ORIGINAL ARTICLE

# CONFIRMATORY FACTOR ANALYSIS OF URDU TRANSLATED CLINICIAN-ADMINISTERED PTSD (POST-TRAUMATIC STRESS DISORDER) SCALE

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## ABSTRACT

**Objectives:** Methods for Assessing and diagnosing psychological distress in culturally diverse individuals are not properly established. In Diagnostic Statistical Manual (DSM-5), PTSD is categorized as a trauma-related disorder. Clinician-Administered PTSD Scale (CAPS-5) is considered a gold standard to assess PTSD, which was adopted in DSM-5. This study is aimed to develop an Urdu translation of CAPS-5 and its psychometric properties.

**Methods:** The study was conducted to translate and validate CAPS-5 by using the steps forward translation (from English to the Urdu language), and back translation (Urdu to English). The psychometric properties of the scale were assessed using the bilingual sample of individuals from the general population, who had a history of trauma and injury. A total of 317 individuals participated in the study. For data collection, two steps approach was used. Initially, the participants responded to the Urdu Version of CAPS-5, and then participants answered the original English, (CAPS-5). Confirmatory factor analysis was used to validate the factor structure of the Urdu version of CAPS-5.

**Results:** The current study showed that first-order (RMSEA value < .05), and second-order (RMSEA value= 0.03, < 0.05) is a good fit model for PTSD symptom level. The factor loading was statistically positive and significant, which indicated that all items contributed to PTSD symptoms.

Conclusion; The result showed that the Urdu version of the Clinician-Administered PTSD scale has a good Confirmatory model, and statistically significant and positive value for the sample of trauma survivors.

**Keywords:** Factor Analysis, Clinician-Administered PTSD, PTSD

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## INTRODUCTION

The diversity of population throughout the world needed a cross-culturally validated scale or instrument. The researchers may have access to use a reliable and valid instrument in their own culture and language. PTSD is a psychological disorder caused by exposure to life-threatening, distressing, and traumatic events. The prevalence of lifetime PTSD may vary in general populations. The estimated range of PTSD prevalence is about 1.3% to 12.2% depending upon the sociodemographic characteristics. [1] According to DSM-5, PTSD symptoms include distress, avoidance, alteration of mood and cognition, and hypervigilance. [2] The accurate diagnoses of PTSD symptoms may help in better understanding of etiology, which may help in intervention and rehabilitation process. PTSD for the first time was introduced in the third edition of DSM, while later on, the symptoms of PTSD were expanded. Recently, it has been included in the fifth edition of DSM (DSM-5) as a trauma-related disorder. [3] Previously, in DSM-IV, PTSD was listed as having 17 symptoms and divided into three clusters, such as re-experience, numbness, and avoidance. In addition, the PTSD symptoms were expanded in DSM-5 up to 20 symptoms across four factors structure. After fulfilling the criterion (A) about experiencing the traumatic events, these 20 symptoms have four structures, which include intrusive symptoms, avoidance symptoms, negative cognition, and hyperarousal and reactivity. [4]

Moreover, the trauma survivors who have at least one symptom re-experienced from criterion (B), one symptom from avoidance (criterion C), and two symptoms from negative cognition and hyper-arousal (Criterion D) and at least one-month duration, will meet the DSM-5 PTSD criteria. [5] Furthermore, the clinician-administered PTSD

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scale for DSM-5 is a gold standard structured interview that is used for assessing PTSD symptoms and which was adapted in DSM-5. [6] The CAPS-5, assess PTSD symptoms more effectively than self-report measure, as in self-report, the likeliness of bias has been found, which include under or over-reporting and lack of awareness about symptoms. [7] The scoring and assessing PTSD symptomology in CAPS-5, is different from the previous version of CAPS. In the current version of CAPS-5 for DSM-5, the two ratings such as frequency and intensity were combined as a single symptom (rating 0-4). [8, 9]

## CONFIRMATORY FACTOR ANALYSIS

The latent factors related to CAPS-5 have remained an area of discussion for the last two decades. Researchers have planned and tested various models of CAPS-5. [10-12] Some recent studies have published CFA after the issue of DSM-5. Primarily, researchers have explored three models; two six models, the externalized and Anhedonia, and hybrid seven factors models. [13-15] The current version of CAPS-5 has been used for testing these models. Moreover, the Anhedonia model of six factors was used to assess the Criterion-D factor of DSM-5, separate negative effect (D,1-4) and decreasing positive affect (D,5-7) in two separate factors.

