TRANSLATION AND PSYCHOMETRIC VALIDATION OF THE DISCOMFORT INTOLERANCE SCALE IN URDU

Asma Zafar[*1], Prof. Dr. Najma Najam[2]

[*1]*PhD Scholar, Institute of Applied Psychology, University of the Punjab, Lahore, Lecturer, Department of Psychology, Virtual University of Pakistan*
[2]*Professor Emeritus, Institute of Applied Psychology, University of the Punjab, Lahore*

[*1]asmazafar@vu.edu.pk, [2]najamnajma@yahoo.com

[*1]https://orcid.org/0009-0009-6546-7836, [2]https://orcid.org/0000-0002-5013-0212

Corresponding Author: *

ABSTRACT

In recent years, extensive research has been conducted on the construct of distress tolerance. The term distress tolerance refers to the ability of the individual to cope with negative outcomes and emotional states. The primary objective of the current investigation was to adapt and translate the Discomfort Intolerance Scale (Schmidt, et al., 2006) into Urdu, as Urdu translation of this measure is not yet available. This study was divided into three distinct phases. Phase I focused adaptation of the scale. Translation of the scale was done in Phase II. Phase III was dedicated to determining the scale's psychometric properties. The sample comprised 316 migraine patients, including 109 males and 207 females, who were selected using the purposive sampling technique and fell within the age range of 24-50 years (M = 32.66, SD = 5.44). The reliability coefficient of the translated scale is .78. Confirmatory factor analysis was performed to confirm the factors associated with Discomfort Intolerance Scale. The results indicated that the translated scale is a reliable and valid scale. This measure can be used in a variety of settings especially in research and clinical settings. Additionally, it will aid future Pakistani researchers in improving Urdu translation, if needed, or translating it into any other regional language.

Keywords. *Discomfort Intolerance Scale, Adaptation, Translation, Confirmatory factor analysis.*

INTRODUCTION

Distress tolerance can be defined as the ability of the individual to cope with negative outcomes and emotional states (Simons & Gaher, 2005). Therefore, a higher distress tolerance imparts the ability within the individual to be able to withstand adverse external surroundings, stresses and times of intimidation. On the other hand, Leyro et al., (2010) defined distress tolerance in relation to psychosocial problems, and stated that lower abilities of coping with stress resulted in higher chances of developing psychopathological illnesses. These illnesses could include anxiety, depression, substance abuse and other pathological issues including migraine. Within individuals with underlying psychosocial problems, distress tolerance could further intensify or deprecate their wellness, as even menial emotionally challenging scenarios can become unbearable (Kraemer et al., 2016). In order to understand the role of distress tolerance in enabling psychosocial problems, Jeffries et al. (2016) highlighted the use of a distress tolerance

scale, in which self-reports can be made on distress tolerance emotionally, physically, or socially. Using this scale, distress tolerance aspects within an individual can be analyzed, which can then be used to identify the likelihood of developing psychosocial problems. Embalzado and Varma (2017) further stated that certain personality temperaments individuals are born leaders and workaholics that thrive during stressful situations, making their distress tolerance high.

According to Sair et al. (2020), a migraine is an illness that engulfs all aspects of the life of the individual and affects the most personal moments as well as social patterns in a migraine patient's life. Therefore, distress tolerance is also an aspect that is affected by migraine, meaning that certain individuals can be forced to become lowly tolerant of distress. Evidence of this has been given in the study of Onen and Günes (2020), in which both discomfort intolerance and distress tolerance were analyzed. The findings of the study revealed that migraine patients have an extremely low threshold when it comes to withstanding external stresses, both in the form of physical comfort and emotional distress. On the contrary, Khalili et al., (2019) compared migraine patient's tolerance to distress with individuals that did not have migraine. Results indicated that people with migraine have a low tolerance to stress. The reason behind this low tolerance can be attributed to the low quality of life that migraine patients have, as a constant headache makes it highly difficult for them to regulate emotions and adjust in accordance with stresses.

