0.03)	.48 (0.05)	.84 (0.04)	–		
5. Negative self-concept (NSC)	.56 (0.03)	.30 (0.05)	.73 (0.03)	.92 (0.03)	–	
6. Disturbances in relationships (DR)	.49 (0.04)	.31 (0.05)	.65 (0.03)	.75 (0.03)	.84 (0.03)	–

Note. All factor loadings and correlations are statistically significant ($p < .001$).

For the purposes of the LCA, we created six binary variables reflecting whether or not the 'diagnostic criteria' were met for the symptom clusters (Re, Av, SoT, AD, NSC, DR). We used the same diagnostic algorithm that is used for the ITQ (i.e., one symptom scored 2 or greater from each cluster). Five models were tested with 2–6 classes, and model selection was based on the results of the Akaike Information Criterion (AIC), the Bayesian Information Criterion (BIC), the bootstrap likelihood ratio test (BLRT), and the Lo-Mendell-Rubin adjusted likelihood ratio test (LMR-A) (Nylund et al., 2007). The model with the lowest AIC and BIC value is regarded as the optimal class solution. For LMR-A and BLRT, a non-significant value ($p > .05$) indicates that a model with one less class should be accepted. Furthermore, we tested the validity of the LCA classes by examining the associations between each class and levels of trauma exposure.

3. Results

3.1. Trauma exposure

Participants reported a mean of 2.66 ($SD = 1.73$) lifetime traumatic experiences, ranging from one to 13 events. Exposure to one traumatic event was reported by 33.2% ($n = 309$), 2–3 traumatic experiences were reported by 39.9% ($n = 372$), 4–5 traumatic experiences were experienced by 20.1% ($n = 178$), and ≥ 6 experiences were reported by 6.9% ($n = 64$) of participants. Rates of exposure to each traumatic event, along with sex differences, are presented in Table 2. The most common traumatic experiences were: accidents and injuries (57.5%), witnessing physical violence in the community (46.6%), and scary medical procedure (40.1%). We found significant gender effects on the eight traumatic experiences (see Table 2). Boys reported experiencing more serious car accidents, robbery with a threat, physical abuse not in family, witnessing physical abuse in the community, physical attack and war experiences in comparison to girls. However, female participants reported higher exposure of two traumatic experiences in comparison to boys: sudden or violent death of a close one, and a scary medical procedure.

3.2. CFA results

The CFA results are presented in Table 3. Model 1 had a poor fit and

Table 2
Exposure to potentially traumatic events in adolescent sample.

Trauma exposure	Total ($N = 932$)	Female ($n = 529$)	Male ($n = 403$)	Gender differences	
				χ^2 ($df = 1$)	p
1. Natural disaster	102 (10.9%)	52 (9.8%)	50 (12.4%)	1.56	.212
2. Serious accident or injury	536 (57.5%)	289 (54.6%)	247 (61.3%)	4.15	.042
3. Robbery with threat	41 (4.4%)	12 (2.3%)	29 (7.2%)	13.07	<.001
4. Physical abuse in family	180 (19.4%)	113 (21.4%)	67 (16.7%)	3.28	.070
5. Physical abuse not in family	241 (25.9%)	103 (19.5%)	138 (34.4%)	26.36	<.001
6. Witnessing physical abuse in family	162 (17.4%)	101 (19.1%)	61 (15.2%)	2.44	.118
7. Witnessing physical abuse in community	434 (46.6%)	221 (41.8%)	213 (52.9%)	11.28	<.001
8. Sexual abuse, someone older touching you private parts when they shouldn't	37 (4.0%)	24 (4.6%)	13 (3.2%)	1.04	.308
9. Sexual assault, someone forcing or pressuring to have sex, when you couldn't say no	21 (2.3%)	14 (2.6%)	7 (1.7%)	0.86	.354
10. Sudden or violent death of a close one	231 (24.8%)	157 (29.7%)	74 (18.4%)	15.71	<.001
11. Physical attack	23 (2.5%)	5 (0.9%)	18 (4.5%)	11.78	.001
12. Witnessing physical attack	80 (8.6%)	47 (8.9%)	33 (8.2%)	0.14	.707
13. Scary medical procedure	373 (40.1%)	239 (45.3%)	134 (33.3%)	13.74	<.001
14. War experiences	18 (1.9%)	3 (0.6%)	15 (3.7%)	12.03	.001

