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Ehsan Ullah Syed  
*Aga Khan University*

Sajida Abdul Hussein  
*Aga Khan University*

Syed Iqbal Azam  
*Aga Khan University*

Abdul Ghani Khan  
*National Institute of Child Health*

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# Comparison of Urdu Version of Strengths and Difficulties Questionnaire (SDQ) and the Child Behaviour Check List (CBCL) Amongst Primary School Children in Karachi

Ehsan Ullah Syed<sup>1</sup>, Sajida Abdul Hussein<sup>1</sup>, Syed Iqbal Azam<sup>2</sup> and Abdul Ghani Khan<sup>3</sup>

## ABSTRACT

**Objective:** To compare CBCL (Child Behaviour Check List) Urdu, with the validated Urdu version of Strengths and Difficulties Questionnaire (SDQ) used as "gold standard" among school children in Karachi, Pakistan, and to develop local cutoffs for CBCL using SDQ as a gold standard.

**Study Design:** A cross-sectional study.

**Place and Duration of Study:** Schools of Karachi metropolitan area from January to December 2006.

**Methodology:** The Strengths and Difficulties Questionnaire (SDQ) and Child Behaviour Check List (CBCL) was completed by parents of 5-11 years old primary school children in Karachi. Appropriate cutoff points for total problem, internalizing and externalizing scales were obtained for CBCL.

**Results:** A total of 556 parents filled out both the SDQ Urdu version as well as CBCL. Scores from the parent rated total SDQ scores were highly correlated with the total CBCL scores ( $r=0.589$ ). The local cutoffs derived for CBCL were considerably lower than USA norms. Slightly higher cutoff for males was found as compared to females for the total CBCL scores.

**Conclusion:** Like the original English version, the Urdu version of CBCL and SDQ are both equally valid assessment tools to be used for both clinical and research purpose in Pakistani settings, where Urdu is widely spoken and understood.

**Key words:** Child psychopathology. Questionnaire. Validity. School children. Pakistan.

## INTRODUCTION

In Pakistan, like most developing countries, the lack of validated assessment tools in local languages impacts research. This is particularly true about child mental health, since till date, there has been very little progress in developing and validating screening tools and assessment instruments. Only recently, a large-scale prevalence survey has been carried out on school children in Karachi, Pakistan.<sup>1</sup>

The Strengths and Difficulties Questionnaire (SDQ) is a brief behavioural screening questionnaire that asks about 25 attributes.<sup>2,3</sup> The SDQ has been shown to be of acceptable reliability and validity, performing at least as well as the longer established Rutter Questionnaires and Child Behaviour Checklist.<sup>2,4</sup> SDQ has subsequently been translated into over 40 languages, including Urdu, the national language of Pakistan.<sup>5</sup> The validity of the Urdu version of the Strengths and Difficulties Questionnaire (SDQ) has been previously tested in Pakistan.<sup>6</sup> The SDQ is widely used in

epidemiological, developmental and clinical researches, as well as in routine clinical and educational practice.<sup>7</sup> A recent meta-analysis suggests screening efficiency of CBCL and SDQ.<sup>8</sup> Since the same is true of the longer established Child Behaviour Check List (CBCL), it is clearly important to compare the properties of the two measures.

The present study is part of the above-mentioned large-scale survey,<sup>1</sup> a major part of which aimed at comparing the two widely used instruments in child mental health research. The objectives of the present study were to determine the correlation between SDQ and CBCL total scores and subscales, this study also aimed to develop local cutoffs for CBCL, using the SDQ, as the gold standard.

## METHODOLOGY

The present data is part of a larger scale cross-sectional study of school children in Karachi. Thus, the study design for this study is also cross-sectional. A detailed description of the sampling procedure is published elsewhere.<sup>1</sup>

Seven private and 8 community schools participated in the study. A total 1488 children were selected; consent forms and information sheets were sent to their parents. The consent forms were collected by the teachers. Parental consent was required before a child could be considered for inclusion in the study. Consequently, children of those parents who did not consent were

<sup>1</sup> Department of Psychiatry/Community Health Sciences<sup>2</sup>, The Aga Khan University, Karachi.

<sup>3</sup> Department of Neuropsychiatry, National Institute of Child Health, Karachi.

**Correspondence:** Dr. Ehsan Ullah Syed, A-136, Block 10-A, Gulshan-e-Iqbal, Karachi.

E-mail: ehsan.syed@aku.edu

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excluded. Children were eligible for the study if they were between 5 and 11 years. Parents who could read the questionnaires, filled them out themselves, while those who could not, had the questionnaires read out to them by the data collectors.