In migraines, distress tolerance cannot remain confined to theories, but it becomes indicative of reality that can define the outcome of interventions (Driscoll et al., 2021). Akbari et al. (2022) stated that low distress tolerance is known as a high level of anxiety, which has a negative correlation with medical compliance and positive engagement in behaviors including exercising preventive healthcare, and stress reduction using relaxation methods. Such behaviors are essential in chronic diseases where symptom elimination is not an option and efforts are geared towards

management and improvement of the patient's quality of life (Cohen et al., 2021). Panes et al. (2020) mentioned that individuals with low distress tolerance may be classified as non-adherent. This can be attributable to their refusal to present themselves for appointments or to follow reported therapies because of the anticipated distress or discomfort associated with these treatments. Tasorian et al., (2022) assert that this non-compliance escalates the condition, and thus, results in a cycle of worsening symptoms and anxiety. Thus, it can be suggested to elevate the idea that the enhancement of distress tolerance might be considered as one of the components of migraine treatment that is aimed not only at decreasing the patient's suffering but also at the supply of the person with the tools to cope with the state and the pathology (Tasorian et al., 2022). Furthermore, awareness of the use of distress tolerance may enable clinicians to develop better strategies for intervention and ensure that the right kind of encouragement is accorded to the patient and assist him/her in managing the physical and emotional impact of the disease. As stated by Ashina et al. (2021) integrated approach to treating Migraine that considers distress tolerance as part of the optimisable component might have better outcomes for the patient such as frequency and severity of Migraine, improved mood, and overall quality of life.

Distress tolerance is a critical concept in clinical practice and studies, and there are several self-report measures and other assessment tools that can be used to assess this construct. Among the most commonly used tools is the Distress Tolerance Scale (DTS), which evaluates an individual's ability to tolerate emotional distress across four dimensions: It comprises of tolerance, appraisal, absorption, and regulation (Brown et al., 2022). Clinically, practitioners have used it to determine the coping strategies that a patient employ while in research in order to determine whether there is a relationship between distress tolerance and other psychological factors. Tofangchi et al. (2022) discuss that other tools are the Frustration Discomfort Scale (FDS) and the Distress Tolerance Questionnaire (DTQ), which focus

on different aspects of distress present in individuals and their ability to endure it. Distress tolerance is measured more often than the other components; however, there are several challenges when it comes to its assessment.

For example, as highlighted by Cheryan and Markus (2020), cultural aspects can influence the way that distress is experienced and reported, leading to measurement effects. As pointed out by Larrazabal et al. (2022), other psychological factors affect self-report measures of distress tolerance, such as a person's mood or mental state at the time of completing the assessment, which yields the scores. In addition, irrespective of the role of distress tolerance as a clinical measure or a research tool, participants may respond in different manners, depending on the meaning given to the task. Osmancevic et al. (2021) assert that the studies on the validity and reliability of these tools have revealed that most of the tools used in the different populations possess adequate psychometric credentials.

However, the distress tolerance scales are still required to be applied for further research and verification among certain groups of people, like migraine patients. For instance, in the 'Talbot et al. (2021)' report, there is information regarding potential deficiencies in distress tolerance in chronic migraine patients, which may impact treatment efficacy and patient's well-being. Thus, Woldeamanuel and Cowan (2022) noted that it is essential to transpose these tools in such populations, for example, in persons suffering from migraines, to assess the validity of the measurements. These considerations also highlight the limitations associated with measures of distress tolerance and suggest that more work exists to be done in developing and refining these indices for use in various contexts and populations.

Significance of Study

Compared with indigenous research, additional methodological challenges are faced by international cross-cultural research that may significantly increase the risk of inferential errors if not properly addressed (Singh, 1995). There is an emphasis on part of

literature that concepts and constructs may require culture-specific meanings and attributes which need to be clearly taken into account to guarantee significant understanding of cross-cultural data (Peng et al, 1991). In a similar manner, the way respondents answer the same question is affected by the language of the questionnaire (Harzing & Maznevski, 2002). Thus, owing to the importance of tool translation in native languages and the importance of the Discomfort Intolerance Scale in research, guidance, and counseling, this tool was chosen to translate in the current study. This translation is intended to make this scale effectively understood by the individuals to whom the translated questionnaire is administered and to overcome the language barrier in use for research purposes in Pakistan. This significant achievement is crucial due to the potential variation in psychological constructs and assessments across different cultures and languages. The study addresses a critical gap in the availability of culturally pertinent psychological evaluation instruments by developing a validated Urdu version of the DIS.

