

Reliability of the Telugu Translation of Perceived Stress Scale in Young adults

Rodah Menorah B.^{1*}, Bismirty Bhuyan²

ABSTRACT

The Perceived Stress Scale (PSS) has been widely used on various populations across India and the world; however, there is currently no validated or reliable Telugu translation available for young adults who prefer a medium other than English (there is one translation for frontline health workers during Covid-19 by Tikka, S.K., et al. in 2022). This gap limits the accessibility and the ability to accurately assess this demographic. Our study thus aims to create a reliable and valid translation of the Perceived Stress Scale originally developed in 1983 by Cohen et al. in Telugu. For this purpose, we translated the original scale into Telugu following forward-backward method. Both the English and translated Telugu versions were administered to 150 bilingual young adults belonging to the age range of 18-25 from Madanapalle, Andhra Pradesh. We employed Cross-sectional research and convenience, snowball sampling methods to select participants who belong to the age range and are fluent in both languages. We statistically conducted exploratory factor analysis, Cronbach's alpha for reliability, paired sample t-test, and Pearson correlation to assess the psychometric properties of the translated scale with the help of JAMOVI 2.6.13 and IBM SPSS software. The Telugu version of the perceived stress scale is structurally equivalent, shows acceptable reliability, strong positive correlation, and a statistically significant difference in mean scores according to the paired sample t-test which could have been influenced by language and cultural differences rather than a flaw in the translation itself.

Keywords: *Perceived Stress, Telugu Translation, Young Adults, Reliability*

Perceived Stress

Perceived stress is an important psychological element that refers to the degree to which events in a person's life are assessed as stressful, unpredictable, and uncontrollable (Cohen, Kamarck, & Mermelstein, 1983; Phillips, 2012). Assessment of stressful life events is done on a personal level. Cohen et al. developed an instrument in 1983 to measure the amount of appraisal and coping abilities in participants and validated its psychometric properties by studying three populations, two from college students and one group from a community smoking cessation program (Cohen, S., Kamarck, T., & Mermelstein, R., 1983). This appraisal-based scale outperformed life event stress evaluations.

¹Student, Masters of Science in Clinical Psychology, Amity Institute of Behavioural and Allied Sciences, Amity University Bengaluru, India

²Assistant Professor, Dept. of Psychology, Amity Institute of Behavioural and Allied Sciences, Amity University Bengaluru, India

*Corresponding Author

Received: December 25, 2024; Revision Received: February 24, 2025; Accepted: February 28, 2025

Reliability of the Telugu Translation of Perceived Stress Scale in Young adults

Consequently, three versions of PSS consisting of 14, 10, and 4 items respectively, were validated and published (Mozumder, M.K., 2017). Sufficient evidence of validity and reliability was indicated by studies conducted over different cultures, populations and across different time periods all over the world, and PSS has been established as a robust tool for measuring perceived stress (Mozumder, M.K., 2017). The scale has been successfully used on multiple demographics like general people (Cohen, S., Williamson GM., 1988), pregnant women, elderly workers, cancer patients, and psychiatric workers (Mozumder, M.K., 2017).

Young adulthood

India boasts of having the largest youth population, with around 24 million young people. Over half of India's population is under the age of 25 years, heavily contributing to the workforce and thus driving the economy and growth of the country (Jain, T. & Joshi P., 2021). The developmental period of young adulthood begins in the late teens and lasts through the early 20s, typically lasting from 18 to 25 years (Rider, E. A., Sigelman, C.K., 2012). This period, often referred to as "youth", is mostly marked by a transition from dependence on parents to social and financial independence as individuals begin to focus on shaping their own careers and families. During this crucial period of transition, there are multiple factors that can contribute to the levels of stress that people face.

Factors causing Perceived stress in young adulthood

Events that evoke stress responses are known as stressors, and they cover a wide range of situations such as academic pressure (Ansari, W. E., Oskrochi, R., 2014), time management, relationship problems, career aspects, financial problems, peer influences, media, competition in the workforce, and so on (Kohli, N., et al., 2022).