**Strengths and Difficulties Questionnaire (SDQ)** is a brief mental health screening questionnaire that measures 25 attributes grouped into five subscales each, generating scores for conduct, hyperactivity, emotional, peer problems, and prosocial behaviour. All scales excluding the last are summed to generate a 'total difficulties scores'.<sup>2</sup>

The Child Behaviour Check List (CBCL) consists of 20 social competence items and 118 items on the behavioural/emotional problems scale.<sup>9</sup> The parents were asked to rate the children's behaviour problems on a 0-2 scale (0 "not true", 1 "somewhat or sometimes true" and 2 "very true or often true") for the previous 6 months. These ratings were combined to form eight narrow band scales or syndromes, two broadband scales, and a total problem score. The eight syndromes are labelled Withdrawn; Somatic Complaints; Anxious/Depressed; Social problems; Thought problems; Attention problems; Delinquent behaviour; and Aggressive behaviour. The broadband scales are termed internalizing and externalizing. The internalizing scale is made-up of: Withdrawn; Somatic complaints; and Anxious/Depressed scales. Internalizing disorders have been characterized as disturbances of emotion or behavioural deficits. The externalizing scale is made-up of the aggressive behaviour and delinquent behaviour scales, and is considered to reflect conduct disorder.

The Urdu translated version of CBCL was administered to all parents of children. The questionnaires were translated and adapted into Urdu, using a seven-step procedure. These steps include translation and back-translation by a panel of experts. The panel comprised of faculty members from the departments of Psychiatry and Neurosurgery, Aga Khan University Hospital (AKUH), Karachi and the Department of Psychiatry, Medical College of Virginia, Richmond, Virginia, USA. All of them had a good command over Urdu and English. Key-informant interviews with the target

population comprised of men and women who were parents of children between the ages of 6 and 16 years. Structured focus group discussions were also held with parents to obtain better cultural understanding of difficult concepts.

Descriptive statistics were computed for the socio-demographic characteristics of children and parents. The correlation between SDQ and CBCL total scores and subscales was computed during Pearson product correlation coefficient. Receiver Operator Characteristics (ROC) curve analysis was carried out and locally derived cutoffs for CBCL were obtained for each scale. Area under Receiver Operator Curve (AUC) was computed, and area of 0.5 showed no discrimination and 1 showed complete discrimination. Data was analyzed using the software package SPSS (version 15.0).

## RESULTS

A total of 556 parents filled out both the SDQ Urdu version as well as CBCL (translated). No significant

**Table I:** Socio-reprographic information of school children and their parents (n=640).

	n (%)
Gender	
Male	339 (53)
Female	301 (47)
School type	
Private school	271 (42.3)
Community School	369 (57.5)
SES <sup>1</sup>	
Lower	497 (78.6)
Middle	113 (18.1)
Upper	21 (30.3)
Mother's education	
Not educated	319 (49.8)
>10 years of schooling	85 (13.3)
10-12 years of schooling	161 (25.2)
Graduate degree/higher	75 (11.7)
Father's education <sup>2</sup>	
Not educated	202 (31.6)
<10 years of schooling	120 (18.8)
10-12 years of schooling	166 (25.9)
Graduate degree/higher	151 (23.6)

<sup>1</sup> missing data n=626, <sup>2</sup> missing data n=639

**Table II:** Correlations between different problem scales for school data (n=556).

Problem scale	Internal CBCL score	External CBCL score	Total SDQ	Emotional symptoms	Conduct problem	Hyperactive	Peer problems	Pro-social
Total problem CBCL	.820 (**)	.918 (**)	.589 (**)	.428 (**)	.465 (**)	.336 (**)	.289 (**)	-.125 (**)
Internal CBCL score		.59 (**)	.418 (**)	.524 (**)	.204 (**)	.136 (**)	.218 (**)	.020 (**)
External CBCL score			.587 (**)	.300 (**)	.578 (**)	.369 (**)	.263 (**)	-.161 (**)
Total SDQ				.617 (**)	.736 (**)	.699 (**)	.563 (**)	-.226 (**)
Emotional symptoms					.210 (**)	.167 (**)	.199 (**)	.089 (**)
Conduct problems						.443 (**)	.250 (**)	.245 (**)
Hyperactive							.165 (**)	.221 (**)
Peer problems								-.238 (**)

