

Psychometric analysis of cognitive distortions scale-urdu on patients diagnosed with mental disorders

Muneeba Shakil¹, Uzma Ali², Amena Zehra Ali³, Bushra Khan⁴

Abstract

Objective: To assess the reliability and concurrent validity of Cognitive Distortions Scale-Urdu based on Beck's Cognitive Model of psychopathology on patients diagnosed with mental disorders.

Method: The correlational study was conducted from June 15, 2019, to January 30, 2020, in Lahore, Pakistan, and comprised psychiatric patients of either gender aged 18-65 years from six government hospitals, including Mayo Hospital, Services Hospital, Punjab Institute of Mental Health, Sir Ganga Ram Hospital, Gulab Devi Hospital and the Combined Military Hospital. The participants completed the demographic information form and the Cognitive Distortions Scale-Urdu. The latter was re-administered after a gap of two weeks to determine its internal consistency and test-retest reliability. Feinstein Paranoia, Subjective Wellbeing and Siddiqui Shah Depression Scales were administered along with the Cognitive Distortions Scale-Urdu to determine its concurrent validity. Statistical analysis was done using SPSS 24.

Results: Of the 106 patients, 56(52.8%) were recruited for reliability analysis with an overall mean age of 32.31 ± 10.62 years, and 50(47.2%) for concurrent validity analysis with an overall mean age of 31.30 ± 10.52 years. Correlation analysis indicated good internal consistency ($\alpha=0.87$), test retest reliability ($r=0.86$) and moderately high concurrent validity of the scale (range: 0.44-0.89).

Conclusion: The Cognitive Distortions Scale-Urdu was found to have sound psychometric properties and was suitable for researchers to obtain quantitative estimates of the frequency and intensity of cognitive distortions in clinical samples.

Keywords: Cognitive distortions scale, Reliability, Validity, Clinical population, Mental disorders.

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Introduction

According to renowned cognitive theorist Aron T. Beck, people who have psychological disorders are prone to process information negatively. This influences the nature of the thoughts that pop up in specific situations, causing them to experience mental disturbance. These thoughts are automatic and are frequently negative, and are thereby called automatic negative thoughts. Such views are also known as erroneous thinking patterns or cognitive distortions, and they are self-defeating in nature.¹

Pakistan is one of the developing countries vulnerable to consistently rising mental health problems. To reduce the prevalence of mental illness through early diagnosis, the focus should include measurements or screening of the factors contributing to mental disorders.² In an attempt to measure culturally relevant negative thinking patterns appropriate to Pakistani culture and beliefs, the Cognitive Distortions Scale-Urdu (CDS-U) was developed based on Beck's Cognitive Model of psychopathology presented in 1967.³ The model postulates that an individual's perceptions or thoughts related to an event influence their emotions and behaviour. When people are distressed, their

attitudes and feelings are usually negatively biased and distorted. These distorted perceptions are formed from dysfunctional beliefs that influence the processing of information. As a result, this negatively biased processing of information lays the foundation for distorted thinking, i.e., cognitive distortions. This theoretical model is applied to a wide range of psychological disorders.³

The scale which was developed in 2015 and consisted of 15 items, had high internal consistency ($\alpha=0.89$), moderately high temporal stability ($r=0.62$), and high split-half reliability ($\alpha=0.84$) with moderately strong concurrent validity ($r=0.66$). The construct is simple in language with fewer items, and is easy to administer. It can be used to screen the self-defeating thinking pattern in adults, which can be further helpful in interventional management of mental disorders. An important limitation of this scale was that it was developed to be used in the clinical context, but it was not developed on a clinical sample. Rather the scale was developed on university students which prevented the generalisability of the findings to other contexts, such as clinical populations.⁴ It is not uncommon for researchers to first test a clinically useful measure with nonclinical samples and then proceed to the next stage of testing its psychometric properties on clinical samples.⁵

In recent years, among the different measures for accessing cognitive distortions, psychometric properties of the

¹Department of Humanities, COMSATS University Islamabad, Lahore Campus, Pakistan; ²Institute of Clinical Psychology, University of Karachi, Pakistan;

^{3,4}Department of Psychology, University of Karachi, Pakistan.

