Psychometric properties of the fifth version of the Posttraumatic-Stress-Checklist in a

clinical sample of refugees

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Abstract

Background

The validity and reliability of the fifth version of the Posttraumatic Stress Checklist (PCL-5) have been demonstrated in numerous studies in Western cultures, various languages, and increasingly in non-Western cultures. However, its applicability in a heterogeneous sample of refugees is controversial because the PCL-5 is based on the Western understanding of post-traumatic stress disorder (PTSD). This study aimed to measure the psychometric properties of the PCL-5 in a sample of refugees and to assess the suitability of this questionnaire for screening refugees living in a Western country for PTSD.

Method

An existing data set of 1202 refugees was analysed utilising Cronbach's alpha, inter-item and inter-subscale correlations, convergent and discriminant validity, and Receiver Operating Characteristic (ROC) analysis. For validity assessment, the PCL-5 was compared to the Clinician-Administered PTSD Scale for Diagnostic and Statistical Manual of Mental Disorders (CAPS-5), and the Brief Symptom Inventory (BSI).

Results

Clusters generally measured the underlying constructs of PTSD well, however, the expected pattern between subscales was not confirmed, and a ceiling effect was observed. ROC analysis yielded a cut-off score of 44 and inconsistencies were found concerning convergent and discriminant validities. The PCL-5 does not appear to discriminately capture the severity of trauma experienced by refugees. It might be that the previously assumed cut-off score is too low for our treatment-seeking sample as the PCL-5 does not adequately capture the sequential, prolonged, and ongoing traumatisation of refugees. This should be considered when developing and deciding on a screening instrument to be used for refugees.

Keywords: PCL-5, PTSD, DSM-5, assessment, refugees, psychometric properties, trauma

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Worldwide, 82.4 million people are forcibly displaced due to persecution, violence, conflicts, and human rights violations (United Nations High Commissioner for Refugees [UNHCR], 2020). Of these, 26.4 million people are recognised as refugees. By now, there is striking evidence that migration and forced displacement heighten the risk of experiencing trauma and, consequently, the development of various mental disorders (Bogic et al., 2015; World Health Organization [WHO], 2018). In fact, by the end of their fleeing, refugees have experienced an average of 4.8 (SD = 3.8; range: 0-15) traumatic events (Nesterko et al., 2019; Steel et al., 2009). Being exposed to just one traumatising event is linked to a variety of mental disorders, of which PTSD receives the greatest attention in trauma research and clinical relevance (American Psychiatric Association [APA], 2013; Blackmore et al., 2020; Piava et al., 2010; Suliman et al., 2009).

Even though there is consensus regarding the particularly high and persistent prevalence rates of PTSD in refugees compared to the general population (Lund et al., 2018), in terms of epidemiology, however, there is a lack of distinct data (Blackmore et al., 2020). While Steel et al. (2009) found prevalence rates between 0-99%, a Dutch research group concluded generally high levels of PTSD (Turrini et al., 2021), demonstrating the lack of consensus. Agreement however exists that interpersonal assault, physical and sexual violence (Craemer et al., 2001), and torture (Steel et al., 2009) result in the highest prevalence of PTSD. Moreover, due to the cumulative nature of the trauma refugees experience, they are particularly vulnerable to developing complex PTSD (cPTSD), which manifests as PTSD with additionally disrupted self-identity, emotional dysregulation and ongoing relationship problems (Cloitre et al., 2013; Reed, 2018). While it is unclear to what extent refugees suffer from PTSD today, there is agreement that they are a highly vulnerable group exposed to numerous risk factors for PTSD (Blackmore et al., 2020).

However, detecting PTSD symptoms seems complex considering that the understanding of PTSD, its definition, and symptomatology are exclusively researched against the background of Western cultures (Hinton & Lewis-Fernández, 2010b). The DMS-5 classification of PTSD focuses on the experience of trauma that occurred in the past that affects mental health in the present (APA, 2013). However refugees suffer from cumulative, sequential, and prolonged trauma (Brewin et al., 2000). Further, some authors suggest that symptoms of PTSD manifest differently in various regions of the world. For example, Jones et al. (2003) argue that flashbacks (an intense form of re-experiencing; Hinton & Lewis-Fernández, 2010a) may be primarily a Western symptom of PTSD. Others highlight that the characteristics of trauma exposure vary so much by time, place, and social context that standardising PTSD obscures at least as much as it clarifies (De Jong et al., 2003).