Objectives

The objectives of the present research are:

- To translate The Discomfort Intolerance Scale in Urdu language.
- To establish the psychometric properties of the newly translated scale.

Method

This study was carried out to translate, cross-validate, and confirm the factor structure of the Discomfort Intolerance Scale in Urdu for the Pakistani population. The Discomfort Intolerance Scale (Schmidt, et al., 2006) was originally developed in English, and its translation from the source language (English) to the targeted language (Urdu) was done.

This study was completed in three phases:

Phase I: Adaptation of the Discomfort Intolerance Scale
Phase II: Translation of the Discomfort Intolerance Scale
Phase III: Establish Psychometric Properties of the Discomfort Intolerance Scale

Phase I: Adaptation of the Discomfort Intolerance Scale

The Discomfort Intolerance Scale (DIS) acts as an important resource for examining the physical and psychological characteristics of discomfort tolerance. The DIS was developed to assess fluctuations in personal functioning concerning the ability to tolerate unpleasant emotions. These are items that experts in pain and anxiety included into this self-report. Respondents rate their identification with the questions from a scale of 0 for 'not like me at all' to 6 for 'like me very much'.

Expert Opinion on Instruments

Initially, in the first step of the adaptation of the Discomfort Intolerance Scale, a general overview was given to the scale to qualify their cultural, linguistic, and construct relevance to the Pakistani population which helped in selecting the tool. It was found that the scale is easy to comprehend and administer as well as easy to score perfectly qualified for fulfilling the aim of the current study. Two lecturers and two assistant professors made up the sample of experts. Through their years of experience within psychology each expert possesses a solid understanding of psychometrics and assessment methods. The experts were presented with the item pool to obtain thoughts on the response structure. The professionals looked into how appropriate phrasal verbs and cultural idioms were. According to the experts' insights the recommendations were crucial and they offered no major changes or revisions to the instrument. The experts indicate that a translation of the scale would enhance the target group's capacity to engage with and grasp these items. In this research effort we employed to assess discomfort level by Discomfort Intolerance Scale. The tool has been developed in English but some members of our target group could find it perplexing because of its linguistic and cultural similarity.

Phase II: Translation of The Discomfort Intolerance Scale

The standard linguistic validation procedure comprised of following steps.
Step I: Forward Translation
Step II: Backward Translation
Step III: Comparison with the Original Version
Step IV: Proofreading
Step V: Pilot Testing

Step I: Forward Translation

After obtaining permission from the author of the scale, The Discomfort Intolerance Scale was used to forward translated (English to Urdu translation) by two bilingual people. They were acquainted with the cultural prospect of the process of translation, and they were also linked with the field of Psychology. The translations were not done word-for-word, but rather in a manner that conveyed the sense and meaning of the statement in a more straightforward and understandable way. In both forward translations, the name of the scale, instructions, and each item were discussed regarding the readability, equality of meaning, and precision. Preference was given to the precise, more valid, and more readable words where there were discrepancies in two forward translations. Every attempt was made to maintain each item's literal meaning as closely as feasible. The Urdu translation was therefore finished in its ultimate form.

Step II: Backward Translation

Following forward translation, a backward translation was produced, which translated the target language version (Urdu) into the source language (English). The goal of reverse translation was to translate the target language version (Urdu) into the source language (English). In order to identify any disparities that might be the result of contextual variations, it also sought to compare the original English version with the translated English version. The consensus of forward translation was sent to two bilingual experts for backward translation. It was made sure that both were bilingual and native of the target language. They were instructed to translate the consensus version into English, which must be common in use. It must not be tough, literary and difficult to understand. Hence, after getting a backward translation version, it was then compared with the original version of the Discomfort Intolerance Scale.