Need to translate the Perceived Stress scale into Telugu

This study has been undertaken to cover the gap in research about Perceived stress in young adults whose preferred medium is Telugu. This study accounts for culturally sensitive translation and access to data from this demographic, which can result in better mental health support and assistance.

REVIEW OF LITERATURE

Shidhaye, R. et al. (2024) undertook the task of translating and validating the Perceived stress scale into Marathi. They followed a structured 5-step procedure according to the guidelines of WHO to translate the scale into Marathi and administered both the English and Marathi versions of the scale to a total of 100 pregnant women. Analysis and comparison of responses was done using Pearson's correlation coefficient method and Bland-Altman's plots to establish the agreement between the two languages. A Satisfactory correlation was found between responses.

Tikka, S.K., et al. (2022) translated the Covid-19 related Perceived Stress Scale into Telugu following the forward-backward translation method. They administered both English and Telugu versions to 323 grassroot healthcare workers after pre-testing the translation on 14 bilinguals. Split-half reliability using Spearman-Brown coefficient, exploratory factor analysis, factor reliability and convergent validity revealed that their translation held good psychometric validity and reliability.

Pangtey, R. et al. (2020) translated and validated the 10-item PSS into Hindi, administering it to 480 adult subjects aged 25-65 in Delhi after forward-backward translation and pretest. After

Reliability of the Telugu Translation of Perceived Stress Scale in Young adults

Principal component analysis and the split-half reliability test, it was concluded that the scale had an acceptable level of consistency, validity, and reliability.

Muthukrishnana, N. et al. (2024) translated and established the psychometric properties of the Perceived Stress scale in Tamil after administering it to 213 elderly people belonging to 60 years and above. They studied the mean, alpha coefficient, temporal stability, and factorial structure, concluding that the translated version had validity and reliability among Tamil-speaking elderly population.

Mozumder (2017) translated the Perceived Stress scale into Bengali and tested its validity on 296 LGBT participants from 6 districts in Bangladesh. He employed a cross-sectional design and a two-stage sampling strategy to collect his data. Analysis of the results proved that the translation showed good psychometric properties, acceptable internal consistency, reliability and validity among the LGBT population.

METHODOLOGY

Objective

The objective of this study was to conduct a factor analysis, internal consistency, reliability, and validity for the Telugu translation of the 10-item Perceived Stress Scale among young adults.

Research Design

A Cross-sectional research method was employed to collect responses from 150 young adults who are fluent in both English and Telugu.

Methodology for Translation

A forward-backward translation procedure was employed where the original English version created by Cohen et al. was translated into Telugu by a language expert and Professor of ethics (BSVK). The Telugu translation was then reviewed by a committee consisting of one expert in English (SB), one PhD research scholar in psychology (SPGI) and one expert in Telugu grammar (LMVB) who are all bilingual. Cultural sensitivity and grammar were checked, and the required changes and alterations were made to the questions in order to make them understandable. After the review, it was translated backward into English by another professor, a doctorate holder in English (PA), who was unaware of the original English version of the perceived stress scale. The backward translation was compared to the original English scale, and changes were made where necessary. Both the questionnaires in English and Telugu were converted into Google forms and circulated to 150 students in Madanapalle, Andhra Pradesh, aged 18-25. Both questionnaires were administered at the same time without any interval following the simultaneous testing method, and responses were obtained in Google Sheets.

Sample

The sample for this research study are young adults belonging to ages 18-25. The sample includes male and female participants who belong to Madanapalle, Andhra Pradesh.

Sampling Method

Participants for the study were selected from Madanapalle Institute of Technology using the convenience and snowball sampling method.

Reliability of the Telugu Translation of Perceived Stress Scale in Young adults

Sample size

The sample consisted of N = 150 participants.

Inclusion Criteria

The participants are included based on the age criteria and their ability to read and write both Telugu and English.

Exclusion Criteria

The participants outside of the age criteria and those who are not bilinguals have not been included in the study.

Tool for data collection

Perceived Stress Scale by Cohen et al. (1983) and Perceived Stress Scale Telugu-translation.

