

Validity of the Child Behavior Checklist-Persian Version in a Community Sample of Iranian Youths

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Objective: The Child behavior checklist (CBCL) is a comprehensive symptom rating scale in child and adolescent psychiatry and a major instruments being used in cross-cultural studies. This study was done to determine the symptom profile of a community sample of Iranian youths using the CBCL-Persian version.

Methods: Through a random probability sampling, five clusters in four central geographic regions of Tehran were selected. After obtaining parents' informed consents, the parents accomplished CBCL forms and the demographic questionnaires. Their children were interviewed by two board certified child and adolescent psychiatrists to evaluate any psychiatric disorders in them. Statistical analysis was done using the T-test and regression analysis. Calculation of sensitivity, specificity, and, Overall misclassification error (OMR) was used to find the appropriate cut-off point.

Results: Two hundred three children and adolescents were evaluated (46.3% female) with mean age of 12.01 years (SD=3.63). Of them, 21.2% had psychiatric disorders. Boys had significantly higher scores in Attention Problem, Delinquent Behavior, Aggressive Behavior, and Externalizing ($p=0.01$). The scores of Somatic Complaints, Thought Problems and Internalizing were significantly higher in boys ($p=0.05$). The cut point of 35 had the best sensitivity and specificity, and of the least OMR.

Conclusion: Most results of our study were consistent with the literature on CBCL in diverse countries. This confirms the validity of the CBCL to be used in child and adolescent psychiatry studies.

Declaration of Interest: None.

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Introduction

The Child Behavior Check List (CBCL), developed and extensively tested by Thomas Achenbach and Craig Edelbrock, probably is currently being the most widely used comprehensive symptom rating scale for searching of childhood onset psychopathologies (1).

Among the checklist's strengths are normative data by gender and age based on large community samples, good inter rater and test-retest reliability, content and construct

validity, and not confining to a single theoretical viewpoint. These characteristics have motivated many researchers to use it for a broad range of studies on children and adolescents. Of note, beside its being used as an instrument in many epidemiological, screening, etiologic and outcome studies, it serve to be a valid instrument in cross-cultural studies (2).

Crijnen, Achenbach and Verhulst (3) contrasted the salient findings from the twelve studies using CBCL in their cross-cultural comparison. They reported that nationality differences were observed in mean CBCL scores ranging from as low as 20 in the united states east coast sample to as high as 35.4 in Greece. They also noted that after computing CBCL mean scores in pairs of samples, the rank order of the item scores were very similar across nationalities, in spite of the observed differences in mean total problem scores.

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They noted those items showing greatest cross-cultural similarities and differences and identified sex differences that were robust across different cultures as well as Socio economic status (SES) differences that were culturally the least sensitive measures. An interesting finding was that on both CBCL and TRF (Teacher rating form of CBCL) many items scores were similar across different cultures.

Bird (4) found that in cross-cultural comparisons there were great similarities in terms of the characters of psychopathology manifested in different settings, despite all the differences that might exist in the rates of symptomatology.

The same procedures that were applied to CBCL and TRF 1991, were reported by Rescorla et al, with regard to 2001 ASEBA (Achenbach system of empirically based assessment) (5-7) scales scores in more societies (distributing in 5 continents). They confirmed the previous results of Crigen, Verhulst and Achenbach about the small to medium effect sizes for differences among societies, and consistent age and gender effects across those societies.

Besides the literature about cross-cultural comparison of CBCL findings, there are many publications about the psychometric properties, normative data and cut-offs of CBCL in several general and clinical populations. However, more detailed and comprehensive data is needed in many populations to be applied in regional, national and multicultural research and service planning.

This study considers the symptom profile of a community sample of Iranian youths using the parent report form of CBCL, to determine an appropriate cut-point for this population.

