

Translation and Validation of Developmental Coordination Disorder Questionnaire in Urdu Language for Developmental Coordination Disorder Population

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ABSTRACT

Aim: To translate developmental coordination disorder questionnaire in Urdu language and validate its psychometric properties for cross cultural adaptation.

Methods: This validation study was done at the Lahore College of Physical Therapy. The Developmental Coordination Disorder Questionnaire (DCDQ) was translated into Urdu utilizing Bombardier, Beaton, and Guillemin's cross-cultural adaption principles. The forward and backward translations were completed by two separate translators, one of whom is a medical professional professor and the other an Urdu language professor. The final certified version of DCDQ-Urdu was confirmed by bilingual professionals. The validated version's reliability was then evaluated on 28 children with developmental coordination disorder.

Results: After population testing, the Cranach's alpha of the DCDQ-Urdu version was 0.873. The inter item correlation of the DCDQ-Urdu for three domains, control during movement, fine motor/handwriting, and general coordination, with total DCDQ score is 0.386, 0.312, and 0.3002, respectively, and after population testing is 0.273, 0.303, and 0.397. The original English and translated DCDQ-Urdu versions had a significant association (Spearman's rho 0.951 p 0.000). Test retest reliability ranged from 0.504 to 0.721.

Conclusion: The Urdu version of the Developmental Coordination Disorder Questionnaire has good internal consistency and fair inter-item correlation, making it suitable for use as a screening tool for parents of children with and without impaired motor coordination.

Keywords: Developmental Coordination Disorder, DCDQ-Urdu version, Motor skill impairment

INTRODUCTION

Developmental Coordination Condition (DCD) is a movement disorder defined by a noticeable deficit in motor coordination development that limits an individual's academic achievements. It's a one-of-a-kind syndrome that can coexist with other issues like developmental dyslexia and attention deficit hyperactivity disorder¹. 4 to 10% of school going children is affected by this disorder (American Psychiatric Association-2020)².

In comparison to other children their age, the child's performance in daily activities requiring motor coordination is significantly lower, and they also have a low intelligence quotient (IQ)³. In some youngsters, these coordination deficits may fade over time, but in others, they persist and produce secondary issues such as behavior and emotions⁴. Furthermore, these people are at a higher risk of experiencing depression, low self-esteem, anxiety, and social isolation^{5,6}.

The Movement Assessment Battery for Children (MABC) and the Bruininks-Oseretsky Test of Motor Proficiency are two norm-referenced tests often used to identify people with DCD (BOT). These tests are commonly used to detect motor deficits in research and clinical settings. Second, administering these tests for population screening is costly and time-consuming. As a result, a reliable and cost-effective screening test is necessary. Aside from that, proof of DCD's effects on a child's ADLs is required in order to identify the affected individual.

Questionnaires administered by parents or teachers can be used to identify children with functional deficits. The revised version of the Developmental Coordination Disorder Questionnaire (DCDQ'07), created in Canada, is a 15-item parent-based questionnaire designed as a tool for rapid motor screening for children aged 5 to 15, and it takes only 10 to 15 minutes to complete. This 15-item revised version is divided into three categories: general coordination, fine motor coordination

(handwriting) and movement control. Cronbach alpha is 0.94, with a sensitivity of 85 percent and a specificity of 71%⁷. This DCD questionnaire has been translated, cross-culturally adjusted, and validated in countries such as Italy, Brazil, Canada, Taiwan, China, the Netherlands, and Germany^{1,3,8-10}.

Urdu is the common language spoken and understood by the majority of the population in a multilingual and multiethnic country like Pakistan. There are currently no DCD screening questionnaires available for the Urdu-speaking community. Parents are either unable to comprehend or use this instrument, resulting in an inability to determine whether or not their child has DCD, or the therapist must translate it for parents on the spot during administration which affects outcomes. It may be easier to identify children who are at risk for motor difficulties, test persons with DCD, and place people with DCD on the proper track if a questionnaire is available in Urdu.