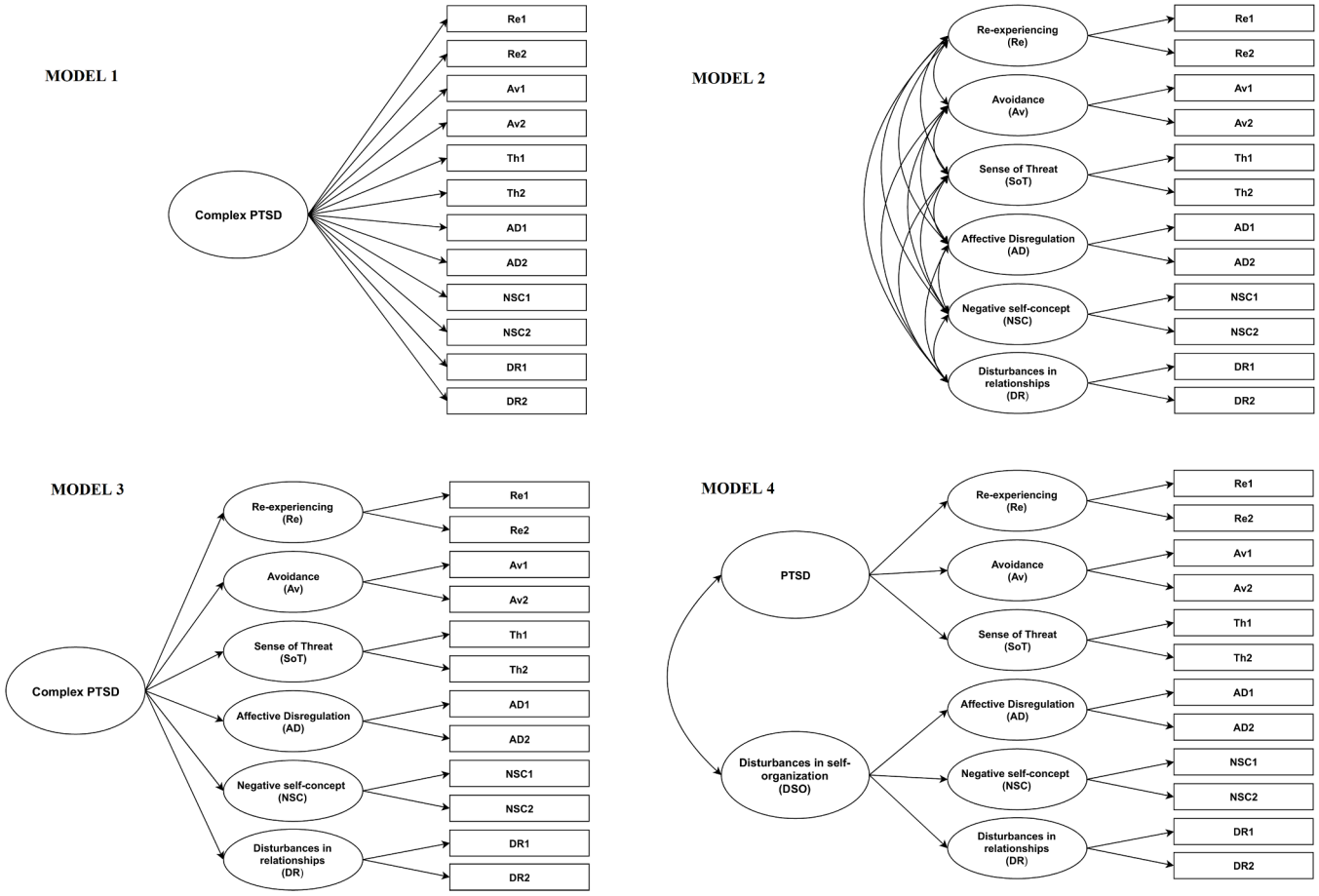

Fig. 1. Factor models of ICD-11 PTSD and CPTSD tested in the study using confirmatory factor analysis.

Table 3
Model fit of confirmatory factor analysis models.