Correspondence: Muneeba Shakil. e-mail: muneebashakeel@cuilahore.edu.pk

Cognitive Distortions Questionnaire (CD-Quest) in the Turkish version was developed on a psychiatric outpatient sample.⁶ One is the 16-item Self-Debasing Cognitive Distortions Scale (SDCDS) established on Indian adolescents.⁷ Another is the 18-item Davos Assessment of Cognitive Biases Scale (DACOBS) short version, which is a reliable self-report screening tool that accesses cognitive distortions related to psychosis.⁸ The measures above belong to other regions of the world and indicate the importance of assessing cognitive distortions and their screening in today's world of consistently rising mental disorders.

The current study was planned to assess the internal consistency, reliability and concurrent validity of CDS-U while dealing with Pakistani clinical population.

Materials and Methods

The correlational study was conducted from June 15, 2019, to January 30, 2020, in Lahore, Pakistan. After approval from the ethics review board of COMSATS University, Lahore, the sample size was estimated using RaoSoft calculator⁹ with a two-tailed significance of 5%, and confidence interval (CI) 95%. The sample was raised using purposive sampling technique from psychiatric patients of either gender aged 18-65 years from six government hospitals, including Mayo Hospital, Services Hospital, Punjab Institute of Mental Health, Sir Ganga Ram Hospital, Gulab Devi Hospital and the Combined Military Hospital. Permission was obtained from the clinician-in-charge and the respective heads of the Psychiatry Departments. To control the confounding effects, participants not meeting the complete Diagnostic and Statistical Manual of Mental Disorders fifth edition (DSM-V) criteria¹⁰ for mental disorders, those suffering from any medical/neurological disorder, and those who had a history of brain injury or had recently undergone brain surgery were excluded. Also excluded were those who had not been diagnosed by a psychiatrist, those who did not show compliance with the treatment, and those with any comorbid disorder along with their primary diagnosis.

After approaching the potential subjects, an interview was conducted using the DSM-V criteria for diagnosis. Diagnostic psychological tests were administered for the confirmation of the disorders.¹⁰

Demographic and clinical data was collected after taking informed consent from the subjects through a demographic sheet, including age, gender, education level, marital status, family setup, birth order, monthly income of the family, number of years passed till diagnosis and years of treatment. Subsequently, various scales were administered, including the CDS-U4. Also administered

were Siddiqui Shah Depression Scale (SSDS), a 36-item measure of depression with high reliability and internal consistency¹¹ and the Urdu version of the 20-item Feinstein Paranoia Scale (FPS) which is scored on a 5-point Likert scale, ranging from 1 = 'not at all applicable' to 5 = 'extremely applicable', and having an alpha reliability of 0.84 and with high validity.¹² Also used was the Institute of Clinical Psychology (ICP) Subjective Well-Being Scale (SWBS), which is based on three subscales: a five-item Life Satisfaction (KS) subscale, a 12-item Positive Affect (PA) subscale, and a 12-item Negative Effect (NA) subscale.¹³ All the scales with high reliability and validity were used in the Urdu language to assess the concurrent validity of CDS-U.

After two weeks, the CDSU was re-administered on the same sample.

Statistical analysis was done using SPSS 24. The internal consistency of the CDS-U was assessed through Cronbach's alpha (α), and the statistical significance was set at $p \leq 0.05$. Pearson Product Moment Correlation of Coefficients was calculated to measure the test-retest reliability after two weeks and to determine the scale's concurrent validity.

Results

Of the 106 patients, 56 (52.8%) were recruited for reliability analysis with an overall mean age of 32.31 ± 10.62 years, and 50 (47.2%) for concurrent validity analysis with an overall mean age of 31.30 ± 10.52 years (Table 1). Among the subjects, 33 (31%) were suffering from depressive disorders, 23 (22%) from anxiety disorders, 30 (28%) from obsessive

Table-1: Demographic characteristics (n=106).

