ISSN 2692-5877
DOI: 10.46998/IJCMCR.2024.37.000909

International Journal of
Clinical Studies & Medical Case Reports

Research Article

Cross-Cultural Validation and Comparison of Distorted Thinking Patterns across Algerian, Indian and Pakistani Population

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Received: January 17, 2024 **Published:** May 30, 2024

Abstract

The Cognitive Distortions Scale-Urdu (CDS-U, 2015) measures distorted thinking patterns in adults. This study was carried out to cross-culturally validate the CDS-U and assess the differences in distorted thinking patterns across Algerian, Indian and Pakistani Samples. The translation and back translation of the instrument was done in Arabic and Hindi language following the recommended procedures. An equally representative sample of 1500 young adults with n = 500 (173 men & 327 women with Mean age=32.86, SD=6.96) from Algeria, n = 500 (286 men & 214 women with Mean age=25.14, SD=5.51) from India and n = 500 (229 men & 271 women with mean age 21.59, SD=4.39) from Pakistan were recruited from different universities through convenient sampling. The factor structure of the scale was examined through factor analysis. Results revealed four factors of the scale, consistent with the factors originally reported by the instrument developer. Cronbach's Alpha of the total 16 items of CDS-U suggests average internal consistency (0.66) for the Algerian sample and above average (0.78) for the Indian sample. The inter-item correlation of the translated CDS-U revealed that all items are significantly related ($p < 0.01$). Furthermore, analysis of variance (ANOVA) revealed significant differences in the distorted thinking patterns of young adults from all three countries. Thus, this cross-cultural validation study demonstrated an acceptable, reliable, and valid measure of distorted thinking patterns across the three cultures. This study's findings will be beneficial in providing awareness about the contributing cultural factors in the development of cognitive distortions.

Keywords: Cognitive distortions scale; Cross-cultural validation; Factor analysis; Algeria; India; Pakistan

Introduction

The rising importance of cross-cultural research has prompted methodologies to study human phenomena across cultures adequately. When conducting a cross-cultural study, a researcher's primary focus is on determining an assessment instrument's factorial structure and psychometric parameters across the cultures [1,2]. Recovery-oriented cognitive therapy based on Beck's Cognitive model adds to the understanding of mental illnesses. It assumes that personality is composed of cognitions, affect, motivation, and behavior. The activation of any of these units depends on the conflict between an individual's internal impulses and external situational factors. Persistent cognitive distortions play a mediating role in the maladjustment of an individual suffering from Psychiatric disorders [3]. Therefore, this study's purpose is twofold: Firstly, to test the Cognitive Distortions Scale-Urdu for factorial invariance across non-clinical populations from Algeria, India, and Pakistan. Secondly, to determine the cross-cultural pattern of persistent distorted thinking across the mentioned collectivistic cultures. Algerian and Indian non-clinical populations were of interest to this study because of the cultural differences with Pakistani non-clinical populations. The Cognitive Distortions Scale-Urdu is validated in terms of language, including Arabic and Tamazight (Berber), which are the official languages of Algeria. These two are the native languages of 99% of Algerians, 72% speaking Arabic, and 27.4% Berber [4] Sarwar, 2012). In India, Hindi is the national and official language of 41% of the people, with 14 other official languages. Hindustani is a popular variant of Hindi/Urdu spoken widely throughout northern India but is not official. Urdu is the official language of Pakistan, with seven other languages spoken in different parts of the country1. Cross-cultural validation is essential as individuals from different cultures with distinct languages have a culturally associated pattern of thoughts influenced by their [5,6] argued that individuals' beliefs and attitudes are shaped not only because of the language influence but also by the way of life

that shapes the minds influenced by the culture to which they belong. Culture-specific Beliefs influence the psychological processes, including cognitive schemas, shaping how people think about themselves, others, and the world. The development of beliefs and cognitive schemas depends on the culture type an individual belongs to, i.e., individualistic and collectivistic cultures. Autonomy, uniqueness, and freedom of speech are given importance in an individualistic culture, whereas social harmony, conformity, and adherence to group norms are given importance in a collectivistic culture [7].

