Normative Data and Psychometric Properties of the Child Behavior Checklist and Teacher Rating Form in an Iranian Community Sample

Mehdi Tehrani-Doost, MD; Zahra Shahrivar*, MD; Bahareh Pakbaz, MD; Azita Rezaie, MD, and Fatemeh Ahmadi, MD

Roozbeh Hospital, Tehran University of Medical Sciences, Tehran, Iran

Received: Feb 11, 2010; Final Revision: Oct 24, 2010; Accepted: Dec 13, 2010

Abstract

Objective: The objective of this study was to determine the normative data and psychometric properties of the parent and teacher rating form of the child behavior checklist (CBCL) in an Iranian community sample.

Methods: A sample of 6-12 year old students was randomly selected from ten elementary schools in Tehran, Iran. The parent’s and teacher’s versions of CBCL were accomplished. Clinical interview and the kiddie schedule for affective disorders and schizophrenia – present and lifetime version, Persian version (K-SADS-PL-PV) were used to evaluate the validity and the cut-off point of CBCL and the teacher rating form (TRF).

Findings: Among 600 recruited students with mean age of 9.11 years (SD=1.45), 54.16% were girls (n=325). Girls had significantly lower scores in Attention Problems, Delinquent Behavior, Aggressive Behavior, Externalizing and Total Problems than boys (P<0.01). The relation was significant between the CBCL Internalizing and students’ ages (β=0.124, P=0.002). The Internal consistency, the correlation among the CBCL and TRF scales, and the inter-rater correlations for CBCL/TRF scales were good to high for most indices and subscales. Based on the receiver operating characteristics (ROC) analysis the best convergences were between the CBCL Attention Problems subscale and attention deficit hyperactivity disorder (ADHD) diagnosis, the CBCL Total Problems and any disorders, the CBCL Externalizing and ADHD+ODD diagnosis. The sensitivities and specificities of the CBCL subscales were higher than the TRF except for Externalizing/ADHD+ oppositional defiant disorder (ODD) which was reverse.

Conclusion: These results support the multicultural CBCL/TRF findings. CBCL is a useful instrument to consider ADHD and any disorders in community samples.

Key Words: Child Behavior; Psychometric; Attention Deficit Hyperactivity Disorder; Checklist

Introduction

Cross-cultural studies which have focused on differences among cultures are being replaced by multicultural perspectives. The multicultural assessment of child and adolescent psychopathology takes into account both individual and
group differences and similarities of various populations. After obtaining the normative samples from diverse populations, new individuals could be compared with the norms of relevant populations using the similar measurements. The multicultural research has shown that the differences within populations are larger than the differences between populations. This discrepancy has been resulted from the diverse data derived from broadband instruments like the child behavior checklist (CBCL) and the strengths and difficulties questionnaire (SDQ) all over the world [1].

There are several studies which have compared the data of CBCL among societies [2-10]. They have reported small (1-5%) to medium (6-9%) effect sizes (ES) for the differences for five and three syndromes of CBCL 1991, respectively [4,5]. Verhulst et al found ESs of 3-8% for differences among seven societies when compared their problem scales scores of 1991 youth self report (YSR) scores [6].

Achenbach System of Empirically Based Assessment (ASEBA) was developed in 2001 from CBCL [11]. The findings of 2001 ASEBA scales scores from the administration of CBCLs in 31 countries, the teacher rating form (TRF)s in 21 societies, and the YSRs in 24 societies were published. In a review by Rescorla, et al their data showed small to medium ESs for differences among societies, like previous studies mentioned above. Achenbach et al [1] mentioned that the multicultural ASEBA findings had some important points:

1) Existence of a relatively narrow range of mean scores on problems scales across very diverse societies.
2) Overlap of the distributions of problem scores from all societies with each other.
3) Similarity of age, gender, and socioeconomic status effects on problem scores in many populations.

Iranian data on teachers’ and parents’ reported emotional and behavioral problems has been reported in the article published by Rescorla et al [12,13]. The paper has compared the internal consistency alpha coefficients, mean scores, age and gender differences, response rates, and data collection methods for parents’ and teachers’ reports in different countries. Iran was among the 19 societies which their means of Total Problems scores were within 1 standard deviation (SD) of the averaged mean. Other Iranian properties of the CBCL and TRF were consistent with most of other countries [15].

A great pool of information has already been produced from multicultural research using the ASEBA system. Nonetheless additional psychometric properties and studies on cultures and populations for more accurate and comprehensive approach to multicultural research are needed. This study was designed to find the normative data and psychometric properties of CBCL and TRF in an Iranian community sample, to be compared with the multicultural ASEBA findings.

**Subjects and Methods**

**Participants and Procedure:**

*Phase 1:* We selected three central geographic regions of Tehran through random cluster sampling. In each region ten elementary schools and in each school four students in each grade (1 to 5) were recruited. Then the CBCL accompanying with a written consent form were sent to the students’ homes. If the parents agreed to continue participating in the next stage of the study, they would sign the form. The questionnaires were gathered after two weeks and the parents of the unreturned ones were contacted by the researchers. If they agreed, they would complete the CBCLs within the next week. If they did not, the students were replaced randomly by new ones to accomplish the sample of each school. For each student whose parents had completed the CBCL, the TRFs were completed by the teacher.