Procedure for Data Collection

The PSS and the Telugu translation were converted into a comprehensive online questionnaire with 10 questions and a 5-Option Likert scale from which the participants could choose their responses. It was administered to the sample via Google Forms and circulated through online platforms like WhatsApp.

Procedure for data analysis

The participants were asked to answer the 10 questions of the Perceived Stress Scale and the Telugu translation by choosing from the 5 alternative options to reflect how they felt in the last month. Item numbers 1, 2, 3, 6, 9, and 10 of the questionnaires measured the appraisal aspect of stress, which is how stressful an event or situation was perceived to be by the young adult. Item numbers 4, 5, 7, and 8 of the questionnaires measured the coping aspect of stress, which is how resilient and capable the young adults perceived themselves to be in controlling the situations. The scoring for item numbers 1, 2, 3, 6, 9, and 10 was 0, 1, 2, 3, 4 respectively for each option on both scales, and this scoring was reversed for item numbers 4, 5, 7, and 8.

All the 10 responses of each participant were scored and interpreted according to the following interpretation key given by Cohen et al.

Total Score	Interpretation
0-13	Low Perceived Stress
14-26	Moderate Perceived Stress
27-40	High Perceived Stress

After interpretation, all the total scores, mean score, and standard deviation scores were calculated. Exploratory factor analysis and total-item correlation was conducted using JAMOVI 2.6.13 version software, Cronbach's alpha to assess the internal consistency reliability, Pearson correlation and paired sample t-test were calculated with IBM SPSS to statistically analyze the correlation of responses between the original English and translated Telugu scales.

Ethical Considerations

Informed consent was obtained from all participants. Permission was granted by the Head of Department of the concerned branch of the college from which students participated in this study. They were also given the option to opt out of the study at any time. There was no compulsion in obtaining responses, and they were all assured that the data collected would be treated with the utmost confidentiality and used for research purposes only.

RESULTS AND DISCUSSION

This research aimed to evaluate the reliability of the Telugu translation of the perceived stress scale using various psychometric methods. The means and standard deviations for both responses were calculated; the English scale yielded a mean score of 18.0 and a standard deviation of 5.28, while the Telugu scale yielded a mean score of 19.2 and a standard deviation of 6.06. The mean difference between the two is -1.17. [Table 1]

Table 1 Descriptives Statistics

	N	Mean	Median	SD	SE
English	150	18.0	18.0	5.28	0.431
Telugu	150	19.2	20.0	6.06	0.495

Exploratory factor analysis was conducted using the principal axis factoring extraction method in combination with Promax rotation to assess the structural equivalence for the Telugu translation [Table 2]. The sample size was sufficient according to the recommended sample size [i.e., 15 participants for each question], which was backed by the Kaiser-Meyer-Olkin (KMO) for the Telugu translation yielding 0.730, indicating good and acceptable sampling adequacy [Table 3]. Bartlett's test of sphericity is significant, $\chi^2(45) = 383.737$, $p = <.001$, confirming that the data was suitable for factor analysis [Table 4].

Table 2 Showing Factor Loadings

	1 Appraisal	2 Coping	3 Uniqueness
Q1	0.652		0.561
Q2	0.663		0.495
Q3	0.671		0.561
Q4		0.626	0.609
Q5		0.367	0.772
Q6	0.445		0.804
Q7		0.546	0.710
Q8		0.567	0.634
Q9	0.664		0.570
Q10	0.717		0.462

The analysis revealed that the 10 questions loaded satisfactorily onto two factors: Appraisal (item numbers 1, 2, 3, 6, 9, and 10) and Coping (item numbers 4, 5, 7, and 8). The factor loadings of the translated scale were highly comparable to the original factor structure of PSS, thus confirming that the translation retains the two-factor structure and construct validity.

Table 3 KMO Measure of Sampling Adequacy

	MSA
Overall	0.730

Table 4 Bartlett's Test of Sphericity

χ^2	df	p
384	45	<.001

To assess internal consistency reliability, the Cronbach's alpha was calculated, the α value was 0.721, exceeding the 0.7 threshold, indicating satisfactory internal consistency. [Table 5]. Table 6 describes the impact caused by deletion of each item of the Telugu translation on Cronbach Alpha value.