Model	CFI	TLI	RMSEA (90% CI)	SRMR	χ^2 (*df*), *p*
Model 1	0.791	0.745	0.133 (0.126–0.141)	0.079	945.81 (54), <.001
Model 2	**0.953**	**0.920**	**0.074 (0.066–0.084)**	**0.042**	**240.68 (39), <.001**
Model 3	0.922	0.893	0.086 (0.078–0.094)	0.060	379.20 (48), <.001
Model 4	0.934	0.907	0.080 (0.072–0.089)	0.051	330.52 (47), <.001

Note. CFI = Comparative Fit index; TLI = Tucker-Lewis index; RMSEA = Root Mean Square Error of Approximation and 90% confidence interval; SRMR = Standardized Root Mean Square Residual.

was thus rejected. Model 3 had an acceptable fit based on the CFI and SRMR values, but low fit on TLI and RMSEA and was also rejected. Models 2 and 4 both demonstrated acceptable fit based on the RMSEA, SRMR, CFI and TLI values. Although the chi-square statistic was statistically significant this should not lead to CFA model rejection in our study, as the power of the chi-square is positively related to sample size and tends to reject models based on large sample sizes (Tanaka, 1987).

Model 2 (the correlated six factor model) had the lowest RMSEA and SRMR values, and the highest CFI and TLI values (see Table 3). However, the ΔRMSEA value from Model 2 to Model 4, was less than 0.015 suggesting that the difference in fit is likely not substantial or meaningful. Nonetheless, based on the slightly superior fit statistics and theoretical consistency, Model 2 was deemed to be the best fitting model. Factor loadings and factor correlations from Model 2 are presented in Table 1. All factor loadings and correlations among the latent factors were significant at $p < .001$. Correlations among factors ranged from 0.30 to 0.92 (See Table 1).

Table 4
Model fit indices of latent class analyses.

Model	Loglikelihood	AIC	BIC	Entropy	BLRT p-value	LMR-A *p*-value
2 classes	−3405.660	6837.320	6900.205	.705	<.001	<.001
3 classes	−3369.411	6778.823	6875.569	.747	<.001	<.001
4 classes	**−3336.814**	**6727.628**	**6858.236**	**.642**	**<.001**	**<.001**
5 classes	−3332.640	6733.280	6897.749	.696	1.000	.222
6 classes	−3328.769	6739.538	6937.869	.660	.667	.334

Note. AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion; BLRT = Bootstrap Likelihood Ratio Test; LMR-A = Lo-Mendell-Rubin Adjusted Likelihood Ratio Test (LMR-A).

3.3. Latent class analysis of ICD-11 PTSD and CPTSD

The LCA model fit statistics are presented in Table 4. The AIC, BIC, LMR-A, BLRT values supported a four-class model. The class structure is presented in Fig. 2. The largest class (34.1%) had high probabilities of meeting the diagnostic criteria for the six symptom clusters and was therefore labeled the 'CPTSD class'. The next largest class (32.4%) had elevated probabilities of meeting the diagnostic criteria for the three PTSD clusters and low probabilities of meeting the diagnostic criteria for the three DSO clusters and was therefore labeled the 'PTSD class'. A third class (12.6%) had elevated probabilities of meeting the diagnostic criteria for the three DSO clusters and low probabilities of meeting the diagnostic criteria for the three PTSD clusters and was therefore labeled the 'DSO class'. Finally, the fourth class (20.9%) had low probabilities of meeting the diagnostic criteria for all symptom clusters and was therefore labeled the 'Baseline' class.