\*\*Correlation is significant at the 0.01 level (2-tailed), \*Correlation is significant at the 0.05 level (2-tailed)

**Table III:** Receiver operating curve analysis and optimal cutoff scores for CBCL scales. .

Problem scales	AUC	95% CI	Cutoff	Sensitivity	Specificity	Normal range
<b>Total score</b>						
Total problem CBCL	0.80	0.77-0.84	40.5	74.7%	69.1%	0-40
Internal CBCL scores	0.75	0.71-0.79	10.5	77.4%	61.2%	0-10
External CBCL scores	0.71	0.66-0.76	14.5	65.5%	64.5%	0-14
<b>Emotional problems</b>						
Total problem CBCL	0.70	0.66-0.75	42.5	65.9%	64.2%	0-10
Internal CBCL score	0.71	0.71-0.79	10.5	77.4%	61.2%	0-4
External CBCL score	0.65	0.61-0.70	12.5	62.5%	62.5%	0-10
<b>Conduct Problems</b>						
Total problems CBCL	0.74	0.70-0.78	41.5	65.9%	65.4%	0-4
Internal CBCL score	0.62	0.57-0.67	11.5	60.7%	56.1%	0-11
External CBCL score	0.79	0.76-0.83	11.5	73.2%	70.6%	0-11
<b>Hyperactivity</b>						
Total Problem CBCL	0.71	0.66-0.75	48.5	68.9%	65.7%	0-8
Internal CBCL score	0.60	0.65	12.5	59.9%	57.0%	0.12
External CBCL score	0.71	0.66-0.76	14.5	65.5%	64.4%	0-14
<b>Peer problems</b>						
Total problem CBCL score	0.62	0.57-0.67	40.5	62.7%	53.3%	0-4
Internal CBCL score	0.58	0.54-0.63	10.5	63.4%	45.5%	0-10
External CBCL score	0.61	0.57-0.66	11.5	62.0%	53.0%	0-11

**Table IV:** Receiver operating curve analysis and optimal cutoff scores for CBCL scales by gender.

Problem scales	AUC	95% CI	Cutoff	Sensitivity	Specificity	Normal range
<b>Males (n=339)</b>						
<b>Total score</b>						
Total problem CBCL	0.81	0.76-0.86	43.5	72.1%	74.6%	0-43
Internal CBCL score	0.72	0.66-0.78	11.5	64.5%	64.3%	0-11
External CBCL score	0.79	0.75-0.85	13.5	72.1%	73.0%	0-13
<b>Emotional problems</b>						
Total problem CBCL score	0.67	0.61-0.74	45.5	61.9%	61.5%	0-45
Internal CBCL score	0.74	0.69-0.80	11.5	69.9%	66.4%	0-14
External CBCL score	0.62	0.56-0.69	14.5	59.4%	60.8%	0-14
<b>Conduct problems</b>						
Total problem CBCL	0.78	0.73-0.83	41.5	68.4%	71.4%	0-41
Internal CBCL score	0.67	0.61-0.73	11.5	60.6%	62.9%	0-11
External CBCL score	0.82	0.78-0.87	10.5	79.8%	71.4%	0-10
<b>Hyperactivity</b>						
Total problem CBCL	0.69	0.64-0.76	48.5	67.2%	65.9%	0-48
Internal CBCL score	0.61	0.55-0.67	11.5	62.2%	54.2%	0-11
External CBCL score	0.69	0.63-0.76	15.5	66.4%	64.8%	0-15
<b>Peer problems</b>						
Total problem CBCL	0.61	0.55-0.68	44.5	60.6%	60.9%	0-44
Internal CBCL score	0.58	0.52-0.65	11.5	55.9%	52.3%	0-11
External CBCL score	0.61	0.55-0.68	13.5	61.2%	57.8%	0-13
<b>Females (n=301)</b>						
<b>Total Score</b>						
Total problem CBCL	0.73	0.74-0.85	42.5	72.5%	72.3%	0-42
Internal CBCL score	0.72	0.67-0.79	13.5	67.2%	67.7%	0-13
External CBCL score	0.76	0.71-0.82	11.5	69.5%	69.2%	0-11
<b>Emotional problems</b>						
Total problem CBCL	0.72	0.68-0.80	40.5	68.1%	67.5%	0-40
Internal CBCL score	0.75	0.70-0.81	12.5	68.8%	67.5%	0-12
External CBCL score	0.69	0.63-0.76	10.5	66.0%	62.4%	0-10
<b>Conduct problems</b>						
Total problem CBCL	0.68	0.62-0.75	40.5	63.0%	60.8%	0-40
Internal CBCL score	0.58	0.51-0.65	13.5	56.3%	57.7%	0-13
External CBCL score	0.75	0.69-0.81	10.5	70.4%	65.9%	0-10
<b>Hyperactivity</b>						
Total problem CBCL	0.71	0.64-0.79	48.5	72.4%	65.5%	0-48
Internal CBCL score	0.62	0.55-0.71	14.5	62.1%	57.0%	0-14
External CBCL score	0.70	0.63-0.79	13.5	63.8%	63.0%	0-13
<b>Peer Problems</b>						
Total problem CBCL	0.62	0.55-0.69	42.5	57.9%	58.4%	0-42
Internal CBCL score	0.58	0.51-0.65	12.5	58.6%	54.4%	0-12
External CBCL score	0.59	0.53-0.67	10.5	60.2%	54.4%	0-10