Moreover, this model was also used to evaluate the "Criterion-E" of PTSD, by using anxious and dysphoric arousal for (E3-4) and dysphoric (E1-2, and E5-6) symptoms respectively. This model has been supported by earthquakes survivors in china. [13] Similarly, six factors externalized behavioral models used the criterion E for externalizing behavior (E1-2), anxious arousal (E3-4), and dysphoric arousal (E5-6), and this model was supported by American veterans sample (15). This study aimed to assess the confirmatory factor analysis of the Urdu translated version of CAPS-5 for DSM-5.

## MATERIALS AND METHODS

Participants and Procedure

In phase 1, we translated CAPS-5 into the URDU language through the following steps: forward translations, committee approach, backward translation, committee approach. In phase 2, cross-sectional data were obtained to validate the factor structure of the CAPS-5. A total of 317 patients who had a history of trauma and injury were recruited from the Pakistan Institute of Medical Sciences Islamabad Pakistan that is a public-sector hospital in Pakistan. Among these, 229 were male and 88 were female. In addition, some of them had physical injuries during violence including, 132 with head injuries, 137 with orthopedic trauma, and 48 were having multiple soft tissue injuries. Furthermore, consent was obtained from all patients All the participants were older than 18 years of age. Clinician-Administered PTSD Scale for DSM-5 (CAPS-5) is a gold standard 30 items structured interview assessing PTSD according to DSM-5. It takes about 45-60 minutes to administer this scale. Initially, the clinician determined whether the respondent has experienced Criterion A related to traumatic events. If the respondents meet criterion A, then the clinician continued the structured interview to assess PTSD. Each item of the interview was rated with 5 points Likert scale ranging from 0 (absent) to 4 (severe). The minimum score of CAPS-5 is 0 and the maximum score 80. The scale was administered by a trained psychologist. The scale has good reliability ranging from 0.91-0.96. [16]

## RESULTS

Confirmatory factor analysis of PTSD Scale First and second-order confirmatory factor analyses were used to measure the factorial structure of overall CAPS-5 through AMOS-23. Table 1 shows the first-order model fit indices for confirmatory factor analysis of PTSD overall, and 2nd order model fit for symptoms level analyses of PTSD.

The factors structure of PTSD was estimated through confirmatory factor analysis for the overall PTSD scale figure 1, and for the symptoms that included; intrusive symptoms, avoidance symptoms; cognition and mood symptoms; and arousal and reactivity (figure 1).

Both models consist of 20 items. The findings of the first order and 2nd order CFA of PTSD showed good results where 20 items were independent in terms of their error covariances. Table 2 shows the factor loadings for first-order CFA, and Table 3, shows the 2nd order CFA factors loadings. Table 2 showed the standardized factor loading by first-order confirmatory factor analysis of Clinician-Administered PTSD Scale for DSM-5. The factor loading of all items was greater than 0.4 indicating that items contributed to PTSD. Table 3 showed the factor loading by second-order CFA of CAPS-5 for DSM-5 was higher than 0.4. It showed that all the items were responsible to assess the PTSD symptoms. Table 4 showed the first order goodness of fit model for CFA to trauma-related items of CAPS-5 for DSM-5. The findings of the first order of trauma-related PTSD showed good results where 11 items were independent in terms of their error. Covariance model fit indices were satisfactory too. Table 5 showed the first-order standardized factor loading of CFA for trauma-related items of CAPS-5. All the factor loading was statistically significant. All items were contributing to trauma-related PTSD symptoms.

**Table 1: Model Fit Indices for CFA of PTSD (N = 317)**

| Models | χ2 | df | Fit Indices | | | | | | χ 2 /df | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | AGFI | GFI | NFI | CFI | St.RMR | RMSEA | | |
| First Order (20 items, Default Model) | | | | | | | | | | |
| | 682.6 | 170 | .87 | .90 | .86 | .89 | .039 | .03 | 3.9 | |
| Second Order (20 items in 4 symptoms) | | | | | | | | | | |
| | 944.82 | 334 | .92 | .91 | .90 | .91 | .037 | .03 | 2.9 | |