In contrast, in their systematic review, Hinton and Lewis-Fernández (2010b) argue that the concept of PTSD is culturally sensitive because universal trauma responses exist across cultures. Yet, in the same year, the same authors emphasise that the different local and cultural expressions of PTSD are more "experience-near" (closer to the everyday experience), and their clinical utility may be greater because they can better capture the individual suffering (Hinton & Lewis-Fernández, 2010a). This is consistent with findings that various local syndromes play an important role in the study of trauma responses (Miller et al., 2009). All these ambiguities highlight the complexity of discussing PTSD cross-culturally and raise questions about the appropriateness of assessment instruments developed in the West to capture PTSD in non-Western patients.

One established instrument for assessing PTSD in refugees is the PCL (Bovin et al., 2016; Krüger-Gottschalk et al., 2017; Meer et al., 2017; Weathers et al., 1993). Its current version, the PCL-5 (Weathers et al., 2013), is based on the DSM-5 criteria for PTSD and measures PTSD based on four clusters: re-experiencing (PCLreex; items 1-5), avoidance (PCLavoid; items 6-7), negative-alterations-in-cognitions-and-mood (PCLneg; items 8-14),

and arousal-and-reactivity (PCLarous; item 15-20) (Appendix A). In clinical practice, the PCL-5 is predominantly used as a pre-diagnostic assessment of symptoms and allows for tracking changes in symptom severity once PTSD has been diagnosed (Blevins et al., 2015). However, despite its frequent use, no conclusive data demonstrate that this instrument is appropriate for screening PTSD symptoms in refugees.

Some studies have cross-culturally adapted the PCL-5 and translated it into different languages for use in non-Western samples and highlighted its robust psychometric properties (Ghazali & Chen, 2018; Verhey et al., 2018). However, several studies in heterogeneous refugee groups named several difficulties. First, refugees speak not just one, but a variety of languages upon arrival in the host country. Refugees from the northern regions of Syria and Iraq, for instance, have difficulties naming their mother tongue or preferred primary language (Ibrahim et al., 2018). Kurds speak regional dialects in their families but have learned Arabic at school and speak it at work or in contact with authorities because Kurdish is banned by Turkish authorities (Zeydanlıoğlu, 2012). Individual literacy skills, moreover, depend on education level as well as ethnicity and background from specific communities of origin (Dohrenwend et al., 2008). At the same time, different languages may be associated with war experiences leading some people to refuse to use certain languages because they evoke memories of confrontations with their enemies (Ibrahim et al., 2018). Thus, even if a few studies have shown the PCL-5 to have robust psychometric properties in non-western countries, to the author's knowledge, there is not one study to date that has examined the psychometric properties of the Dutch version of the PCL-5 in a heterogeneous sample of refugees. This limited attention to the complexity of screening refugees for PTSD upon arrival in the host country makes new research in this direction inevitable.

To evaluate the utility of PTSD screening instruments such as the PCL-5 and to allow comparisons between international trauma studies, the psychometric properties of these tests need to be examined (Weathers et al., 2014; Weathers et al., 2017). Therefore, the purpose of

the present study was to address the question of whether the Dutch version of the PCL-5 exhibits the same sound psychometric properties in a clinical sample of refugees that have been demonstrated in Western samples (Bressler et al., 2018) and, increasingly, in non-Western samples (Ghazali & Chen, 2018; Verhey et al., 2018). It is hypothesised that the PCL-5 has high internal consistency, inter-item, and item-total consistencies (Blevins et al., 2015; Bressler et al., 2018).

Method

Participants

An existing data set from ARQ Centrum'45, a national centre specialising in diagnostics and treating complex psychotrauma, was used. These data were collected between June 2014 and February 2022 from refugees who live in the Netherlands and seek treatment at ARQ Centrum '45. Prior to the data collection, accordance with the General Data Protection Regulation of the European Union and the ethical principle of the ARQ Centrum'45 was assured. The total sample consists of 1202 participants who completed the PCL-5. Of those, 1168 participants completed the BSI, 503 completed the CLL, and 244 completed the CAPS-5. The mean age of the total sample was 44.2 years ($SD = 11.05$; range 19-80 years) and 69.8% ($n = 839$) identified as male. Further, 684 participants reported the number of exposures they had to potentially traumatic events (PTEs; Table 1).