Reliability of the Telugu Translation of Perceived Stress Scale in Young adults

Table 5 Reliability statistics showing Cronbach alpha value

Cronbach's Alpha	N of items
0.721	10

Table 6 Showing effect of item deletion on Cronbach Alpha value

	Scale Mean if Item Deleted	Cronbach's alpha if Item Deleted
Q1	17.3333	0.681
Q2	17.4800	0.668
Q3	17.1667	0.683
Q4	17.7733	0.738
Q5	17.1533	0.700
Q6	17.4400	0.714
Q7	17.5867	0.737
Q8	17.3267	0.705
Q9	17.2733	0.685
Q10	17.4067	0.664

Paired samples t-test was performed to compare the total and mean scores of the young adults on both the English and Telugu scales. The $t(149) = -2.92$, $p = 0.004$ (two-tailed). A negative t score suggests that the mean on the English scale is significantly less than the mean on the Telugu scale. Indicating that there is a significant difference in responses between the two scales. [Table 7]

Finally, Pearson's correlation was computed to assess the correlation of total scores of each participant on both the scales; a strong positive correlation was found ($r = 0.631$, $p < 0.01$), indicating a high level of consistency in responses between the two scales. [Table 8]

Table 7 Showing Paired Sample T-test scores

Pair	Mean	SD	t	df	Sig.
English-Telugu	-1.1733	4.92187	-2.920	149	0.004

* $p \leq 0.05$ (2-tailed)

Table 8 Showing Pearson Correlation Scores

	English	Telugu
English	-	.631**
Telugu	.631**	-

**Correlation is significant at the 0.01 level (2-tailed)

Limitations

The statistically significant mean difference observed in the paired sample t-test indicates that the results obtained from the English and the Telugu scale in all likelihood have minor differences. This could be as a result of other aspects that have influenced the way the concept of Perceived stress is viewed in other cultures and languages.

Even if the factor structure is retained, there might have been losses in translation owing to cultural or language barriers. There may have been certain words or phrases in the Telugu version that were perceived in such a way, which affected the relative response on the two scales. The participants only belong to the ages of 18-25, which limits the generalizability of

Reliability of the Telugu Translation of Perceived Stress Scale in Young adults

findings to other age groups. Though Cronbach alpha shows a satisfactory internal consistency, it does not account for the dimensionality or distinctiveness of the two factors. Further analysis using confirmatory factor analysis (CFA) could benefit the research.

Future research directions

Further research should be done in comparing the Telugu PSS with other language versions in other cultural settings to ascertain if the variation in the responses is due to cultural differences in the stress perception or just translation differences. Performing a detailed Confirmatory Factor Analysis on the Telugu version would provide additional support for claims regarding its construct validity and also validate the two-factor structure yielded from the exploratory analysis. The test-retest reliability of the Telugu version in long-term studies to evaluate its ability to measure perceived stress in an individual over a certain period of time could be assessed. From the stress construct perspective, the convergent and discriminant validity of the Telugu PSS, should be proved in future research.

CONCLUSION

The Telugu version of the perceived stress scale is structurally equivalent, shows acceptable reliability, strong positive correlation, and a statistically significant difference in mean scores according to the paired sample t-test which could have been influenced by language and cultural differences rather than a flaw in the translation itself. Further confirmatory factor analysis (CFA) and simplification of language and words used to make the questions more understandable can enhance the paired sample t-test scores and make the Telugu questionnaire more reliable and valid.