***p < .001

**Table 2: Standardized Factor loading by first order Confirmatory Factor Analysis of PTSD (N = 317)**

| Items | PTSD | Items | PTSD | Items | PTSD | Items | PTSD |
|---|---|---|---|---|---|---|---|
| 1 | .49 | 6 | .70 | 11 | .77 | 16 | .77 |
| 2 | .50 | 7 | .61 | 12 | .82 | 17 | .71 |
| 3 | .51 | 8 | .80 | 13 | .85 | 18 | .79 |
| 4 | .46 | 9 | .81 | 14 | .72 | 19 | .85 |
| 5 | .69 | 10 | .74 | 15 | .76 | 20 | .80 |

**Table 3: Standardized factor loading by second-order Confirmatory Factor Analysis of PTSD at symptoms level (N = 317)**

| Items | Intrusive | Items | Avoidance | Items | Cognition and Mood | Items | Arousal and Reactivity |
|---|---|---|---|---|---|---|---|
| 1 | .75 | 6 | .84 | 8 | .82 | 15 | .77 |
| 2 | .73 | 7 | .74 | 9 | .82 | 16 | .78 |
| 3 | .73 | | | 10 | .75 | 17 | .72 |
| 4 | .73 | | | 11 | .77 | 18 | .80 |
| 5 | .57 | | | 12 | .83 | 19 | .85 |
| | | | | 13 | .86 | 20 | .80 |
| | | | | 14 | .73 | | |

**Table 4: Goodness of Fit Model Indices for CFA of Trauma-Related PTSD (N = 317)**

| Models | χ2 | df | Fit Indices | | | | | | χ 2 /df | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | AGFI | GFI | NFI | CFI | St.RMR | RMSEA | | |
| First Order (11 items, Default Model) | | | | | | | | | | |
| 159.86 | 44 | .87 | .91 | .94 | .95 | .04 | .04 | 3.63 | | |

***p < .001

**Table 5: Standardized factor loading by first-order Confirmatory Factor Analysis of trauma-related PTSD (N = 317)**

| Items | Trauma-Related PTSD | Items | Trauma-Related PTSD |
|---|---|---|---|
| 9 | .82 | 16 | .78 |
| 11 | .77 | 17 | .72 |
| 12 | .81 | 18 | .80 |
| 13 | .86 | 19 | .85 |
| 14 | .73 | 20 | .81 |
| 15 | .76 | | |