Step III: Comparison with the Original Version

Then, a comparison was made to compare the original English version and the translated English version in order to see discrepancies due to contextual differences. In a few places, discrepancies in meaning and context between the backward translation version and the original English version of the scale were found during the comparison. In a few places, the translator translated in the wrong way, and at certain points, the word used in Urdu consensus conveyed the wrong meaning. To resolve such issues, all these points were highlighted, and essential changes in the Urdu version were incorporated.

Step IV: Proofreading

For the purpose of proofreading, the scale was given to an individual who had a good command of the Urdu language to remove grammatical mistakes and typo errors. The aim of proofreading was to ensure that no typing, spelling, or grammatical mistakes remained in the target language version. Certain grammatical mistakes and typo errors were corrected. With this step, the translation was finalized.

Step V: Pilot Testing

The pilot study aimed to find out if the Discomfort Intolerance Scale translated into Urdu were easy-to-understand and user-friendly tools and to check these out. This try-out phase also aimed at knowing the estimated average time of completing the tools for the main study so that the hospital administration could be informed accordingly about the required time of testing. For the pilot study, the sample consisted of 30 migraine patients of both genders. Participants were approached after obtaining formal permission from the hospital administration. They received a verbal briefing on the study's objectives. In the response, participants were asked to highlight any ambiguities they encountered. The pilot testing results showed that the Discomfort Intolerance Scale was easy to comprehend for patients with migraine, and no need was felt to discard or modify any item. The final translated tool was given to the participants in the main study phase.

Phase III: Establish Psychometric Properties of The Discomfort Intolerance Scale

Sample

The sample consisted of 316 migraine patients of both genders, ages 24-50 years.

Inclusion Criteria

- Diagnosed patients with migraine were included in the study.
- Diagnosed at least 2 years ago
- Migraine patients within the age range between 24-50 years took part in this study.
- Both genders were included.

Exclusion Criteria

- Individuals having a diagnosis of tension-type headache and sinus related headaches were not included in the study.
- Patients with less than 2 years of diagnosis time period did not participate in the study.
- Migraine patients with any kind of physical disability were excluded from the study.
- Migraine patients who have any psychiatric illness did not participate in the study.

Table 1: Descriptive Statistics of the Demographic Characteristics of Patients with Migraine (N=316)

Variables	f	(%)	M	SD
Gender				
Men	109	34.5		
Women	207	65.5		
Age			32.66	5.44
Education				
Un Educated	1	.3		
Less than 5	1	.3		
5-9	5	1.6		
Matriculation	109	34.5		

Variables	f	(%)	M	SD
Intermediate	98	31.0		
Graduation	76	24.1		
Post Graduation	26	8.2		
Marital Status				
Un Married	122	38.6		
Married	192	60.8		

Note: f=frequencies of demographic variables, % = percentage M= mean and SD= standard deviation

Table 1 showed the frequencies and percentages of categorical variables including Gender, Education, Marital Status and mean and standard deviation for Age.

Instrument
To check psychometric properties, the Urdu version of The Discomfort Intolerance Scale which was finalized in Phase I was used.

Procedure
Proper permissions were taken from where data were collected. The participants were approached and then briefed about the study's objectives with informed consent. While gathering the data, the researcher took ethical factors into account. Every research subject gave their informed consent. The study's goal was explained to the respondents. They received assurances that the data they provided would be kept private and used exclusively for study. Afterward, the scale was given to take the responses of the participants. The data collected from the participants was then arranged and coded for statistical analysis.

Results
To check if the recently translated scale was properly understood by the local sample, appropriate analyses, including descriptive statistics, reliability analysis, and confirmatory factor analysis, were run using SPSS and AMOS.

Table 2 : Descriptive Statistics and Reliability of Discomfort Intolerance (N=316)

Variables				Range		
	K	M	SD	Actual	Potential	α
Discomfort Intolerance Scale	5	12.66	4.06	5-25	5-25	.78

Note: K= numbers of items, M = mean, SD = standard deviation and α = Cronbach alpha reliability

The table shows the descriptive statistics and reliability analysis of The Discomfort Intolerance Scale. The reliability analysis showed that Cronbach alpha reliability for Discomfort Intolerance Scale was.78.