REFERENCES

- Ansari, W.E., Oskrochi, R. (2014). Are student symptoms and health complaints associated with perceived stress at university? Perspectives from the United Kingdom and Egypt. *International Journal of Environmental Health and Public Health* 11(10), 9981–10002.
- Cohen, S., Kamarck, T. & Mermelstein, R. (1983). A Global Measure of Perceived Stress. *Journal of Health and Social Behaviour*, 24,385-396.
- Cohen, S., Kamarck, T. & Mermelstein, R. (1983). A Global Measure of Perceived Stress. *Journal of Health and Social Behavior*, 24(4), 385–396. <https://doi.org/10.2307/2136404>
- Cohen. S., Williamson G.M. (1988). Perceived stress in a probability sample of the United States. In: Spacapan S, Oskamp S, editors. *The social psychology of health*. Newbury Park, CA: Sage Publications, Inc.; p. 31–67.
- Jain T. & Joshi P. (2021). The Stage of Young Adulthood: Challenges and Issues in Career Choices. *International Journal of Indian Psychology*, 9(2), 2023-2030. DOI:10.25215/0902.201
- Kohli, N., Dua, K. (2022). Stress Among Youth: Causes and its Management in Recent Times. *International Journal of Science and Research (IJSR)*. 11. 1002-1007. DOI:10.21275/SR22714172859
- Mozumder, M.K. (2017). Validation of Bengali perceived stress scale among LGBT population. *BMC Psychiatry* 17, 314. <https://doi.org/10.1186/s12888-017-1482-0>
- Muthukrishnan, N., Veluswamy, N. & Nagaraj, M. (2024). Psychometric Properties of The Tamil Version of Cohen's Perceived Stress Scale. *Aegaeum*. 8. 436-447.
- Pangtey, R., Basu, S., Meena, G.S., Banerjee, B. (2020). Perceived Stress and its Epidemiological and Behavioral Correlates in an Urban Area of Delhi, India: A Community-Based Cross-Sectional Study. *Indian J Psychol Med*; 42(1):80-86. DOI: 10.4103/IJPSYM.IJPSYM_528_18

Reliability of the Telugu Translation of Perceived Stress Scale in Young adults

- Rider, E. A., Sigelman, C.K. (2012). Life-span human development. Belmont: Wadsworth.
- Shidhaye, R., Thanage, C., Bangal, V., and Behere N. (2024). Translation and Adaptation of the Perceived Stress Scale and the Multidimensional Scale of Perceived Social Support into Marathi [version 1; peer review: 1 not approved]. Wellcome Open Res, 9:512 (<https://doi.org/10.12688/wellcomeopenres.22518.1>)
- Tikka, S.K., Malathesh, B.C., Bhatia, V., Sahoo, D.P., Sreepada, N., Meena, S.K. (2022). Factor Structure of the Telugu Version of the COVID-19 Pandemic-Related Perceived Stress Scale (PSS-10-C) Administered on Grassroots Frontline Health Care Workers of Rural Telangana. Indian Journal of Psychological Medicine; 44(3):272-278. DOI:10.1177/02537176221086848

Acknowledgment

To God Almighty for this opportunity. To my translation team who invested their valuable time in making this study possible. To Rev. Dr. B. Sunil Vara Kumar (BSVK) who forward translated the questionnaire into Telugu, to Mr. B. Suresh Babu (SB), retired Principal and Regional Inspecting Officer (RIO), Intermediate Board in Ananthapuramu, Andhra Pradesh, Rev. Dr. Samuel Peter Gadda Immanuel (SPGI), PhD scholar in Psychology, and Mrs. Lucy Mary Vimala Bai (LMVB), expert in Telugu grammar who were part of the translation review committee. To Dr. P. Anuradha (PA), Professor of English at BVRITH College of Engineering for Women, Hyderabad, who backward translated the forward Telugu translation into English. To Dr. D. Pradeep Kumar, professor in Management, Madanapalle Institute of Technology and Sciences, Madanapalle for granting permission to obtain responses from students. To Mrs. Shruthi.R my professor in UG at BCWCC, Bangalore for her constant support, I extend my deepest gratitude.

Conflict of Interest

The author(s) declared no conflict of interest.

How to cite this article: Rodah, M.B., & Bhuyan, B. (2025). Reliability of the Telugu Translation of Perceived Stress Scale in Young adults. *International Journal of Indian Psychology*, 13(1), 1290-1299. DIP:18.01.121.20251301, DOI:10.25215/1301.121

APPENDIX I

Perceived Stress Scale – PSS10 by Cohen et.al.