The notion that cognitive patterns developed through shared knowledge structures are influenced by culture is central to Beck's cognitive theory [8]. Beck's cognitive theory gives importance to the values and belief systems of individuals form their cognitive patterns. However, there is a gap in knowledge regarding how the above-mentioned collectivistic cultures influence these cognitive structures. The presentation of these cognitive structures may vary in different cultures, where cognitive distortions in one culture may be considered adaptive in one while maladaptive in the other culture [9]. The cultural differences in various automatic negative thoughts are based on cultural values to different fundamental assumptions. Since then, cognitive distortion scales have been developed in various cultures, and different factor solutions have been yielded on the adult population.

These include The Cognitive Distortions Scale (CDS) developed in the United States by [10]; it has 40-items with factors including Self Criticism/Blame, Helplessness/Hopelessness, and preoccupation with danger. The Cognitive distortions questionnaire (CD-Quest) was developed on American, Australian, Brazilian undergraduates and one Turkish-speaking outpatient clinical sample [11]. A 10-item Cognitive Distortions Scale (CDS) was developed by [12], that measures cognitive distortions in interpersonal and personal achievement. The Inventory of Cognitive Distortions developed by [13], accessed cognitive distortions in patients that intensify clinical conditions with eight common factors: Magnification, Fortune-Telling, and Externalization of Self-Worth Perfectionism, Emotional Reasoning, Minimization, Comparison to others and Emotional Reasoning and Decision Making.

Comparison of Algerian, Indian, and Pakistani cultures may explore factorial invariance of the measure in question and the similarities and differences between the general population's values and beliefs from these three cultures concerning their distorted thinking patterns. Therefore, the current study focused on the cognitive distortions scale-Urdu based on cognitive theory of psychopathology [14]. This study's findings will be beneficial in providing awareness about the contributing cultural factors in the development of cognitive distortions.

Method

Description of the Sample

A total of 1500 young adults aged 18 to 35 years from Algeria, India, and Pakistan completed an Arabic, Hindi, and Urdu language version of the Cognitive Distortions Scale-Urdu (CDS-U). Among them n = 500 (173 men & 327 women with Mean age=32.86, SD=6.96) from Algeria, n = 500 (286 men & 214 women with Mean age=25.14, SD=5.51) from India and n = 500 (229 men & 271 women with mean age 21.59, SD=4.39) adults from Pakistan were conveniently recruited from different universities from each country as the study sample. To control potential extraneous variables, certain inclusion/exclusion criteria were developed for participation in the study. Those respondents who participated in the study were (a) university students, (b) Nationals and residents of the home country, (c) with minimum education till intermediate, and (d) could read and write their native language. Those respondents were excluded from the study who were (a) diagnosed with any serious medical illness or psychiatric disorder and (b) with any physical disability. The demographic information taken from the participants included their age, gender, qualification, religion, marital status, residential area, and family system. The respondents were also asked if they were suffering from any medical illness, psychiatric disorder, or physical disability.

The Demographic characteristics of the sample are presented in **Table 1**.

Table 1: Showing frequency and percentage of demographic variables.

Variables		Algeria		India		Pakistan	
		Frequency	Percent	Frequency	Percent	Frequency	Percent
Education	Up to 12	19	3.8	483	32.2	0	0
	Graduation	481	96.2	809	53.9	250	50
	Post-Graduation	0	0	182	12.1	171	34.2
	Ph. D	0	0	26	1.7	79	15.8
Gender	Male	173	34.6	286	57.2	229	45.8
	Female	327	65.4	214	42.8	271	54.2
Marital Status	Married	315	63	132	26.4	24	4.8
	Unmarried	118	23.6	365	73	475	95
	Separated/Divorce/Widow	67	13.4	3	0.6	1	0.2
Residence	Rural	0	0	137	27.4	0	0
	Urban	500	100	244	48.8	500	500
	Sub-urban	0	0	119	23.8	0	0
Religion	Hindu	0	0	475	95	0	0
	Sikh	0	0	13	2.6	0	0
	Muslim	500	100	6	1.2	500	100
	Others	0	0	6	1.2	0	0
Family System	Joint	319	63.8	282	56.4	188	37.6
	Nuclear	50	10	207	41.4	312	62.4
	Extended	131	26.2	11	2.2	0	0

Measure

Cognitive Distortions Scale-Urdu

The instrument is developed for age 18 and above to measure distorted thinking patterns of the adult population; it is developed on the student population and is a 5-point rating scale ranging from 1 "Not at all applicable on me" to 5 "Totally applicable to me." The measure has four subscales, namely: (a) Stress Creating Thinking (4-items); (b) Rigid Thinking (4-items); (c) Predictive thinking (5-items); and (d) Self Blame/Self Criticism (3-items). The scale has 16 items with good internal consistency (a = .87), moderately high temporal stability (r=.86), moderately high split-half reliability (a = .86) and moderately high concurrent validity of the scale ranging from r =.44 to .89 [15].