Confirmatory Factor Analysis
To identify the factor structure of the translated scale, confirmatory factor analysis was performed on five items using a 5-point Likert scale. The Discomfort Intolerance Scale's factor structure was validated using the Structural Equation Model (SEM) and AMOS (Analysis of Moment Structures) version 25.0. The model fit indices are listed in Table 3.

Table 3: Fit Indices of Confirmatory Factor Analysis for The Discomfort Intolerance Scale (N =316)

Model	χ^2	df	χ^2/df	GFI	CFI	RMSEA	SRMR
Model Fit	16.11	5	3.22	.98	.99	.08	.06

Note. All change in chi square values are computed relative to model, χ^2 >.05, GFI= Goodness of fit index, CFI=comparative fit index, NNFI = non-normed fit index; RMSEA=root mean square error of approximation, SRMR=Standardized root mean square, $\Delta\chi^2$ = chi square change.

Table 3 shows the model fit indices for the Discomfort Intolerance Scale. The

confirmatory component analysis of The Discomfort Intolerance Scale revealed an unsatisfactory absolute model fit, as illustrated by χ^2 (5) = 16.11, p <.05. However, the sensitivity of the chi-square test to sample size and parameter count has been acknowledged in the literature, as underlined by Hair et al. (2010). As a result, relative fit indices such as GFI, CFI, RMSEA, and SRMR were used to assess the model's fitness.

Hu and Bentler's (1999) criteria for a successful relative model fit include a χ^2/df ratio of 0 to 3, RMSEA and SRMR values below.08, and CFI and GFI values equal to or greater than.9. The model had RMSEA and SRMR values of.08 and.06, respectively, with GFI and CFI values of.98 and.99, indicating a strong fit to the investigated data.

Figure 1: Confirmatory Factor Analysis of Discomfort Intolerance Scale.
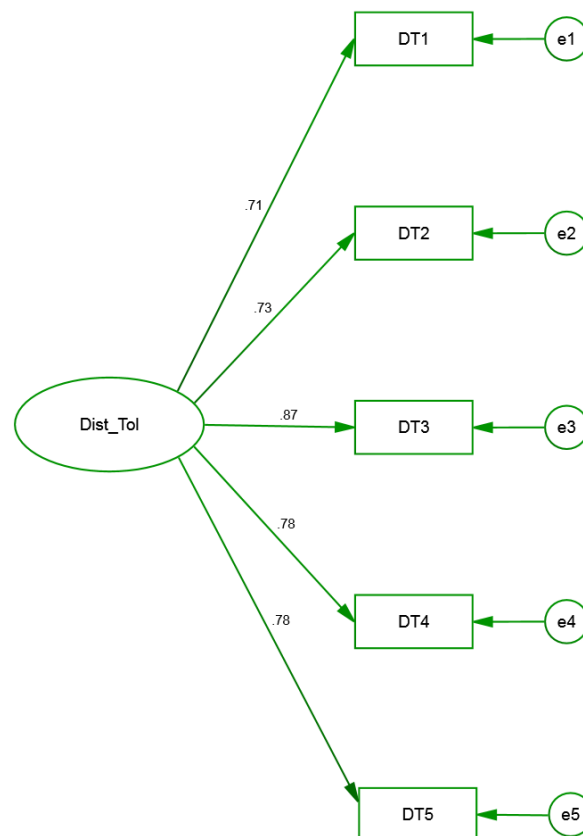
Confirmatory Factor Analysis (CFA) was used to assess the psychometric qualities of The Discomfort Intolerance Scale, specifically its reliability, convergent validity and discriminant validity. The composite reliability coefficients exceeded the required requirement of 0.7 (Hair et al., 2015; Henseler et al., 2016).

Convergent validity was determined by looking at the factor loadings of the scale items. Haire et al. (2010) define acceptable standardized factor loadings as.70 or higher, accounting for about 50% of the variance in the associated factor for measure validation. The AVE score for the Discomfort Intolerance Scale is.60, which explains 60% of

the variance. However, the composite and Cronbach's alpha reliability coefficients were.87 and.88, respectively, showing high reliabilities.