Table 1

Exposure to Potentially Traumatic Events

Exposure to PTEs ($N = 684$)	M	SD
Number of PTEs which have been experienced themselves	7.31	2.44
Number of PTE which have been experienced themselves or witnessed	9.65	2.65

Number of PTE which have been experienced themselves or witnessed or heard of or experienced	10.61	2.71

Materials

Posttraumatic Stress Checklist-5 (PCL-5)

The PCL-5 (Weathers et al., 2013) was used to assess the presence and severity of PTSD symptoms in the past month. The self-report format of the test consists of 20 questions assessing symptoms experienced in four clusters in the past month on a 5-point Likert scale ranging from 0 (*not at all*) to 4 (*extremely*) (range 0-80). Questions per cluster were summed to assess the severity of each cluster. All scales were added to a total score. The originally proposed cut-off score is 38 (Weathers et al., 2013), with higher scores reflecting a higher severity of symptoms. A preliminary DSM-5 PTSD diagnosis may be established by considering items rated "moderate" or higher as confirmed symptoms and following the DSM-5 diagnostic rule (at least one B, one C, two D, and two E symptoms present; Weathers et al., 2013). An example item is: "In the past month, how much were you bothered by repeated, disturbing dreams of the stressful experience?". The PCL-5 shows adequate psychometric properties in different languages and cultures (Bovin et al., 2016; Krüger-Gottschalk et al., 2017; Meer et al., 2017).

Clinician-Administered PTSD Scale for DSM-5 (CAPS-5)

To further assess the severity of PTSD symptomatology, participants were interviewed with the CAPS-5 questionnaire (Weathers et al., 2017). The CAPS-5 contains 20 items corresponding to the PTSD criteria in DSM-5, including two items to assess the PTSD dissociative subtype, and three items on functional impairment. Items are rated on 5-point Likert scales ranging from 0 *(absent)* to 4 *(extreme)*. A symptom is considered present when rated 2 or higher (Weathers et al., 2017). Item severity is assessed by summing all items

(score between 0-80). An example item is "In the past month, did you have any recurring unpleasant dreams?". The CAPS-5 shows adequate psychometric properties (Weathers et al., 2017).

Brief Symptom Inventory (BSI)

The BSI, being the short version of the SCL-R-90 (Derogatis & Cleary, 1977), covers nine symptom dimensions (e.g., Interpersonal Sensitivity, Depression, Anxiety) and three global indices of distress (Global Severity Index, Positive Symptom Distress Index, and Positive Symptom Total) characterising the intensity of distress during the past seven days (Derogatis & Spencer, 1993). Items on the self-report measure are rated on a 5-point Likert scale ranging from 0 *(not at all)* to 4 *(extremely)*. An example item is "During the past 7 days, how much were you distressed by poor appetite? ". The BSI demonstrates adequate psychometric properties (Derogatis & Spencer, 1993).

Procedure

As part of the routine diagnostic assessment at intake at ARQ Centrum '45, the PCL-5, CAPS-5, and CLL were administered to all clients who applied for clinical assessment and/or treatment at Foundation Centrum'45 in the Netherlands. Data was primarily conducted for diagnostic purposes and only secondarily for research purposes. Participants were informed that their data were anonymously used for research purposes and they could have their data excluded if they did not want their data to be used in this respect.

Data Analyses

For all analyses of the exploratory quantitative cross-sectional research design, IMB ISPSS (version 27) was used. The psychometric properties of the PCL-5 were examined using internal consistency reliability analyses (Cronbach's alpha, inter-item correlations, and item-

total correlations). Internal consistency is considered adequate when Cronbach's alpha of the total scale is > .80, and most inter-item correlations are between .15 - .50 (moderate magnitude; Clark & Watson, 1995). Because Cronbach's alpha is an indicator of the scale length, it would be expected for the PCL clusters to have lower values than the PCL-5 total scale, with smaller clusters having smaller values than larger clusters (PCLneg [7 items] > PCLarous [6 items] > PCLreex [5 items] > PCLavoid [2 items]) (Boeschoten et al., 2018). Item-total correlations were performed to determine whether the subscales adequately represented the total scale. In terms of construct validity, the PCL-5 is expected to have high convergent validity with the CAPS-5, a structured clinical interview for PTSD (Weathers et al., 2017), and high discriminant validity with the BSI (Derogatis & Cleary, 1977), an assessment of general psychopathology (Eidhof et al., 2019). For this purpose, Pearson correlations (adequate > .8; substantial > .6; moderate > .4; Landis & Koch, 1977) were utilized. Subsequently, the ROC curve was established to determine the optimal cut-off score in the sample. The ROC curve is a method of plotting the true-positive rate (sensitivity) and false-positive rate (specificity) of a diagnostic test against each other (Fan et al., 2006). Hereby, the optimal cut-off value for the test is determined by finding the maximum area under the curve (AUC).

Results

According to the cluster model, 1011 (84.1%) participants received a preliminary PTSD diagnosis based on the PCL-5, while 191 (15.9%) did not. The mean score of the PCL-5 total score (PCLtot) was 51.96 (SD = 15.03). The PCLtot, as well as the four clusters PCLreex, PCLneg, PCLavoid, and PCLarous, indicate a considerable skew towards the upper end of the scale, based on the histogram, frequency distribution, and boxplot consideration (for histogram, see Figure 1, for boxplot, Figure 2).