Materials and Methods

Through a random probability sampling, five clusters in four central geographic regions of Tehran (the capital city of Iran) were selected. Four well-trained psychologists explained the purpose of the study and after obtaining informed consents from the parents; they administered a demographic questionnaire

and requested them to complete the CBCL-Persian version. Parallel to this process, all children and adolescents in each household were asked to participate in the study. Finally a total number of 203 youths aged 6 to 18 years was interviewed clinically by two child and adolescent psychiatrists to diagnose any psychiatric disorders in them. Psychiatric diagnoses were approved if both psychiatrists agreed with them. If not, a third psychiatrist's opinion was asked for the final decision. The interviewers were blind to the results of CBCL. The study was done from October 1999 to July 2000.

Child Behavior Checklist (CBCL) - Persian Version:

Translation and back translation of CBCL. After translating the CBCL (7) to the Persian language by three child and adolescent psychiatrists, it was discussed and evaluated by a group of academic psychiatrics. Then it was back translated by a bilingual general physician. The new English script was compared to the original scale to assess its content reliability. Minor edition in the Persian version was done and the final version was administered in a pilot study on 30 children and adolescents to consider its feasibility.

CBCL is a 113 items questionnaire completed by parents about their child (Parent Rating Form) (8). There is also a teacher form filled in by teachers (Teacher Rating Form, TRF) (9). Items are scored on a three-point scale. A total score, externalizing and internalizing scores, as well as eight subscales are derived from these questionnaires. It is a well known, worldwide used dimensional rating scale which its psychometric properties have been reported in most countries, as well as Iran. In terms of the psychometric properties of the Persian version of the CBCL, its internal consistency was %88. Its test-retest reliability over a 5-8 week period was 0.48, 0.97, and 0.58 for Internalizing, Externalizing and Total Problems, respectively. Its Inter-rater reliability for Total Problems was 0.38 for CBCL/YSR, 0.20 for CBCL/TRF, and 0.17 for YSR/TRF (10).

Statistical analysis was performed using EPINFO for windows. Descriptive statistics were used to find the prevalence of the scales

and indexes. T-test was used to find any differences between girls and boys on dependent variables. A regression analysis was performed to predict the value of total mean and subscales scores regarding to the age of participants. To determine the cut points, patients and non-patients were identified based on clinical diagnosis. True and false positive and negative results were used to calculate the sensitivity, the specificity and the Overall Misclassification Error (OMR). Then the mean total scores with best sensitivity and specificity and the least OMR were chosen as the most appropriate cut point.

Results

Of the 203 children and adolescents which were evaluated, 46.3% (n=94) were female and 53.7% (n=109) were male. The mean age was 12.01 (SD=3.63). The 15-year-old youths had the most frequency (11.8%).

The majority of the participants were students (39.4% in elementary school, 56.4% in guidance and high school). Only 4.4% were preschool children.

According to the psychiatric diagnoses, 21.2% (n=43) of the participants had psychiatric disorders. Among them 53.5% (n=23) were boys.

The range of the participants' Total Problems scores was between 1 and 82. Table 1 shows the means and standard deviations of the CBCL scales in whole population and by gender. Boys had significantly higher scores in Attention Problems, Delinquent Behavior, Aggressive Behavior, and Externalizing. The scores of Somatic Complaints, Thought

Problems, and Internalizing were significantly higher in girls.

We did not find any relationship between the age of the participants and their CBCL scores.

Based on the clinical interview, the participants were divided into two groups: patients (n=43) and non-patients (n=160). The "CBCL Cases" were identified using different cut-points. Sensitivity specificity and OMR were calculated for these cut-off points with reference to DSM-IV. Based on the total scores obtained from our sample, the score 35 had the best sensitivity (79.1%), the best specificity (98.5%) and the least OMR (5.4%). Table 2 summarizes the data on patients and non patient's CBCL total scores.

Table 2. Data on patients and non patients CBCL total problems mean scores

CBCL total problems Mean scores	Diagnoses based on clinical interview		Total number
	Patient	Non patient	
<35	9	158	167
35 ≥	34	2	36
Total	43	160	203

Discussion

This is one of the few reported study that has administered the CBCL to a community group of Iranian youths. We found the raw score of 35 (corresponding to T score of 58-59) to be the most appropriate cut-off point for our population. Achenbach (1991) introduced the T score of 60-63 as the most efficient discrimination for most age/sex groups in the normative samples on all three instruments (CBCL, TRF, and youth self report YSR). Comparing the highest total scores in our sample and the results of Achenbach justifies a lower T score to be appropriate for our study.