The questions in this scale ask about your feelings and thoughts during the last month. In each case, you will be asked to indicate how often you felt or thought a certain way.

Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is to answer fairly quickly. That is, don't try to count up the number of times you felt a particular way; rather indicate the alternative that seems like a reasonable estimate.

For each question choose from the following alternatives:

0 – never 1 – almost never 2- sometimes 3 – fairly often 4 – very often

1. In the last month, how often have you been upset because of something that happened unexpectedly?
2. In the last month, how often have you felt that you were unable to control the important things in your life?
3. In the last month, how often have you felt nervous and stressed?
4. In the last month, how often have you felt confident about your ability to handle your personal problems?
5. In the last month, how often have you felt that things were going your way?
6. In the last month, how often have you found that you could not cope with all the things that you had to do?
7. In the last month, how often have you been able to control irritations in your life?
8. In the last month, how often have you felt you were on top of things?
9. In the last month, how often have you been angered because of things that happened that were out of your control?
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

APPENDIX II

అనుభవిత ఒత్తిడి కొలబద్ధ - పిఎస్ఎస్ 10

ఈ కొలబద్ధలోని ప్రశ్నలు గత నెలలో మీ భావాలు మరియు ఆలోచనల గురించి అడుగుతాయి. ప్రతి సందర్భంలో, మీరు ఒక నిర్దిష్ట మార్గంలో ఎంత తరచుగా భావించారో లేదా ఆలోచించారో సూచించవలెను. కొన్ని ప్రశ్నలు సారూప్యంగా ఉన్నప్పటికీ, వాటి మధ్య తేడాలు ఉన్నాయి మరియు మీరు ప్రతిదాన్ని ప్రత్యేక ప్రశ్నగా పరిగణించాలి. చాలా త్వరగా సమాధానం ఇవ్వడం ఉత్తమ విధానం. అంటే, మీరు నిర్దిష్ట మార్గంలో ఎన్నిసార్లు భావించారో లెక్కించడానికి ప్రయత్నించవద్దు, బదులుగా మీకు సరిగ్గా అనిపించే అంచనాను తెలియపరిచే జవాబును ఎన్నుకొనండి.

ప్రతి ప్రశ్నకు క్రింది ఎంపికల నుండి ఎంచుకోండి:

0-అస్సలు లేదు 1-దాదాపు లేదు 2-కొన్నిసార్లు 3-దాదాపు తరచుగా 4-చాలా తరచుగా

1. గత నెలలో నీవు అనుకున్న సంఘటన నీకు జరుగుట వలన బాధకు గురిచేయబడ్డావా?
2. గత నెలలో ప్రముఖమైన సంగతులను స్వాధీనములో ఉంచుకోలేకపోయావని ఎన్ని సార్లు అనుకున్నావు?
3. గత నెలలో ఎంత తరచుగా నీవు చాలా ఒత్తిడికి గురిచేయబడ్డావు?
4. గత నెలలో ఎన్ని సార్లు నీ వ్యక్తిగత సమస్యలను నీ అంతట నీవు పరిష్కరించు కొనగలవని అనుకున్నావు?
5. గత నెలలో ఎన్ని సార్లు నీకు కావాల్సినట్టుగా సంగతులు జరుగుతున్నాయని అనుకున్నావు?
6. గత నెలలో ఎన్ని సార్లు మీరు తప్పక చేయవలసిన పనులను చేయలేకపోయారని అనుకుంటున్నారు?
7. గత నెలలో ఎన్ని సార్లు నీకు కలిగిన కోపాన్ని సహించి, అధికమించ గలిగావు?
8. గత నెలలో ఎన్ని సార్లు నీవు నీ పరిస్థితులకన్నా బలముగ ఉన్నావని అనుకున్నావు?
9. గత నెలలో ఎన్నిసార్లు నీవు నీ స్వాధీనములో లేని విషయాలు జరిగినప్పుడు కోప్పడ్డావు?
10. గతనెలలో ఎన్నిసార్లు నీకు సమస్యలను అధికమించు శక్తిలేదని అనుకున్నావు?