Figure 1

Histograms of PCL-5 Clusters and PTSD Total Score

PCLreex   PCLneg   PCLavoid   PCLarous   PCLtot
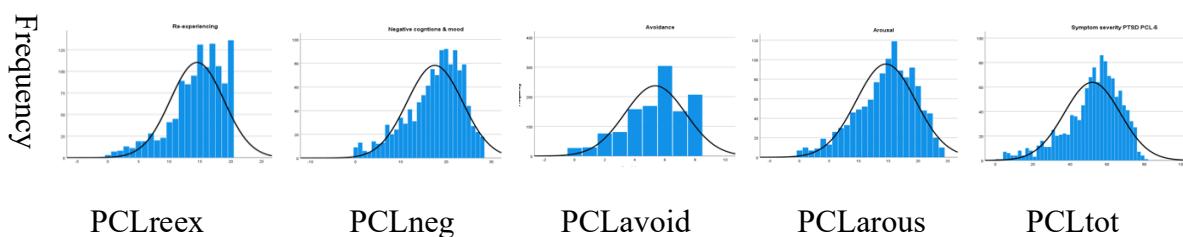
Figure 2

Boxplots of PCL-5 Clusters and PTSD Total Score

PCLreex   PCLneg   PCLavoid   PCLarous   PCLtot
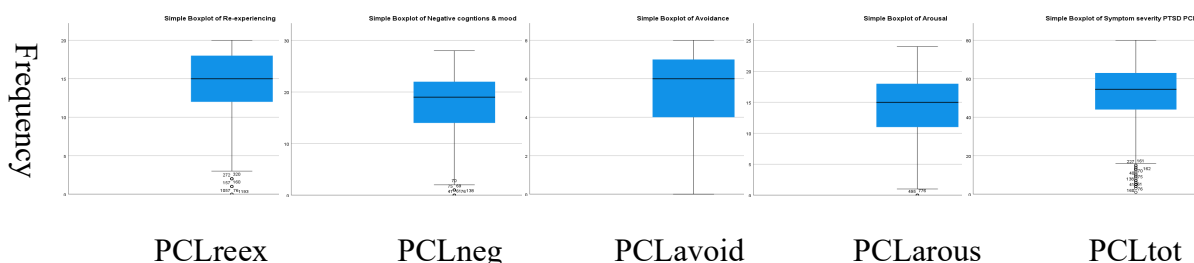
Internal consistency

In line with Clark and Watson (1995), Cronbach's alpha coefficients indicated high internal consistency for both the PCLtot (α = .92) and for the symptom clusters PCLreex (α =.87) and PCLneg (α = .82), and acceptable levels for PCLavoid (α = .77) and PCLarous (α =.78). This suggests that all clusters generally measure the underlying construct of PTSD well. The results were consistent with the hypothesis that the total PCL-5 score should be higher than the subscales. However, the pattern between the subscales, that smaller clusters have smaller values than larger clusters could not be confirmed.

Re-experiencing

Inter-item correlations ranged from .49 to .62 (*M* = .56); 90% of inter-item correlations were outside the recommended range of moderate magnitude of .15 - .50 indicating a large

overlap between the items (Clark & Watson, 1995). This explains the high internal consistency, however, it likewise suggests that each item does not exhibit a high degree of uniqueness. Furthermore, corrected item-total correlations were high, suggesting all items measure the same underlying construct (Table 2).

Table 2

Inter-item and Corrected Item-total Correlations (Re-experience)

Items	1	2	3	4	5
Repeated, disturbing, and unwanted memories of the stressful experience?[1]	1.00				
Repeated, disturbing dreams of the stressful experience?[2]	.62	1.00			
Suddenly feeling or acting as if the stressful experience were actually happening again?[3]	.61	.57	1.00		
Feeling very upset when something reminded you of the stressful experience?[4]	.62	.55	.56	1.00	
Having strong physical reactions when something reminded you of the stressful experience?[5]	.54	.49*	.51	.61	1.00
Corrected Item Total Correlation	.74	.67	.68	.72	.64

*Probability Note. * Moderate magnitude.*

Avoidance

The inter-item correlation between the two questions was very high ($r = .63$), indicating that both items are probably not sufficiently distinct. Further, by definition, the corrected inter-item correlation corresponded to the value of the corrected item-total correlation (Clark & Watson, 1995), which suggests both items measure the same underlying construct.

Negative cognition and mood.

Inter-item correlations ranged from .11 to .59 (M = .41); 57.14% of inter-item correlations were outside the recommended range of moderate magnitude of .15 - .50 indicating a large overlap between the items. Contrary, corrected item-total correlations were high, except for item one (trouble remembering) (Table 3).