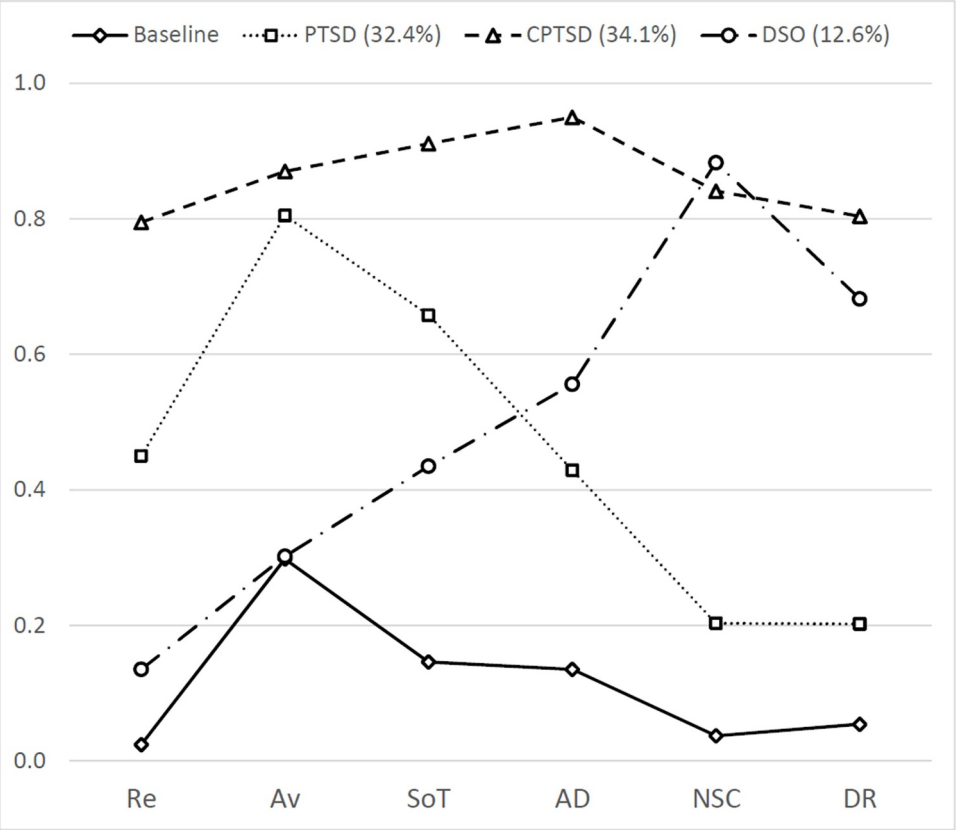

Fig. 2. Latent classes of ICD-11 PTSD and CPTSD in adolescent sample.

Multinomial binary logistic analysis using 'Baseline' class as reference category was applied for all traumatic experiences exposure as predictors for each of the LCA classes. 'PTSD class' was predicted by the two traumatic experiences: death of the close one (OR [95% CI] = 1.90 [1.17–3.08], p = .010), and physical attack (OR [95% CI] = 0.08 [0.01–0.52], p = .008). Five traumatic experiences were significant predictors of 'Complex PTSD' class: physical abuse in family (OR [95% CI] = 1.87 [1.04–3.36], p = .037), witnessing physical abuse in family (OR [95% CI] = 2.37 [1.20–4.66], p = .013), witnessing physical abuse in community (OR [95% CI] = 1.61 [1.06–2.46], p = .027), sudden or violent death of a close one (OR [95% CI] = 1.89 [1.14–3.12], p = .013), scary medical procedure (OR [95% CI] = 1.97 [1.31–2.96], p = .001). One traumatic experience, death of the close one, was a significant predictor of the 'DSO class' (OR [95% CI] = 1.91 [1.05–3.49], p = .034).

4. Discussion

To our knowledge, this was the first study to validate ICD-11 PTSD and CPTSD factorial structure in an adolescent population using the International Trauma Questionnaire Child and Adolescent version (ITQ-CA). Our study confirmed findings from the ICD-11 PTSD and CPTSD adult samples factor structure studies (Brewin et al., 2017) indicating a similar factor structure of PTSD and CPTSD among adolescents exposed to potentially traumatic events.

The two CFA PTSD and CPTSD symptom structure models (Model 2 and Model 4) had the best fit in our study. We selected the first-order correlated six factor model of the six PTSD and DSO symptoms as having the best fit. However, alternative second-order two factor model with correlated PTSD and DSO latent factors also had a good fit. This second-order model was selected as having the best fit in the recent study in Austria, which also tested ICD-11 PTSD and CPTSD factor structure (Haselgruber et al., 2020) using the adult version of ITQ. Although the first order correlated six factor model in the same study had a better fit based on RMSEA and CFI/TLI indexes (Haselgruber et al., 2020). While findings provide initial support for ICD-11 PTSD and CPTSD symptoms, it is possible that symptom structure among adolescents could be somehow different from adults. Adolescents are in the developmental stage marked with identity changes, and it is possible that DSO symptoms of NSC, DR or AD symptoms have different associations with core PTSD symptoms of Re, Av, and SoT.