Procedure

To assess the potential cognitive distortions, the self-administered scale was adapted from Urdu into the other three languages using a standard translation and back-translation method, except for Urdu as it was the original language. As for the Algerian sample, the scale was translated into Arabic and was presented to 5 experts in psychology in Algerian universities. For the Indian sample, after translating the scale in English and Hindi, it was presented to 5 experts in psychology in Indian universities. The back-translation of the scale from Arabic, Hindi, and English into Urdu was presented to 5 experts in psychology in Pakistani universities for its content validity.

The sample recruited through convenient sampling included young adults engaged in higher education from different universities in the three countries. The ethical review board of Mohammed Boudiaf of M'sila University, M'sila, Algeria, approved the study protocol on July 26, 2020. An invitation to participate in the study through an online google form was sent to university students of each country via two recruitment strategies: (i) invitation through respective universities during their online classes; and (ii) through electronic invitations via social networks. The participants were provided informed consent and were asked for their voluntary participation in the study following assurance of confidentiality and anonymity. Data of 1500 participants, including 500 participants from each country, were collected within six months after initiating data collection, and the results were compiled through statistical analysis.

Statistical Analysis

The Statistical Package for Social Sciences (SPSS), version 20, was used for data analysis. The categorical demographic variables were analyzed with frequency and percentages. The Descriptive analysis, including Mean and Standard Deviation, was used to analyze continuous demographic and clinical variables. Cronbach Alpha was used for the reliability of the test, and inter-item correlation was used for the internal consistency of the scale. Factor analysis was finally used for validation of the construct of the scale. Moreover, inferential analysis, i.e., One Way Anova with the Post hoc Duncon test, was used to determine the difference between four types of distorted thinking patterns.

Results

Table 2: Showing Mean & SD of the Algerian and Indian sample.

Sr. No.	Items	Hindustan		Algeria	
		Mean	SD	Mean	SD
	N	500		500	
	Age	25.14	5.51	32.86	6.96
	Cronbach's Alpha	0.66		0.78	
Item Scores					
1	I think, I think too much about myself	3.35	1.28	2.28	1.35
2	I would have never been satisfied with my performance	2.89	1.33	2.79	1.37
3	Whenever I have to deal with frustration, I find myself in a quandary.	3.04	1.23	2.2	1.38
4	I blame myself for everything that happens to me	3.05	1.38	2.55	1.38
5	I should have regretted those things, but I don't	2.79	1.32	3.09	1.39
6	I go without asking others what they understand about me	2.98	1.33	3.06	1.26
7	Once something went wrong with me, the future will surely be bad.	2.39	1.43	2.08	1.35
8	I think whatever I do, I will always fail.	2.05	1.37	1.34	0.91
9	I think more negatives aspects about anything.	2.62	1.37	2.56	1.44
10	I make my decisions based on my emotions.	3.1	1.29	2.82	1.34
11	Without thinking about any results, I take it.	2.83	1.4	2.1	1.34
12	I know I also form an opinion about someone without knowing the facts.	2.63	1.36	1.96	1.3
13	I guess about the future, what is going to happen to me.	3.03	1.3	2.29	1.36
14	I like people who either Do or do not do; there is no middle ground.	3.05	1.31	3.02	1.42
15	Everything is wrong. I often see everything as good again	3.08	1.31	2.46	1.4
16	Most of my predictions would have come true.	3.05	1.18	3.07	1.22

Table 3: Showing Inter-Item Correlations analysis of Cognitive Distortions Scale-Urdu.