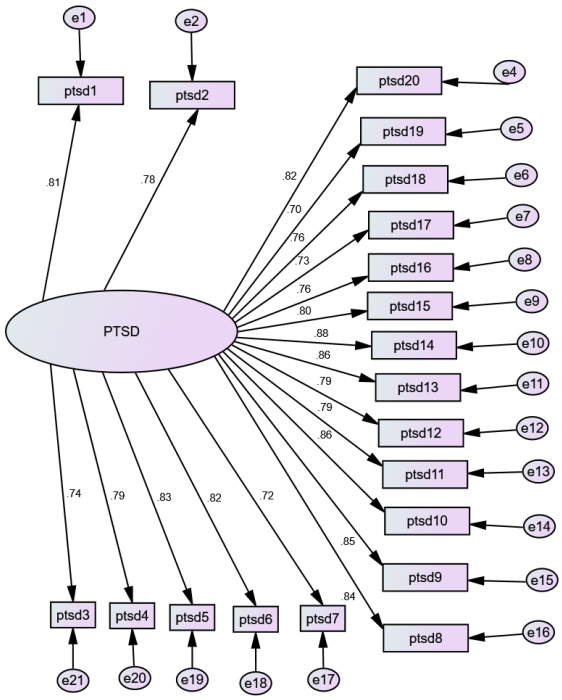


**Fig 1: Factor loading in first-order Confirmatory Factor Analysis (CFA) of PTSD**

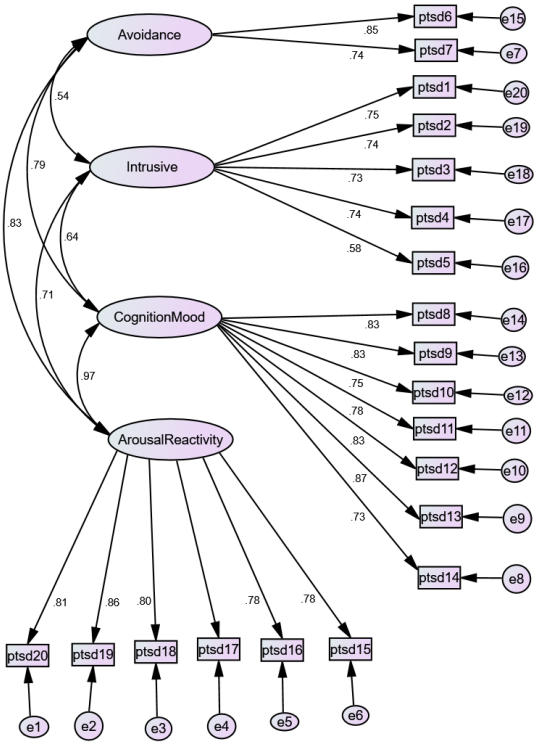


**Fig 2: Standardized factor loadings in second-order confirmatory factor analysis of symptoms level of PTSD**

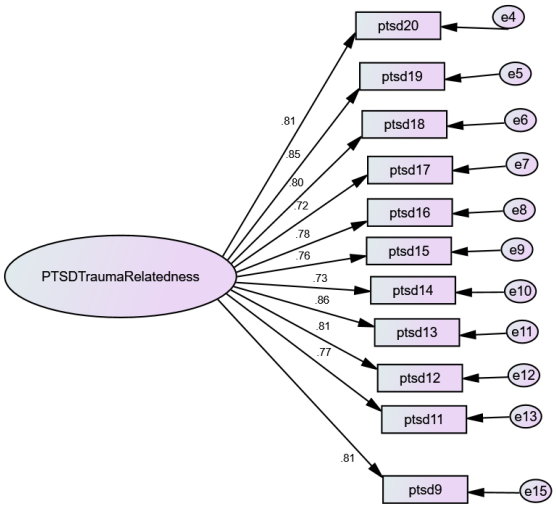


**Fig 3: Standardized factor loadings in first-order confirmatory factor analysis of Trauma-Related PTSD**

## DISCUSSION

In the current study, we aimed to have a validated Urdu version of the Clinician-Administered PTSD Scale for DSM-5 (CAPS-5) for trauma survivors. A confirmatory factor analysis was carried out on CAPS-5, and no warning messages were received from AMOS. All 20 items were distributed into four symptoms i.e.

intrusive symptoms, negative cognition, avoidance, and hyper-arousal. All the factor loading had higher than 0.4 which indicated that all the items were responsible for PTSD symptoms. Additionally, trauma-related items were also loaded for first-order confirmatory factor analysis.

The result of factor loading was higher than 0.4 that indicated that the items contributed trauma related to PTSD. Furthermore, the result for model fit indices showed a satisfactory result. GFI= .90, AGFI=.87, NFI=.86, RMSEA=.03, and RMR= .03 indicate a good fit. Similarly, model for trauma-related items might also good fit. Coughlan recommended that some researchers may have calculated a relative chi-square (x2df).

They have proposed a ratio range of 2 to 1 or 3 to 1, and was accepted. [17] The result of the present study showed 3.9 which is adequate for model fit. Similarly, some researchers suggested that RMR might be <0.08

and ideally <0.05. [18] In the current study, RMR value was .03 which falls within the proposed range. The AGFI of the current study was 0.87, which is greater than >0.80. [19]

The psychometric characteristics of the Urdu translated version were supported by an entirely different American sample. [20] Regarding, the original factor structure of CAPS-5 for DSM-5 for PTSD symptoms, the current study result might also be providing support to the DSM-5 model, where these diagnostic criteria were recently considered the best evidence for PTSD symptoms.

The current study had several limitations. All the samples were recruited from hospitalized population and the majority were men. It is unclear how the result of the current study could be generalized to non-clinical samples and women. The sample was taken from a single geographic population, so the result may not be generalizable to samples belonging to other regions of the country. Further large-scale studies are needed to fill these gaps.

## CONCLUSION

The current study was intended to assess the CFA of translated Urdu version of the Clinician-Administered PTSD Scale for DSM-5 among trauma survivors. The result showed that the Urdu version of CAPS-5 has a good model fit which was statistically significant and positive for the sample of trauma survivors. It has been established through current results that CAPS-5 is psychometrically a good measure for PTSD symptoms.

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**AUTHOR'S CONTRIBUTION**

Following authors have made substantial contributions to the manuscript as under

**Zaman S:** Conceived and designed the research, collected data

**Irfan S:** Analyze data statistically and drafted the manuscript.

**Hussain B:** review manuscript.

**Arouj K:** reviewed the manuscript.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.