Furthermore, LCA analysis supported the validity of ICD-11 PTSD and CPTSD symptom structure. We could identify distinct latent classes of low symptom, PTSD, CPTSD and DSO in line with previous studies that used LCA for analysis of CPTSD symptom structure (Brewin et al., 2017). CPTSD class in line with theoretical assumptions was predicted with more traumatic experiences in this study. Moreover, CPTSD class was predicted by physical abuse related traumatic experiences which could be associated with prolonged traumatization among children. CPTSD was not predicted by sexual abuse in contrast to previous studies, (e.g., Kazlauskas et al., 2018). However, as this was not a clinical sample, but general population sample prevalence of sexual abuse was too low to have enough statistical power to predict CPTSD. Of note, the sudden death of a loved one was predictive of the DSO cluster. The association may be reflective of the presence of other disorders which share some of the same symptoms (e.g., the negative self-concept associated with depression) or disruption in the key developmental domains that DSO represents (i.e., emotion regulation, self-concept, and relational capacities) due to loss of important figures in the child's social environment.

5. Limitations

There are several limitations associated with this study that needs to be discussed. This was a cross-sectional study and thus we could not analyze either trajectories of symptom change, nor effects of time since

trauma exposure on posttraumatic stress disorders symptoms. As our main measure of PTSD and CPTSD in the study was self-report, we relied on self-report of participants. However, diagnostic interviews for ICD-11 PTSD and CPTSD although in development are not yet available. The study was conducted in a non-clinical sample, and further studies in clinical samples could provide additional information on validity and symptom structure of ICD-11 PTSD and CPTSD among adolescents.

CRediT authorship contribution statement

Evaldas Kazlauskas: Supervision, Formal analysis, Writing - original draft. **Paulina Zelviene:** Investigation, Supervision, Data curation. **Ieva Daniunaite:** Supervision, Data curation. **Philip Hyland:** Formal analysis. **Monika Kvedaraite:** Data curation, Formal analysis. **Mark Shevlin:** Formal analysis. **Marylene Cloitre:** Supervision, Writing - review & editing.

Declaration of Competing Interest

The authors report no conflicts of interest in this work.

Acknowledgement

This project has received funding from European Social Fund (project No 09.3.3-LMT-K-712-02-0096) under grant agreement with the Research Council of Lithuania (LMTLT).

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.jad.2020.01.061.

References

Ben-Ezra, M., Karatzias, T., Hyland, P., Brewin, C.R., Cloitre, M., Bisson, J.I., ... Shevlin, M., 2018. Posttraumatic stress disorder (PTSD) and complex PTSD (CPTSD) as per ICD-11 proposals: A population study in Israel. Depression and Anxiety 35 (3), 264–274. https://doi.org/10.1002/da.22723.

Brewin, C.R., 2019. Complex post-traumatic stress disorder: a new diagnosis in ICD-11. BJPsych Adv. 1–8. https://doi.org/10.1192/bja.2019.48.

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 (September), 1–15. https://doi.org/10.1016/j.cpr.2017.09.001.

Chen, F.F., 2007. Sensitivity of goodness of fit indexes to lack of measurement invariance. Struct. Equ. Model. 14 (3), 464–504. https://doi.org/10.1080/10705510701301834.

Cloitre, M., Shevlin, M., Brewin, C.R., Bisson, J.I., Roberts, N.P., Maercker, A., ... Hyland, P., 2018a. The International Trauma Questionnaire: development of a self-report measure of ICD-11 PTSD and complex PTSD. Acta Psychiatrica Scandinavica 138 (6), 536–546. https://doi.org/10.1111/acps.12956.

Cloitre, M., Roberts, N., Bisson, J., & Brewin, C. (2018). International trauma questionnaire – child and adolescent version (ITQ-CA).

Cloitre, M., Hyland, P., Bisson, J.I., Brewin, C.R., Roberts, N.P., Karatzias, T., Shevlin, M., 2019. ICD-11 posttraumatic stress disorder and complex posttraumatic stress disorder in the United States: a population-based study. J. Trauma. Stress 32, 833–842. https://doi.org/10.1002/jts.22454.