Table 3

Inter-item and Corrected Item-total Correlations (Negative Alteration in Cognition and Mood)

Items	1	2	3	4	5	6	7
Trouble remembering important parts of the stressful experience?[1]	1.00						
Having strong negative beliefs about yourself, other people, or the world?[2]	.16*	1.00					
Blaming yourself or someone else for the stressful experience or what happened after it?[3]	.17*	.54	1.00				
Having strong negative feelings such as fear, horror, anger, guilt, or shame?[4]	.18*	.59	.56	1.00			
Loss of interest in activities that you used to enjoy?[5]	.11	.44*	.39*	.51	1.00		
Feeling distant from or cut off from other people?[6]	.13	.57	.43*	.57	.56	1.00	
Trouble experiencing positive feelings?[7]	.19	.51	.39*	.52	.49*	.58	1.00
Corrected Item Total Correlation	.20	.67	.58	.70	.58	.67	.63

Probability Note. * Moderate magnitude.

Arousal and reactivity

Inter-item correlations ranged from .25 to .55 (*M* = .38); only item six (6.67%; trouble falling/saying asleep) was outside the recommended range of moderate magnitude of .15 - .50 indicating all items in this cluster possess enough unique information. Similarly, all corrected item-total correlations were high, suggesting all items measure the same underlying construct (Table 4).

Table 4

Inter-item and Corrected Item-total Correlations (Arousal and Reactivity)

Items	1	2	3	4	5	6
Irritable behaviour, angry outbursts, or acting aggessively?[1]	1.00					
Taking too many risks or doing things that could cause you harm?[2]	.45*	1.00				
Being "superalert" or watchful or on guard?[3]	.33*	.27*	1.00			
Feeling jumpy or easily startled?[4]	.47*	.32*	.50*	1.00		
Having difficulty concentrating?[5]	.42*	.28*	.33*	.48*	1.00	
Trouble falling or staying asleep?[6]	.32*	.25*	.33*	.41*	.55	1.00
Corrected Item Total Correlation	.57	.44	.49	.63	.58	.51

Probability Note. * Moderate magnitude.

PCL-5 total

Inter-item correlations ranged from .06 to .63 (*M* = .38); 60 (15.79%) of the 380 correlations were outside the recommended range of moderate magnitude, indicating that, generally, the PCL-5 exhibits high internal consistency. Corrected item-total correlations ranged from .27 to .74 (*M* = .59), suggesting that high scores on the PCL-5 are generally associated with high PCL-5 total scores.

Construct validity

PCL-5 and CAPS-5

In line with hypotheses, both PCLtot and CAPS-5 total score (CAPStot) correlated highest with their respective sub-clusters (PCLsub; CAPSsub), then with the total score of the respective other instrument, followed by the clusters of the other instrument. This generally suggests solid convergent validity for both the PCL-5 and the CAPS-5 and sufficient discriminant validity between the two scales.

For PCLavoid, the pattern was as expected, as it correlated highest with PCLtot, then with the other PCL cluster PCLneg, PCLarous, and PCLreex, followed by CAPStot and the CAPSsubs. However, correlations with the other clusters were only moderate (.45 - .62).

A somewhat different, unexpected pattern was found for the remaining PCLsubs: after the highest correlation of each of the PCLsubs with PCLtot, the next highest correlation was with the other PCLsubs, unexpectedly except for the PCLavoid cluster, then with CAPStot and some CAPSsubs, only now followed by PCLavoid and the remaining CAPSsubs. However, the deflection of PCLavoid was only .02 and can therefore be neglected.

Concerning the correlation between each of the PCL-5 and CAPS-5 clusters, PCLavoid correlated most strongly with the CAPS-voidance cluster (CAPSavoid), the PCLneg correlated most strongly with the CAPS-negative-alterations-in-cognitions-and-mood cluster (CAPSneg), and the PCLarous correlated most strongly with the CAPS-arousal-and-reactivity cluster (CAPSarous). These results were as expected. PCLreex, however, unexpectedly correlated most strongly with CAPSarous and only then with the CAPS-5-re-experience cluster (CAPSreex). Differences, however, lay within a .01 range and can thus be neglected.

Corrected item-total correlations for both the PCL-5 and the CAPS-5 clusters were high (.64 – .85), only the subclusters avoidance had medium correlations (PCLavoid: r = .50; CAPSavoid: r = .54).

PCL-5, CAPS-5, and BSI

Furthermore, PCLtot, CAPStot and the BSI-total-score (BSItot) were correlated. Unexpectedly, PCLtot correlated higher with BSItot (r = .84) than with the CAPStot (r = .64). In line with hypotheses, CAPStot and BSItot correlated lower (r =.61) than CAPStot and PCLtot, thus suggesting sufficient discriminant validity between CAPS-5 and BSI.