*Phase 2:* After gathering and analyzing the CBCLs and TRFs data, we recruited randomly 15% of children whose Total Problems scores of the CBCL were above 65 and 15% of the students whose same scores were under 65 (the reported cut-off for Total Problems T-score by Achenbach’s manual). Then they were asked to come to Roozbeh Hospital to be interviewed by a board certified child and adolescent psychiatrist to
diagnose psychiatric disorders according to DSM-IV classification. To confirm the probable diagnoses, the kiddie schedule for affective disorders and schizophrenia, present and lifetime version, Persian version (K-SADS-PL-P) was used by a fellow in child and adolescent psychiatry who was blind to the CBCL scores of the participants. The validity and cut-off points of CBCL and TRF were considered with regard to clinical diagnoses.

This study is a part of a larger project carried out from 2006 to 2007 and some of its results have been published before\[16\]. The main study was approved by the Department of Research at Tehran University of Medical Sciences which approved the ethical issues of the research as well.

**Measures:**

*Child Behavior Checklist (CBCL):* This is a 113 item questionnaire completed by parents about their children (Parent Rating Form). There are a teacher form filled in by teachers (TRF) and a youth self report form (YSR) as well. Items are scored on a three-point scale. A total score, externalizing and internalizing scores, as well as eight subscales are derived from this questionnaire. It is a well known, worldwide used dimensional rating scale psychometric properties of which have been reported in most countries\[17,18\].

*Kiddie Schedule for Affective Disorders and Schizophrenia for School–Age Children - Present and Lifetime Version - Persian Version (K-SADS-PL-PV):* The K-SADS-PL is a semi-structured interview for assessing psychiatric diagnoses in children and adolescents. It assesses the present and lifetime status of psychiatric disorders as well as the severity of the symptoms. Kaufman et al introduced the K-SADS-PL from K-SADS-P according to the fourth edition of DSM \[19\].

K-SADS-PL is capable of generating 32 DSM-III-R and DSM-IV Axis I child and adolescent psychiatric disorders. Diagnoses are made as definite, probable (greater than or equal to 75% of symptom criteria met), or not present. The different components of the K-SADS-PL are described comprehensively in Kaufman's and Ambrosini’s articles \[19,20\]. The K-SADS-PL-PV has been validated by Shahrivar et al in Iran \[21\]. Based on their study the specificities were more than 81% for all disorders and the sensitivities for most major diagnoses were between 75% and 100%.

The kappa agreements for most diagnoses were higher than 0.4 and the test-retest reliabilities were between 0.38 and 0.87.

**Statistical analysis:**

Statistical analysis was performed using the SPSS (release 11.5). Through the descriptive statistics the prevalence of the subscales and indices were calculated. T-test and analysis of variance were used to evaluate the relationship among dependent and independent variables respectively. Pearson correlation test was done to find the correlation between parent and teacher questionnaires. Alpha Cronbach was used to find the internal consistency of the CBCL and TRF. Using the ROC (receiver operating characteristics) analysis, the sensitivity and specificity of the CBCL and TRF subscales were calculated to find the appropriate cut-off scores comparing with the clinical diagnosis as the gold standard.

**Findings**

Of 681 CBCL forms which were sent to parents, 600 were completed. The students consisted of 325 girls (54.16%) and 275 boys (45.88%). Their mean age was 9.11 years (SD=1.45) with minimum of six and maximum of 12. A total number of 52 children and their parents participated in the second phase of the study. Among these participants, 25 and 27 students had Total Problems scores higher and lower than the Achenbach's cut off, respectively.

Table 1 shows the mean scores and standard deviations of eight problem subscales, Internalizing, Externalizing and Total Problems based on parent and teacher reports separately. It also compares these scores between girls and boys. The scores of Attention Problems, Delinquent Behavior, Aggressive Behavior, Externalizing and Total Problems were significantly higher in boys (\(P<0.01\)). The regression analysis showed that there was not any significant relation between students' ages and the parents' and teachers' rated Total Problems and externalizing scores. But this relation was significant between the parents' reported

...
Internalizing score and the students’ ages ($\beta=0.124$, $P=0.002$).

With regards to the fathers’ characteristics, the higher their academic levels, the lower were the teachers reported scores of children in all subscales ($P<0.05$), total T-scores ($P=0.03$), Externalizing ($P=0.003$) and Internalizing ($P=0.006$). This was the same for all subscales of the parents reported scores except for Withdrawn, Somatic Complaints, Thought Problems and Aggressive Behavior.