Haselgruber, A., Sölva, K., Lueger-Schuster, B., 2020. Validation of ICD-11 PTSD and complex PTSD in foster children using the International Trauma Questionnaire. Acta Psychiatr. Scand. 141, 60–73. https://doi.org/10.1111/acps.13100.

Ho, G.W.K., Karatzias, T., Cloitre, M., Chan, A.C.Y., Bressington, D., Chien, W.T., ... Shevlin, M., 2019. Translation and validation of the Chinese ICD-11 International Trauma Questionnaire (ITQ) for the assessment of Posttraumatic Stress Disorder (PTSD) and Complex PTSD (CPTSD). European Journal of Psychotraumatology 10 (1), 1608718. https://doi.org/10.1080/20008198.2019.1608718.

Hyland, P., Shevlin, M., Brewin, C.R., Cloitre, M., Downes, A.J., Jumbe, S., ... Roberts, N.P., 2017. Validation of post-traumatic stress disorder (PTSD) and complex PTSD using the International Trauma Questionnaire. Acta Psychiatrica Scandinavica 136 (3), 313–322. https://doi.org/10.1111/acps.12771.

Karatzias, T., Cloitre, M., Maercker, A., Kazlauskas, E., Shevlin, M., Hyland, P., ... Brewin, C.R., 2017. PTSD and Complex PTSD: ICD-11 updates on concept and measurement in the UK, USA, Germany and Lithuania. European Journal of Psychotraumatology 8 (sup7), 1418103. https://doi.org/10.1080/20008198.2017.1418103.

Kazlauskas, E., Gegieckaite, G., Hyland, P., Zelviene, P., Cloitre, M., 2018. The structure of ICD-11 PTSD and complex PTSD in Lithuanian mental health services. Eur. J. Psychotraumatol. 9 (1). https://doi.org/10.1080/20008198.2017.1414559.

Kline, R.B., 2011. Principles and Practice of Structural Equation modeling. Principles and Practice of Structural Equation Modeling, third ed. The Guilford Press, New York. https://doi.org/10.1038/156278a0.

Knefel, M., Lueger-Schuster, B., Bisson, J., Karatzias, T., Kazlauskas, E., Roberts, N.P., 2019. A cross-cultural comparison of ICD-11 complex posttraumatic stress disorder symptom networks in Austria, the United Kingdom, and Lithuania. J. Trauma. Stress. https://doi.org/10.1002/jts.22361.

Nylund, K.L., Asparouhov, T., Muthén, B.O., 2007. Deciding on the number of classes in latent class analysis and growth mixture modeling: a Monte Carlo simulation study. Struct. Equ. Model. 14 (4), 535–569. https://doi.org/10.1080/10705510701575396.

Sachser, C., Berliner, L., Holt, T., Jensen, T.K., Jungbluth, N., Risch, E., ... Goldbeck, L., 2017a. International development and psychometric properties of the Child and Adolescent Trauma Screen (CATS). Journal of Affective Disorders 210 (December 2016), 189–195. https://doi.org/10.1016/j.jad.2016.12.040.

Sachser, C., Keller, F., Goldbeck, L., 2017b. Complex PTSD as proposed for ICD-11: validation of a new disorder in children and adolescents and their response to Trauma-Focused Cognitive Behavioral Therapy. J. Child Psychol. Psychiatry Allied Discip. 58 (2), 160–168. https://doi.org/10.1111/jcpp.12640.

Shevlin, M., Hyland, P., Karatzias, T., Fyvie, C., Roberts, N., Bisson, J.I., ... Cloitre, M., 2017. Alternative models of disorders of traumatic stress based on the new ICD-11 proposals. Acta Psychiatrica Scandinavica 135 (5), 419–428. https://doi.org/10.1111/acps.12695.

Tanaka, J.S., 1987. How big is big enough ?": Sample size and goodness of fit in structural equation models with latent variables. Child Dev. 58 (1), 134–146.

World Health Organization. (2018). International classification of diseases for mortality and morbidity statistics (11th Revision).Retrieved from https://icd.who.int/browse11/l-m/en.