Discussion
The objective of the present study is to establish the Urdu versions of Discomfort Intolerance Scale (DIS) and to investigate the reliability and validity coefficient among migraine patients. The analysis concluded that Urdu version of the DIS had good psychometric properties establishing both high reliability and factor structure of the tools.

The Discomfort Intolerance Scale is a widely used, well-established measure that evaluates an individual's capacity to endure unpleasant emotional and physical experiences (Yoshida et al., 2003). The absence of a validated Urdu version of this scale poses a limitation to the practicality of the instrument within clinical and research practice. Furthermore, this instrument shows how discomfort intolerance impacts their behaviors and lifestyle. Migraine patients may engage in avoidance behaviors to reduce the likelihood of experiencing physical discomfort (Pistoia et al, 2022). The DIS allows researchers to reveal discomfort avoidance that worsen migraine symptoms.

To make sure the items were meaningful to study participants after translation required strict adherence to back-translation and cultural adaptation steps. There were several stages incorporated in the translation and validation procedure. To start with bilingual specialists translated the original English text of the Discomfort Intolerance Scale into Urdu. In order to verify the translation accuracy of the Urdu version into English independently a translator deciphered it back into English. Back-translations were carefully adopted as part of the translation approach. During pilot testing with 30 migraine patients provided insight to enhance the cultural sensitivity and readability of the items. Respondents stated that the Urdu version of the DIS was simple and viable to answer. The items were found to be relevant to their personal experiences with discomfort intolerance, and social support making the scales contextually appropriate and user-friendly.

Next researcher gave the Urdu form of the Discomfort Intolerance Scale to 316 migraine patients. The goodness of fit of the identified factor model was evaluated using confirmatory factor analysis (Bashir & Khalid, 2020). Cronbach's alpha was employed to assess the Urdu version's internal consistency of both scales. Results show that the Urdu version of the Discomfort Intolerance Scale has solid psychometric performance with a stable factor structure and excellent internal consistency. The validated Urdu scale allows professionals to assess discomfort intolerance in migraine patients.

The Urdu version of the Discomfort Intolerance Scale (DIS) revealed excellent internal reliability as the scale's items correlated strongly and represented the same underlying factor. The value of 0.78 illustrates the reliability of the scale in assessing discomfort intolerance.

Construct validity was evaluated through confirmatory factor analysis (CFA). Conformation with the initial factor structure of the DIS was established through CFA showing that the translated items kept their underlying dimensions. The accepted ranges of the model fit indices (such as CFI = 0.99) show that the Urdu version precisely represents the construct of distress tolerance.

The factor loadings for the Urdu DIS items varied between 0.71 and 0.87 showing that each item strongly connects to its factor. The items' high factor loadings indicate that they are reliable indicators of the underlying construct of distress tolerance.

Furthermore, the validity evidence that is, the maximum shared variance for discriminant validity and the average variance retrieved for convergent validity—also falls within the permissible ranges (Hair et al., 2010). Considering the Fornell and Larcker (1981) criteria led to excellent discriminant validity estimates for the scale. Hair et al. (2010) reported establishing measurement invariance that includes strict invariance with factor loadings mean intercepts and covariance as well as error variance invariances. The outcomes of strict invariance measurement invariance also obtained validation. Consequently the research found that the scales did not change at all measurements in the sample.

This study's conclusion indicated that the Urdu version of the DIS accurately reflected the properties supported by earlier studies. It exhibited strong psychometric properties, suggesting that both instruments are consistent across different cultural contexts.

Conclusion
The availability of the validated Urdu version of the DIS is useful in enhancing the existing assessment practices of psychology in Pakistan. Through these measurements, people can gain clarity over distress tolerance,

and the influence that it has on several mental health disorders such as anxiety or depression. Mental health specialists can thus prepare systematically developed and refined intervention strategies and therapy conceptualization for people suffering from chronic and persistent diseases like migraine by employing the validated scales available.

Limitations

The study acknowledged potential limitations, including the limited sample size and the study conducted within a specific cultural context. The researchers suggested that future research should continue to validate the Urdu translation of the DIS in diverse populations and age groups.

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