Variable	n (%)
Gender	
Male	50 (47.2)
Female	56 (52.8)
Education	
Matric	23 (21.7)
Inter	42 (39.6)
Graduation	34 (32.1)
Masters	7 (6.6)
Marital Status	
Single	50 (47.2)
Married	56 (52.8)
Family Setup	
Joint	60 (56.6)
Nuclear	46 (43.4)
Birth Order	
First	31 (29.2)
Middle	45 (42.5)
Last	30 (28.3)
Socio-economic Status	
Upper Middle	9 (8.5)
Middle	51 (48.1)
Lower Middle	46 (43.4)

Table-2: Inter-item correlation of Cognitive Distortions Scale (n=56).

Item No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1	0.38**	0.43**	0.44**	0.27**	0.29**	0.32**	0.22**	0.35**	0.32**	0.39**	0.26**	0.30**	0.23**	0.22**
2		1	0.30**	0.43**	0.17**	0.24**	0.26**	0.23**	0.32**	0.24**	0.45**	0.19**	0.35**	0.27**	0.18**
3			1	0.41**	0.16**	0.19**	0.27**	0.17**	0.27**	0.31**	0.40**	0.17**	0.27**	0.23**	0.23**
4				1	0.17**	0.25**	0.30**	0.20**	0.36**	0.38**	0.48**	0.15**	0.29**	0.30**	0.21**
5					1	0.27**	0.29**	0.27**	0.14**	0.24**	0.14**	0.28**	0.11**	0.19**	0.29**
6						1	0.32**	0.23**	0.18**	0.19**	0.30**	0.21**	0.20**	0.22**	0.205**
7							1	0.37**	0.21**	0.25**	0.35**	0.16**	0.21**	0.29**	0.22**
8								1	0.29**	0.23**	0.29**	0.16**	0.19**	0.23**	0.289**
9									1	0.47**	0.41**	0.18**	0.27**	0.29**	0.28**
10										1	0.39**	0.21**	0.32**	0.34**	0.21**
11											1	0.19**	0.30**	0.35**	0.18**
12												1	0.19**	0.15**	0.21**
13													1	0.43**	0.17**
14														1	0.29**
15															1

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

Table-3: Item total statistics of Cognitive Distortions Scale-Urdu for the scale's internal consistency (n=56).

Item No	Items	Scale Mean	Scale Variance	Item-Total Correlation	Cronbach's Alpha if Item Deleted
1.	Magnification	3.27	1.33	0.51	0.87
2	Catastrophizing	3.46	1.29	0.52	0.86
3	Minimization	3.14	1.37	0.68	0.86
4	Labeling	3.55	1.37	0.69	0.86
5	Should and Must	3.82	1.19	0.37	0.88
6	Personalization	2.54	1.45	0.59	0.86
7.	Self-Blame	3.21	1.50	0.36	0.87
8	Mind Reading	3.57	1.40	0.37	0.87
9	Overgeneralization	2.75	1.55	0.65	0.86
10	Selective Abstraction	2.91	1.50	0.58	0.86
11	Emotional Reasoning	3.21	1.41	0.52	0.86
12	Discounting positives	3.13	1.38	0.33	0.87
13	Jumping to conclusions	2.79	1.44	0.54	0.86
14	Fortune Telling	3.00	1.56	0.52	0.86
15	All or Nothing	3.36	1.43	0.55	0.86

Table-4: Reliability statistics of Cognitive Distortions Scale-Urdu (n=56).

Variable	Internal Consistency	Test-retest Reliability
Cognitive Distortions Scale	$\alpha = 0.87$	$r = 0.86$

p value of ≤ 0.05

Table-5: Concurrent validity of the Cognitive Distortion Scale-Urdu with related constructs (n=50).

Variables	R	Sig.
Depression	0.89**	0.000
Paranoia	0.89**	0.000
Negative Affect	0.44**	0.001
Positive Affect	-0.48**	0.000
Life Satisfaction	-0.59**	0.000

** Correlation is significant at the 0.01 level.

compulsive disorder (OCD) and 20(19%) from psychotic disorders.