Receiver operating characteristics (ROC) curve

The ROC analysis was carried out to determine the optimal cut-off score for the PCL-5 among the clinical sample of refugees. The ROC curve for the performance of the PCL-5 gave an AUC of 0.90 (95% CI: 0.87–0.93) and PCL-5 reached the highest-level balanced sensitivity and specificity at a cut-off score of 44 (Table 5 and Figure 3)

Table 5

*Validity Characteristics of the PCL-5 at Different Cut-offs (N = 1202)*

Cut-off score	Sensitivity	1- Specificity
35.50	0.952	0.356
36.50	0.943	0.335
37.50	0.937	0.319
38.50	0.929	0.314
39.50	0.919	0.304
40.50	0.912	0.267
41.50	0.893	0.246
42.50	0.875	0.236
43.50	**0.864**	**0.215**

44.50	0.850	0.209
45.50	0.835	0.194
46.50	0.817	0.188
47.50	0.795	0.168
48.50	0.770	0.147
49.50	0.743	0.136
50.50	0.713	0.120

Figure 3

ROC Curve for PCL-5
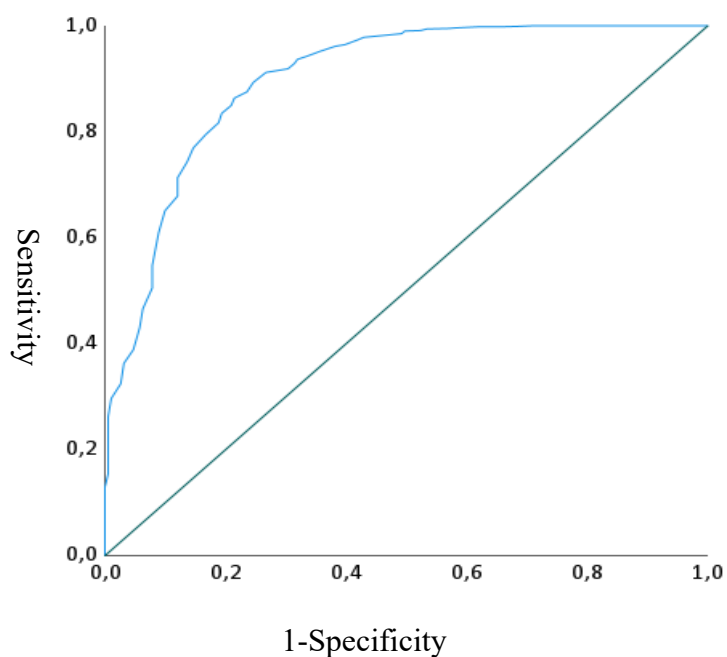
Discussion

This work extends the previous literature on homogeneous groups suffering from PTSD by providing the first psychometric assessment of the PCL-5 in a heterogeneous treatment-seeking sample of refugees. It was hypothesised that the PCL-5 would exhibit robust psychometric properties in the present sample despite the discrepancy between Western understandings of PTSD and the trauma experienced by refugees (Blevins et al., 2015; Bressler et al., 2018). In line with the hypotheses, the PCL-5 clusters generally

measured the underlying constructs of PTSD well. However, the pattern between subscales of smaller clusters having lower scores than larger clusters, based on Cronbach's alpha, was not confirmed and a ceiling effect was observed. Reliability analyses indicated that the items in the PCLarous cluster contained enough unique information to assume that the items were sufficiently distinct from each other. The three remaining clusters (PCLrex, PCLavoid, and PCLneg) also each measured the targeted construct, however, with some high degree of item overlap. Using the PCL-5 and CAPS-5 total scores and the cluster scores, solid convergent within-test validity and discriminant between-test validity were demonstrated. Though the validity pattern of the PCLavoid cluster hereby was as expected, unexpected results were found for the correlations of the three remaining clusters (PCLreex, PCLarous, and PCLneg). Results were also inconsistent when the BSI was included: The PCLtot score correlated most strongly with the BSItot score and not with the CAPStot score as expected. Yet, sufficient discriminant validity was found between the CAPStot and the BSItot. Finally, the ROC analysis yielded an optimal cut-off score of 44 for a heterogeneous clinical sample of treatment-seeking refugees. This decision is higher than that reported in previous literature (cf. 38; Weathers et al., 2013).

Consistent with previous studies, most inter-item correlations in the PCLarous cluster were in the recommended range of moderate magnitude. Therefore, it can be assumed that the items in this cluster possess sufficiently unique information (Briggs & Cheek, 1986; cf. attenuation paradox: illustrating why maximising internal consistency beyond a certain point does not increase construct validity but rather decreases it; Clark & Watson, 1995). However, in contrast to previous literature (Blevins et al., 2015; Verhey et al., 2018), most items in the remaining clusters (PCLreex, PCLavoid, PCLneg) fell outside the recommended range and thus did not differ sufficiently from one another.