Items	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14	V15	V16	Total
V1	.21**	.31**	.17**	0.02	0.06	.20**	.24**	.18**	.17**	.15**	.14**	.11**	.12**	.21**	0.04	.48**
V2	1	.17**	.11**	.14**	.11**	.15**	.20**	.19**	.18**	.07*	.15**	.08*	.16**	.112**	.12**	.44**
V3		1	.24**	.09**	0.05	.23**	.25**	.18**	.22**	.16**	.23**	.14**	.09**	.212*	0.05	.51**
V4			1	.14**	.09**	.23**	.19**	.19**	.12**	.16**	.15**	.19**	.07*	.13**	.09**	.45**
V5				1	.13**	.22**	.09**	.12**	.09**	.13**	.10**	0.05	.16**	.12**	0.06	.37**
V6					1	.12**	0.04	0.04	.07*	.09**	0.06	.07*	.16**	.12**	.13**	.32**
V7						1	.36**	.19**	.11**	.20**	.23**	.18**	.13**	.13**	.09**	.53**
V8							1	.25**	.13**	.22**	.25**	.21**	.12**	.23**	.09**	.52**
V9								1	.15**	.12**	.20**	.15**	.17**	.07*	0.03	.45**
V10									1	.21**	.17**	.19**	.08*	.14**	.09**	.42**
V11										1	.39**	.22**	.09**	.18**	.08*	.48**
V12											1	.27**	.09**	.23**	.08*	.51**
V13												1	.16**	.20**	.24**	.47**
V14													1	.20**	.12**	.39**
V15														1	.11**	.46**
V16															1	.31**
Total																1

*. Correlation is significant at the 0.05 level (2-tailed).

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

The **Table 3** results showed that all items are significantly related to each other at p <0.01. It indicates that all items are homogeneous and equally measured the cognitive distortions.

Items	Stress Creating Thinking	Rigid Thinking	Predictive Thinking	Self-Criticism/ Self-blame	h^2
V1	**0.733**				0.544
V2	**0.5**				0.405
V3	**0.606**				0.445
V10	**0.408**				0.272
V11		**0.67**			0.52
V12		**0.659**			0.532
V13		**0.645**			0.495
V15		0.346			0.319
V4			0.397		0.247
V5			**0.641**		0.557
V7			**0.645**		0.484
V8			**0.411**		0.401
V9			**0.459**		0.32
V6				**0.604**	0.398
V14				**0.59**	0.396
V16				**0.567**	0.466

The Principal Component Factor Analysis on 1000 participants' scores of 16 items was done (Table-4). Factor analysis extracted four factors which were explaining 42% of the total variance. These were rotated with the varimax solution for a simple structure. The first factor, i.e., stress-creating thinking, includes item numbers 1,2, 3 & 10, and these emerge with 11% variance of the total variance. The second factor, Rigid thinking, includes a total of four items from the scale, i.e., 11, 12, 13 & 15, which again emerged with 11% variance. The third factor is Predictive Thinking, and a total of five items (items 4, 5, 7, 8 & 9) emerged with 11% variance of the total variance. In the fourth factor, self-criticism/self-blame emerged with three items, i.e., 6, 14 & 16, with 9% variance.

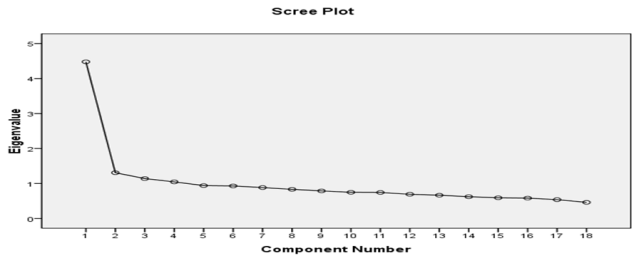

Figure 1: Showing the graphical representations of the item's wise eigenvalue.

Table 5: Showing Mean & SD of clinical variables.

Variables		Algeria		Pakistan		India	
		Mean	SD	Mean	SD	Mean	SD
Cognitive Distortion Scale (CDS) Total score		45.33[a]	9.16	48.88[b]	13.83	51.85[c]	10.85
D1	Stress creating thinking	17.46[a]	6.12	22.38[b]	8.15	25.93[c]	7.16
D2	Self-Criticism/self-blame	8.54[a]	2.7	9.19[b]	2.99	8.82[a]	2.59
D3	Predictive Thinking	8.42[a]	2.46	8.59[a]	2.87	9.07[b]	2.6
D4	Rigid thinking	8.30[a]	2.59	8.40[a]	2.82	9.23[b]	2.64

Table 6: One-Way Analysis of Variance of clinical variables (N=1500).