There were significant mild, moderate to strong positive

correlations between all the 15 items of CDS-U (Table 2). All the items had fairly similar mean values, indicating that they were tapping into the same concept, and the corrected item-total correlation and Cronbach's α after item deletion were the same; retaining all the items in the scale (Table 3). Cronbach's α analysis indicated the internal consistency of the scale to be good ($\alpha = 0.87$, $p \leq 0.05$) and the scale's temporal stability was very good ($r = 0.86$, $p \leq 0.05$) (Table 4). It had a significantly strong positive association with depression and paranoia, a moderately positive association with NA, and a moderately negative association with PA and LS (Table 5).

Discussion

The findings together indicated that CDS-U has a strong reliability and strong concurrent validity as it correlated well with measures that have already been validated. Two properties of any test indicate its robust psychometric properties; reliability and validity.¹⁴ Analysis of the current study's psychometric properties was associated with its data's adequacy in testing the construct of interest. The measurement of mental health-related instruments plays a vital role in research and clinical practice.¹⁵ A measure needs to be reliable and valid to be classified as a tool with strong psychometric properties.¹⁶ The CDSU scale's psychometric properties were analysed to assess self-defeating cognitive distortions leading to a wide range of psychological disorders in the clinical population. There are several tools that measure such distorted thinking patterns, including, the Cognitive Distortions Scale (CDS) that has 40 items assessing self criticism / blame, helplessness / hopelessness and preoccupation with danger in people who experience interpersonal victimisation.¹⁷ The Inventory of Cognitive Distortions is a 69-item measure assessing the cognitive distortions in patients that intensify clinical conditions.¹⁸ A 10-item CDS measures cognitive distortions in interpersonal and personal achievements.¹⁹

The 15-item Cognitive Distortions Questionnaire (CDQ) assesses the frequency and intensity of negative thinking patterns.⁵ However, these scales are either not culturally relevant in terms of language and target population or are only developed to screen depression in the clinical population. A culturally valid and reliable measure of depressed Pakistani adults' cognitive distortions was developed in 2013, entitled the Indigenous Cognitive Distortions Scale (ICDS). It can be administered to depressed adults aged 18-70 years and has internal consistency ($\alpha=0.87$), construct validity (range: 0.74-0.95), and test-retest reliability (0.82).²⁰

All the aforementioned measures share the same limitation of their applicability to a wide range of psychological disorders. All the measures were developed to assess either depression or its associated features. Firstly, Beck in his cognitive theory ascertained that cognitive distortions play a crucial role in the development and maintenance of other psychological disorders as well. Secondly, among these measure, only a few provide a total score measure and information regarding overall level of cognitive distortion. Thirdly, all these measures are limited in their scope as they do not categorise and identify specific types of cognitive distortions.²¹ Therefore, a psychometrically sound measure for assessing cognitive distortions leading to several psychological disorders was still needed. The CDS-U was developed to overcome this limitation as the measure was developed to assess cognitive distortions not specific to depression alone, but covering other psychological disorders as well.⁴ The measure not only provides a total score, but also provided scores and information regarding different types of cognitive distortions. Therefore, the current study added to the local literature an information related to an indigenous measure of cognitive distortions.

Literature suggests that changes in cognitive distortions predict a decrease in depressive symptoms, but a reduction of depressive symptoms does not predict changes in cognitive distortions.²² A higher level of cognitive distortions was found to be associated with a higher level of depressive symptoms.²³ Paranoid ideation is described as a malfunction of the cognitive capacity where meaning is attached to understanding events' causes. Cognitive behaviour therapy (CBT) may help reduce paranoid ideation by reducing cognitive distortions.²⁴

The current study aimed at proceeding in the best possible way, however, there are a few limitations of the study. Firstly, the CDS-U showed good internal consistency and concurrent validity of the clinical population, but there is a need to conduct studies using alternative methods and additional reliability and validity analyses on clinical

samples. This will enable refinement of the instrument even more regarding its applicability and utility as a therapeutic assessment tool. The scale should also be examined concerning its ability to assess changes in cognitive distortions over time during treatment to help practising clinicians keep track of their clients' progress.

Conclusions

CDS-U was found to be a reliable and valid instrument for assessing erroneous thinking patterns that cause an individual to develop several clinical conditions.

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