Table 1. CBCL scales mean scores by gender

CBCL Scales Means (Standard Deviations)	Total (N=203)	Female (N=94)	Male (N=109)	p- value
Withdrawn	2.43 (2.40)	2.65 (2.61)	2.24 (2.19)	0.42
Somatic complaints	0.64 (1.14)	0.90 (1.40)	0.14 (0.79)	0.02
Anxious / Depressed	3.29 (2.6)	3.58 (2.80)	3.03 (2.41)	0.17
Social problems	2.06 (2.12)	2.00 (2.11)	2.12 (2.15)	0.05
Thought problems	0.45 (0.85)	0.54 (0.87)	0.37 (0.83)	0.05
Attention problems	3.28 (2.71)	3.03 (2.94)	3.50 (2.48)	0.03
Delinquent behavior	1.60 (1.89)	1.29 (1.72)	1.8 (1.99)	0.01
Aggressive behavior	5.14 (4.95)	4.5 (4.60)	5.7 (5.19)	0.01
Other problems	3.70 (2.71)	3.90 (3.00)	3.53 (2.00)	0.52
Internalizing	6.28 (4.63)	7.07 (5.17)	5.61 (4.03)	0.07
Externalizing	6.71 (6.25)	5.79 (5.86)	7.51 (6.50)	0.01
Total problems	22.40 (14.74)	22.4 (15.16)	22.39 (14.44)	0.74

Our study showed that the mean total problem scores (22.40) in this Iranian population was close to Achenbach's results (1991) including; 23.1 in 4-11 year old girls, 24.3 in 4-11 year old boys, 22 in 12-18 year old girls and 22.5 in 12-18 year old boys. The mean total score of the Iranian population was 27.5 which were in the range of the other countries (16.8-28.1) (7). Our results about the most mean scores of CBCL were consistent with a great study in a community sample of Iranian youths in Tehran. Of note, these scores are very diverse in other studies, e.g. 16.1 in China and 34.5 in Greece (2).

Although we did not find any significant gender difference in mean total problem scores in our population, but there were other important data on CBCL subscales. Female had higher scores in Somatic Complaints and Internalizing. This was the same as the results of Achenbach (1991). Besides, Internalizing was reported higher in girls than boys in Vietnam (11). Boyle et al, (1987) and Offord et al, (1987) reported higher scores of Somatic Complaints in girls.

Boys in our study had higher scores in Aggressive Behavior, Delinquent Behavior, Attention Problems, and Externalizing. These results were replicated in many studies (5,7,11,-15).

We did not find any relation between age and the CBCL scores of our participants. But some studies reported different results. Larsson B and Frisk M reported higher problem scores in adolescents in comparison with younger children (16). Vietnamese girls' level of Internalizing increased significantly with age (11).

CBCL studies are important because they demonstrate similarities and differences in scores of symptomatology occurring in different cultural settings even when the methods of ascertainment are fairly uniform across them. The differences may be attributable to cultural factors rather than to diverse methodology.

Besides, the CBCL studies provide a closer approximation to the application of a uniform methodology across different cultural settings.

We found an acceptable cut-point for CBCL in our population, but it is imperative to consider appropriate cut-offs for other

versions of the instrument and in different settings, to find applicable results to those population under consideration (17).

Limitations

Our sample size was not large enough, so the results should be generalized with caution. We analyzed the cut-off point just for total problem scores not other subscales of CBCL, so we do not have any applicable data on major scales like externalizing and internalizing syndromes.

We administered parent ratings of CBCL. Using teacher and self-report versions of CBCL would help us to gather more precise and comprehensive information about our children.

We did not use any structured or semi-structured interview to consider psychiatric diagnoses and the clinical interviews were used as diagnostic gold standard. This subject limits the validity and reliability of our data.

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