difference was found between the social demographic characteristics of the responders who filled out both the questionnaires and those who filled out just the SDQ. Majority of the children were males (53%), belonged to community schools (57.7%), and came from lower socioeconomic status households (76.9%). About half of the mothers were uneducated (49.8%) while about one-third (31.6%) fathers were uneducated (Table I).

A positive and moderate correlation between the total and subset scores of SDQ and CBCL was obtained (Table II).

An area under curve (AUC) > 0.70 was observed for all CBCL scales in total score. The lowest AUC of 0.58 was found in internal CBCL score in peer problems, while the highest value of 0.80 was found in total problem CBCL in total score. Optimal cutoffs obtained from ROC curves provided the abnormal ranges for each scores based on this Pakistani school children population. The abnormal ranges were slightly higher than the CBCL English version for most scores (Table III). Further gender-wise cutoff were also determined, with slightly higher cutoff for males as compared to females for the total CBCL scores (Table IV).

## DISCUSSION

The present study aimed at comparing the Urdu version of SDQ and CBCL found that the total scores for the two questionnaires were significantly correlated. Similar findings were obtained in the Finnish and German studies.<sup>10,11</sup> Results of this correlation study suggest that the translated version of CBCL can be similarly useful in screening the child psychiatric disorders as the already validated SDQ (Urdu).

Both SDQ and CBCL have effectively demonstrated different strengths. The SDQ is brief, free of cost and easy to administer and score, CBCL on the other hand is a pay-per use scale, it requires data entry and specialized scoring program, whereas the SDQ can be scored by hand.<sup>8</sup> The CBCL is, however, more comprehensive and includes less common symptoms such as compulsions, hallucinations or sexual problems. Consequently, the CBCL might be better suited for studies that require a more detailed assessment of a border range of symptoms.

The secondary aim of this present study was to determine local CBCL cutoffs, for total scores and the two broadband internalizing and externalizing scale. The study found that Pakistani school children had a much lower mean cutoff scores, compared to US population, because at higher cutoffs, a poor sensitivity of less than 50% was obtained. Similar findings were noted in other countries. Vietnamese children had lower mean raw scores than USA norms on the CBCL's total, externalizing, internalizing, and competence scales. Boys were reported to have more externalizing

problems and girls more internalizing problems.<sup>12</sup> A Greek study conducted in the same year displayed a similar trend.<sup>13</sup> Greek parents saw their children as more anxious and depressed and, therefore, as having more internalizing problems.<sup>13</sup> They also saw them as being more aggressive and delinquent; consequently Greek children had higher externalizing scores than their USA counterparts. The total problems score was also higher in Greece than in the USA.<sup>13</sup>

Questionnaires for the assessment of behaviour are useful when they discriminate effectively between clinical and non-clinical populations. One of the major limitations of this present study is that the sample was drawn only from school children and there was no representation of a comparative clinical group. However, the present study is a first step towards child psychiatric assessment tool validation in Pakistan and we have been able to compare the already validated Urdu SDQ with the much longer CBCL in a community sample of Pakistani 5-11 years old children and have established local cutoffs based on the distribution of scores in this population. There is an urgent need to conduct a similar study on clinical population to determine whether these cutoffs successfully discriminate between clinical and community samples.

## CONCLUSION

The present study suggests that the two questionnaires can be used interchangeably in school population in Pakistan. The two Urdu version questionnaires have different advantages in a developing country like Pakistan where lack of resource and research tools have made it difficult to conduct large-scale epidemiological studies among Pakistani population, using the two instruments, as both have shown their advantages as an effective tool and have wider research application.

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