Variables			Sum of Squares	Mean Square	F	Sig.
Cognitive Distortion Scale-Urdu		Bs	10662.35	5331.17	40.71	0.001
		Ws	196064.5	130.97		
CDS Domain 1	Stress creating thinking	Bs	18072.88	9036.44	174.86	0.001
		Ws	77362.1	51.68		
CDS Domain 2	Self-Criticism/self-blame	Bs	108.35	54.18	7.09	0.001
		Ws	11432.9	7.64		
CDS Domain 3	Predictive Thinking	Bs	113.63	56.82	8.12	0.001
		Ws	10473.6	7.01		
CDS Domain 4	Rigid thinking	Bs	259.19	129.59	17.99	0.001
		Ws	10783.85	7.2		

df=2; Abbreviations: Between Groups= Bs, Within Groups=Ws

In **Table 5**, it has been found that the Indian population shows more stress-creating thinking as compared to the Pakistani and Algerian samples. On the self-criticism/self-blame domain, the Algerian and Indian samples scored the same; however, the Pakistani sample scored high on this domain. On the Predictive Thinking domain, Algerian and Pakistani's scored approximately the same; however, the Indian sample scored high on this domain. The Indian sample also scored high on rigid thinking patterns as compared to the other two counterparts.

The results found a significant difference between groups on the cognitive distortion scale ($F=40.71$, $df=2$, $p<0.001$). On the stress-creating thinking domain of the scale, the F value is 174.86, $df=2$, $p<0.001$, which indicates a significant difference. On the Self-Criticism/self-blame domain, the F value is 7.09, $df=2$, which is significant at $p<0.001$. Another domain of the scale is Predictive Thinking; the F value is 8.12 with $df=2$ significant at $p<0.001$, showed a significant difference between all groups. On the Rigid thinking domain, the F is17.99, $df=2$, which is significant at $p<0.001$.

Discussion

The present study was carried out to determine the Cognitive Distortions Scale-Urdu for factorial invariance among university populations from Algeria, India, and Pakistan using two different languages. Secondly, to determine the cross-cultural pattern of persistent distorted thinking across the mentioned collectivistic cultures. Overall findings suggest that the CDS-U is a psychometrically sound tool to assess distorted thinking patterns of young adults from countries using these two languages (i.e., Arabic and Hindi). Analysis of the overall data suggests that CDS-U performed well across its four subscales in terms of their internal consistency, factor loadings, and factorial structure.

To assess the cognitive distortions, review of the literature suggests the availability of the following measures: (a) the Inventory of Cognitive Distortions (ICD) [16]; (b) the Cognitive Error Questionnaire (CEQ) [17]. (c) the Cognitive Bias Questionnaire (CBQ) [18], (d) the Cognitive Distortions Scale (CDS) [12], (e) the Cognitive Distortion Scales [10], and (f) the Cognitive Error Rating Scales (CERS) [19]. The empirical evidence suggests that all these measures are psychometrically sound to be used for the assessment of cognitive distortions [20]. Although all the measures belong to other world regions, they indicate the importance of cognitive distortions assessment and their screening in today's era of consistently rising mental disorders.

However, these scales are not culturally relevant in terms of language to be used by other countries or are only developed to screen Depression in the clinical population. They share the limitation of their applicability to a wide range of psychological disorders. Firstly, in his cognitive theory, Beck has ascertained those cognitive distortions play a crucial role in the development and maintenance of other psychological disorders. Secondly, among these measures, a few only provide a total score measure and information regarding the overall level of cognitive distortion. Thirdly, all these measures are limited in their scope as they do not categorize and identify specific types of cognitive distortions or distorted thinking patterns [16]. Therefore, a psychometrically sound measure for assessing cognitive distortions leading to several psychological disorders was developed on the Pakistani student population and was named cognitive distortions scale-Urdu (CDS-U).