One explanation for the low distinction of the items could be the clinical nature of the sample, which includes individuals who are not only severely traumatized but also suffering.

Indeed, being a refugee regularly involves a particularly high trauma load (Blackmore et al., 2020), resulting from a combination of an intolerable situation in the home country (pre-), additional trauma experiences during flight (peri)-, and often in the country of arrival (post-traumatization; Brewin et al., 2000). This combination of an accumulation of traumatic experiences and their long duration often leads to extreme PTSD symptoms, that go far beyond those of prior defined PTSD and are referred to as cPTSD (Cloitre et al., 2013; Ebert & Dyck, 2004). Such particularly high trauma load is linked to an increase in mental and physical health complaints (Sacchi et al., 2020). Hence their high scoring on most items resulted in non-significant differences in the item of most of the PCL-5 cluster, the PCL-5 total score and the preliminary PDSD diagnosis and in a ceiling effect. This is an effect that occurs when the distribution of variables are positively skewed over the range of possible maximum scores (e.g., Ho & Carol, 2015).

Another interpretation for the statistical overlap of the items could be that participants deliberately exaggerated their suffering as a cry for help. Indeed, there is evidence of refugees posing as mentally ill to obtain residence more easily (Newnham et al., 2019). This assertion is supported by the present data, which show a higher mean score ($M = 51.96$; $SD = 15.03$) in the present sample than in studies examining other traumatised, clinical, and treatment-seeking populations (e.g., military personnel; Wortman et al., 2016; or Chinese health care workers during the SARS-CoV-2 outbreak in 2019; Cheng et al., 2020). It should be noted, however, that no meta-analysis to date has summarised the mean PCL-5 scores. Thus, the correlation analyses did not reveal that the questions were not sufficiently different from each other, as the sample consistently reported strong symptomatology.

Turing to construct validity, because the CAPS-5 is a clinical interview which underpins the decision of the PCL-5 (Lee et al., 2022), it should diagnose fewer refugees who suffer from PTSD and detect the false-positive responses of the PCL-5. This can indeed be seen in the data, as the CAPS-5 diagnosed fewer participants with a preliminary PTSD

diagnosis (only 86.3% of those positively diagnosed by the PCL-5). However, both instruments are based on the DMS-5 and hence the Western understanding of PTSD. On the one hand, this means refugees could fall through the grid of both instruments (Ibrahim et al., 2018). This can be seen in the data, as the CAPS-5 questions differ only minimally from the PCL-5. Yet, on the other hand, the observed ceiling effect suggests that the questionnaire does indeed capture the sample's suffering well.

In addition, inconsistencies were found between PCL-5, CAPS-5, and BSI. As PCL-5 and CAPS-5 are based on the same underlying construct of PTSD, they should have higher construct validity with each other, and both consequently have high discriminant validity with the BSI, as it is a general measure of psychopathology (Weathers et al., 2013; Wortmann et al., 2016). Reasons for not finding these patterns could be that the BSI better reflects the symptomatology of cPTSD than the CAPS. Differential exposure to particularly strong types of traumata in certain groups (e.g., genocide, torture) affects the nature of the traumata, and the sociocultural context shapes the expression of individual symptoms (Hinton & Lewis-Fernández, 2010a). These cultural differences link PTSD to specific comorbidities (Hinton et al., 2008) and somatic symptoms (Kirmayer & Bhugra, 2009; Kirmayer & Sartorius, 2007). This may provide circumstantial evidence as to why the BSI, measuring a broader range of symptoms, yields higher construct validity to the PCL-5 than the CAPS-5.

Another explanation could be that PCL-5 and BSI are self-measurements, while CAPS-5 is administered by a third party, like a therapist. Hence, there is a possibility that refugees exaggerate their symptoms to increase their chances of obtaining a residence permit. In the two self-report instruments, they might easily score higher as they see the Likert scale physically presented in front of them. In contrast, in the CAPS interview lying to the interviewer and feigning more severe symptomatology may be a greater burden. Moreover, a form of social desirability could likewise also impact the presented behaviour. Refugees may have had negative experiences with authorities or be less willing to truthfully confide their

situation to a stranger. As a result, they might tend to react in a reserved and closed manner and do not communicate the actual seriousness of their situation. Lastly, during an unfiltered inquiry, a severely traumatised person may dissociate from the most personal emotions and feelings, which impairs memory retrieval (Giesbrecht & Merckelbach, 2005). This demonstrates the variety of variables that must be considered when cautiously interpreting the results of this work.