MATERIAL AND METHODS

A cross-cultural linguistic validation study was conducted in which the original Developmental Coordination Disorder Questionnaire was translated into the target language of Urdu (forward translation) by two independent translators, one of whom was familiar with the concept of the questionnaire and the other who was not, and both translations were then compared¹¹. The final version was reviewed by an expert panel, and the pre-final version of the translated version was tested in a sample of 38 people from the target population (parents of children with developmental coordination disorder at special schools such as Compass Institute and Society Public School in Lahore) who met the inclusion criteria for children with developmental coordination disorder. Children aged 8 to 15 years old, as well as parents of children with DCD who are able to communicate in Urdu¹².

Before testing, parents and the LCPT ethical committee gave their approval. The SPSS version 23 was used to enter the data and conduct the analysis. Descriptive statistics were used to present the study variables. The questionnaire was accompanied

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by an information sheet that explained the study's nature and goal, as well as how each participant's agreement was obtained. The responders were guaranteed that their answers would be kept private.

RESULTS

The final version of the Urdu translated version of the DCD questionnaire is evaluated on the target population, which is children with DCD, with a sample size of 38.

Reliability Statistics: The Cronbach alpha of DCD questionnaire after population testing is 0.873.

Cronbach Alpha	0.873
No. of items	15

Inter-Intra rater reliability: The inter item correlation of three domains, control during movement, fine motor/handwriting, and

Inter-Rater and Intra-Rater reliability: The Intra-class Correlation coefficient ranged from 0.024 to 0.637 after testing on DCD population.

Intraclass Correlation Coefficient							
	Intra class Correlation	95% Confidence Interval		F Test with True Value			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.410	.020	.053	2.758	51	3621	.000
Average Measures	.637	.482	.765	2.758	51	3621	.000

DISCUSSION

The purposes of current study were to complete formal Urdu translation of the DCDQ'07, validate the translated version and to test its basic psychometric properties. Because of the disorder's heterogeneity, there is no gold standard test for screening¹³.

Many studies have shown that when the psychometric properties of the DCDQ are evaluated, they appear to be sound, and it can be used across the population without gender discrimination, and it can be used with confidence with children aged 8 to 15 years old because there is no correlation between age and test scores¹⁴.

This test has a strong alpha value that remains unchanged when any item from the original questionnaire is removed. The initial version of DCDQ had a high level of internal consistency. The Urdu adaptation of the original DCDQ has an acceptable internal consistency with a Cronbach alpha score of 0.774. The three DCDQ domains with 9, 11 and 10 points each include control during movement, fine motor/handwriting, and overall coordination. Since the Italian version of the DCDQ had a 0.94 cronbach alpha for internal consistency (sensitivity of 88% and specificity of 9%)¹⁵.

Internal consistency (0.86) and test-retest reliability were both strong on the DCDQ-Hindi (0.73). As evidenced by the nearly identical results in this current study, confirmatory factor analysis confirmed equivalence to the DCDQ '07¹.

In Urdu-speaking countries, this variation of the DCDQ can be used to test for motor coordination issues. The dependability of the Urdu translated version was assessed after it was applied to the population, yielding an acceptable Cronbach alpha score of 0.873. The Pearson correlation coefficient of 3 defined domains of 0.273, 0.303, and 0.397 represents inter domain correlation.

The sensitivity and specificity of DCDQ are still unknown. The generalizability of the translated version is limited because it was tested on a small group of people. Illiterate careers were not included in the study. DCDQ '07 can be translated into other Pakistani languages spoken by minorities and non-Urdu speakers.

CONCLUSION

Urdu version of the Developmental Coordination Disorder Questionnaire has good internal consistency and fair inter-item correlation, making it suitable for use as a screening tool for parents of children with and without impaired motor coordination.

Conflict of interest: Nil

general coordination, with total DCDQ score was 0.273, 0.303, and 0.397, respectively, after pilot testing of the Urdu version-I of DCDQ. The p-values for all three domains were greater than 0.05, at 0.182, 0.168, and 0.159, respectively. Test retest reliability ranged from 0.504 to 0.721.

Domains	Statistics	Total score of DCD
Control during movement	Pearson correlation	0.273
	Sig. (2-tailed)	0.186
	N	38
Fine Motor/Hand writing	Pearson correlation	0.303
	Sig. (2-tailed)	0.168
	N	38
General coordination	Pearson correlation	0.397
	Sig. (2-tailed)	0.159
	N	38

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