The CDS-U was developed to overcome the limitations of all the existing measures of cognitive distortions as it measures cognitive distortion leading to a wide range of psychological disorders, provides a total score and overall level of cognitive distortions, and categorizes four types of distorted thinking patterns. Keeping in mind the importance of assessing cognitive distortions, the Cross-cultural validation of originally generated CDS-U in a single culture was done to check its applicability, meaningfulness, and equivalence in the other two collectivistic cultures (i.e., Algeria and India) [21]. The scale has 16 items includes following cognitive distortions (a) magnification, (b) catastrophizing, (c) minimization (d) labeling (e) Should and must (f) personalization (g) self-blame/criticism (h) mind-reading (i) overgeneralization (j) selective abstraction (k) emotional reasoning (l) discounting positives (m) jumping to conclusions (n) fortune-telling, and (o) all or nothing. It categorizes these cognitive distortions into four domains of distorted thinking patterns (1) Stress creating thinking, (2) Self-Criticism/self-blame, (3) Predictive Thinking, and (4) Rigid thinking.

Based on the second objective, findings suggest cross-cultural differences in distorted thinking patterns across Algerian, Indian and Pakistani samples. It has been found that the Indian population shows more stress-creating thinking than the Pakistani and Algerian sample. On the self-criticism/self-blame domain, the Algerian and Indian samples scored the same; however, the Pakistani sample scored high on this domain. On the Predictive Thinking domain, Algerian and Pakistani's scored approximately the same; however, the Indian sample scored high on this domain. The Indian sample also scored high on rigid thinking patterns as compared to the other two counterparts [22]. Ascertained that all culture's standard systems and expectations are different. One thing that is disturbing in one culture is not necessarily disturbing in the other. A given culture defines the thought patterns and behaviors. The disparity between these constructs depends on the differences between cultures. Although there were differences in distorted thinking patterns across these three cultures, but were not to a great extent, as all three are collectivistic cultures.

The researcher aimed to proceed in the best possible way; however, the study has a few limitations. The Cognitive Distortions Scale-Urdu showed good cross-cultural validity and internal consistency. However, there is still a need to carry out studies using alternative methods and additional cross-cultural reliability and validity analyses on clinical samples. The study's other potential limitations are the sampling method and demographic characteristics of the sample (i.e., convenient sampling). The responses were taken online, and the questionnaire is self-reported; therefore, it is subject to well-known biases and limitations inherent within such a methodology.

Conclusion

This study is the first to ascertain that the CDS-U is an appropriate psychometric tool for cross-cultural comparisons to assess cognitive distortions. A four-factor structure was found for the CDS-U among different university populations using two languages (Arabic and Hindi). The findings of the study suggest that the two languages are comparable for future cross-cultural studies. The CDS-U has been validated to be used independently in countries using these languages, and parts of

these versions can be used for cross-cultural comparisons. The present study contributes to the cognitive psychology and psychopathology field by cross-validating results that can be used for future cross-cultural research on cognitive distortions.

Declarations

Ethics approval and consent to participate: The study was approved by all local ethical committees (No 7/2021 for the Ethical Committee of the RCLCMS of University of Mohamed Boudiaf M'sila, Algeria as the main ethical committee) and is in accordance with the Declaration of Helsinki. Students were asked to give written informed consent to participate in this study.

Consent for publication: Not applicable.

Availability of data and materials: The datasets generated and/or analyzed during the current study are not publicly available due the fact that participants were not asked at that time to provide consent on open data but are available from the corresponding author on reasonable request.

Competing interests: The authors declare that there is no conflict of interest.

Funding: Not applicable.

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Author contributions: M. R the research idea was invented, translating the scale into Arabic, applying it to an Algerian sample, and the research methodology. M. S working on developing the scale on the Pakistani sample and discussing the results. S.R and P. K working on developing the scale on the Indian sample, formulating the introduction. S.R and M. S Statistical aspect, discussion of results and comparison between samples. All authors reviewed the manuscript.

Acknowledgement: The authors acknowledge the voluntary participation of the participants from all three countries.