Furthermore, the analysis of the ROC curve for the present sample yields a cut-off score of 44. This means that all individuals who reach or exceed this value would receive a preliminary PTSD diagnosis. Intending to develop a screening instrument for PTSD that minimises the number of false-negative test results, it appears strategically meaningful to decide on a conservative cut-off score. Firstly, because the decision on the optimal cut-off score is almost always a trade-off between sensitivity and specificity (Fan et al., 2006). Secondly, because of the importance of the PCL-5 to ensure no traumatized individual falls through the system and that all those suffering from PTSD also receive critical care. However, the present analyses yield a significantly higher cut-off value compared to the previous literature, which uses a threshold of ≥ 33 for other conflict-affected populations (Bovin et al., 2016) and a threshold of 35-38 for other clinical non-refugee samples (Bressler et al., 2018; Weathers et al., 2013). This suggests underpinning the generally high severity of traumatisation in the refugee population.

These findings yield two major implications. First, generally, the PCL-5 appears appropriate for the present clinical sample of refugees who are traumatised to a large extent. However, as shown by the ceiling effect, caution should be paid to whether the questionnaire adequately captures the severity of the trauma and cPTSD in particular. If this would not be the case, it would be efficient to adapt the PCL-5 scale or follow it up with another instrument that better captures the characteristics of cPTSD.

Second, refugees' sequential, prolonged, and ongoing traumatisation should be considered when developing and deciding on a screening instrument to be used as a gold standard in screening refugees for PTSD after their arrival in the host country. Special attention should be paid to whether the Western concept of PTSD applies to other cultures. This could also provide clarity on the issue of the high convergent validities between PCL-5 and BSI. Additionally, this might shed light on the additional distress that may tempt refugees to intentionally exacerbate their situation.

Limitations

There are several limitations regarding the result of the study. A first limitation is that it was not possible to include a non-clinical reference group of refugees due to the use of a pre-existing data set. Therefore, trends like the outliers of the boxplots, the skewness of the histograms and, in general, the trends of the results could not be compared to other non-clinical samples. A second limitation concerns the fact that the PCL-5 does not contain any reversed items. This means it is easy for participants to feign higher symptomatology without being statistically identified and consequently deleted from the data set. A third limitation is the Dutch language in which the PCL was conducted. The resulting language barrier may have influenced the understanding of the questions and thus may have substantially biased the results of this study.

Future research

Further research should therefore confirm the results of the present study by means of a control group. Furthermore, future research should use the findings of this work to explore the merits of supplementing the PCL-5 with a cPTSD instrument to better capture the often-severe suffering of traumatized refugees. Moreover, research should develop a framework that defines PTSD in non-Western cultures, taking into account the evidence that PTSD represents

broader symptomatology than previously thought. Particular attention should be paid to the

nature, and prolonged and sequential features of the trauma experienced by refugees.

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Appendix

Appendix A. The PCL-5 questionnaire (Weathers et al., 2013).

Instructions: "Below is a list of problems that people sometimes have in response to a very stressful experience. Please read each problem carefully and then circle one of the numbers to the right to indicate how much you have been bothered by that problem in the past month."

Scoring on a 5-point Likert scale: Not at all (0), A little bit (1), Moderately (2), Quite a bit (3), Extremely (4)

In the past month, how much were you bothered by:

1. Repeated, disturbing, and unwanted memories of the stressful experience?

2. Repeated, disturbing dreams of the stressful experience?

3. Suddenly feeling or acting as if the stressful experience were actually happening again (as if you were actually back there reliving it)?

4. Feeling very upset when something reminded you of the stressful experience?

5. Having strong physical reactions when something reminded you of the stressful experience (for example, heart pounding, trouble breathing, sweating)?

6. Avoiding memories, thoughts, or feelings related to the stressful experience?

7. Avoiding external reminders of the stressful experience (for example, people, places, conversations, activities, objects, or situations)?

8. Trouble remembering important parts of the stressful experience?

9. Having strong negative beliefs about yourself, other people, or the world (for example, having thoughts such as: I am bad, there is something seriously wrong with me, no one can be trusted, the world is completely dangerous)?

10. Blaming yourself or someone else for the stressful experience or what happened after it?

11. Having strong negative feelings such as fear, horror, anger, guilt, or shame?

12. Loss of interest in activities that you used to enjoy?

13. Feeling distant or cut off from other people?

14. Trouble experiencing positive feelings (for example, being unable to feel happiness or

     have loving feelings for people close to you)?

15. Irritable behavior, angry outbursts, or acting aggressively?

16. Taking too many risks or doing things that could cause you harm?

17. Being "superalert" or watchful or on guard?

18. Feeling jumpy or easily startled?

19. Having difficulty concentrating?

20. Trouble falling or staying asleep?