References

1. Dimitrov DM. Testing for factorial invariance in the context of construct validation. Measurement and Evaluation in Counselling and Development, 2010; 43(2): 121–149. https://doi.org/10.1177/0748175610373459.
2. Spector PE, Liu C, Sanchez JI. Methodological and Substantive Issues in Conducting Multinational and Cross-Cultural Research. The Annual Review of Organizational Psychology and Organizational Behavior, 2015; 21(2): 101–131. https://doi.org/10.1146/annurev-orgpsych-032414-111310.
3. Beck AT, Finkel MR, Beck JS. The theory of modes: Applications to schizophrenia and other psychological conditions. Cognitive Therapy and Research, 2020; 1-10.
4. Sarwar K. "Algeria wants to learn English from India." (Archive) Awaz Multimedia & Publications, 2012.
5. Wang W, Charles CC. Influences of culture and language: intentional or unintentional switch of thinking pattern. In The Customer is Not Always Right? Marketing Orientations in a Dynamic Business World: Proceedings of the 2011 World Marketing Congress. Academy of Marketing Science, 2011; 131-132.
6. Weisbuch M, Ambady N. Non-conscious routes to building culture: Non-verbal components of socialization. In C. Whitehead (Eds.). The Origin of Consciousness in the Social World, 2008; 159–183. Exeter: Imprint Academic.
7. Ambady N. The Mind in the World: Culture and the Brain. Association for Psychological Science, 2011.
8. Nisbett RE, Norenzayan A. Culture and cognition. In D. L. Medin (Ed.). Stevens' Handbook of Experimental Psychology: Sensation and perception (3rd ed). New York, NY: Wiley & Sons, Inc, 2002; (3): 1-29.
9. Kim JD. Stress and anxiety among Korean international students at Liberty University: Analyzed by State-Trait Anxiety Inventory (Form Y). Doctoral Dissertation and Projects. 2009.
10. Briere J. The Cognitive Distortion Scale Professional Manual. Psychological Assessment Resources: Odessa, 2023.
11. Batmaz S, Kocbiyik S, Yuncu OA. Turkish Version of the Cognitive Distortions Questionnaire: Psychometric Properties. Depression Research and Treatment, 2015; 1-8. https://doi.org/10.1155/2015/694853.
12. Covin R, Dozois DJA, Ogniewicz A, Seeds PM. Measuring cognitive errors: initial development of the scale of the cognitive distortion (CDS). International Journal of Cognitive Therapy, 2012; 4(3): 297–322.
13. DiTomasso RA, Yurica CL. Inventory of Cognitive Distortions Manual. In: Eidelman P, Talbot L, Ivers H, Bélanger L, Morin CM, Harvey AG. Change in dysfunctional beliefs about sleep in behavior therapy, cognitive therapy, and cognitive-behavioral therapy for insomnia. Behav Ther, 2016; 47: 102-115.
14. Beck AT. Depression: clinical, experimental, and theoretical aspects. New York: Guilford Press, 1967.
15. Shakil M, Ali U. Reliability Assessment of ICP Cognitive Distortions Scale, Pak. J Clin Psychol, 2015; 14: 64-72.
16. Yurica CL. Inventory of cognitive distortions: development and validation of a psychometric test for the measurement of cognitive distortions [Doctoral dissertation, Philadelphia College of Osteopathic Medicine], Philadelphia, Pa, USA, 2002.
17. Lefebvre MF. Cognitive distortion and cognitive errors in depressed psychiatric and low back pain patients. Journal of Consulting and Clinical Psychology, 1981; 49(4): 517–525.
18. Krantz S, Hammen C. Assessment of cognitive bias in depression. Journal of Abnormal Psychology, 1979; 88(6): 611–619.
19. Drapeau M, Perry JC. Cognitive Errors Rating Scales, 3rd edition. McGill Psychotherapy Research Group, McTavish, Canada, 2010.
20. Abdullah S, Salleh A, Mahmud Z, Ahmad J, Ghani SA. Cognitive distortion, depression and self-esteem among adolescent rape victims. World Applied Sciences Journal, 2011; 14(4): 67–73.
21. Matsumoto D. Handbook of research methods in experimental psychology. Cross-cultural research. In S. F. Davis (Ed.). Oxford: Blackwell, 2003.
22. Alexander HL, Jane MM. The Milbank Memorial Fund Quarterly. Comparability in International Epidemiology, 1965; 43(2): 189-198.

[1] Nation Master. Language Stats: compare key data on India & Pakistan Nation, 2020. https://www.nationmaster.com/country-info/compare/India/Pakistan/Language