In terms of mothers’ characteristics, the higher their educational level, the lower were the scores on parents’ reported Social Problems ($P=0.001$), Attention Problems ($P<0.001$) Anxious/Depressed ($P=0.04$), Thought Problems ($P=0.005$), Internalizing ($P=0.03$), Externalizing ($P=0.03$) and Total Problems ($P<0.001$). All CBCL scores were significantly higher ($P<0.01$) in children of house keeper mothers except for Delinquent Behavior. However, TRFs showed significantly higher scores just in Withdrawn ($P=0.01$), Internalizing ($P=0.05$) and Total Problems ($P=0.05$) of the children of unemployed mothers.

**Internal Consistency:**

Internal consistencies (coefficient of Cronbach) were 0.91 for both parent and teacher reports which showed high reliability.

**Correlations among the CBCL subscales:** Table 2 shows the correlations among all subscales of TRF and CBCL separately. The highest correlations were between Internalizing and Anxious/Depressed, Total Problems, Somatic Complaints and Withdrawn. It was the same for Externalizing and Aggressive Behavior, Total Problems, Delinquent Behavior and Attention Problems.

**Inter-rater correlations for the CBCL/TRF subscales:**

All subscales of the TRF and CBCL were significantly correlated ($P<0.01$) which showed a

### Table 1: Mean Scores (standard deviations) of the CBCL and TRF in the population and by gender

| Subscales          | Total (n=600) Mean (SD) | Girls (n=325) Mean (SD) | Boys (n=275) Mean (SD) | P-Value |
|--------------------|-------------------------|-------------------------|------------------------|---------|
|                    | Parent Teacher          | Parent Teacher          | Parent Teacher Teacher|         |
| Somatic Complaints| 1.23 (2.08) 0.84 (1.63) | 1.23 (1.92) 0.87 (1.66) | 1.23 (2.26) 0.81 (1.60) | 1 0.6   |
| Withdrawn          | 2.15 (2.66) 2.48 (2.93) | 2.12 (2.90) 2.37 (2.77) | 2.18 (2.35) 2.60 (3.11) | 0.8 0.3 |
| Anxious/Depressed  | 4.87 (3.76) 3.24 (3.77) | 5.00 (3.95) 5.84 (4.61) | 4.72 (3.53) 6.21 (4.85) | 0.4 0.3 |
| Social Problems    | 2.58 (2.32) 6.01 (4.72) | 2.51 (2.33) 2.92 (3.60) | 2.66 (2.31) 3.62 (3.24) | 0.4 0.05|
| Thought Problems   | 1.03 (1.58) 1.15 (1.81) | 0.93 (1.58) 1.43 (1.60) | 0.90 (1.46) 1.43 (2.01) | 0.05 0.01|
| Attention Problems | 4.40 (3.88) 6.65 (7.62) | 4.01 (3.64) 5.89 (8.46) | 4.86 (4.09) 7.54 (6.74) | 0.01 0.01|
| Delinquent Behavior| 2.40 (2.74) 2.01 (2.42) | 2.10 (2.21) 1.60 (1.96) | 2.74 (3.21) 2.49 (2.80) | 0.01 0.01|
| Aggressive Behavior| 6.64 (5.69) 7.33 (8.84) | 5.93 (5.03) 5.99 (7.42) | 7.47 (6.28) 8.90 (10.05) | 0.01 0.01|
| Internalizing      | 8.09 (6.55) 9.15 (7.64) | 8.93 (5.47) 8.93 (7.46) | 8.01 (6.65) 9.47 (7.85) | 0.8 0.4  |
| Internalizing T score | 53.84 (10.08) 56.00 (19.15) | 53.51 (9.58) 54.41 (9.79) | 54.24 (10.64) 57.87 (26.12) | 0.4 0.05|
| Externalizing      | 9.10 (8.32) 9.24 (10.58) | 8.06 (7.38) 7.47 (8.47) | 10.33 (9.18) 11.33 (12.33) | 0.01 0.01|
| Externalizing T score | 49.38 (11.12) 48.94 (12.63) | 49.28 (10.08) 47.89 (11.15) | 49.50 (12.26) 50.18 (4.10) | 0.8 0.05|
| Total Problems     | 37.45 (22.10) 37.05 (25.23) | 27.53 (19.45) 26.83 (23.12) | 31.70 (23.38) 33.43 (28.86) | 0.01 0.01|
| Total Problems T score | 44.94 (18.56) 45.41 (20.81) | 52.57 (10.30) 51.55 (11.62) | 53.34 (12.11) 53.92 (13.94) | 0.6 0.09|
All correlations were significant at *P* < 0.01.

|                  | Externalizing Problems | Internalizing Problems | Total Problems |
|------------------|-------------------------|-------------------------|-----------------|
| **Teacher**      | 0.90                    | 0.83                    | 0.49            |
| **Parent**       | 0.82                    | 0.70                    | 0.43            |

Table 2: Correlations among the child behavior checklist and teacher rating form scales and subscales.
good cross-informant agreement between the corresponding subscales.

**Discriminative validity:**

Table 3 and 4 summarize the information derived from the performance of CBCL and TRF scales regarding the results from the ROC analysis based on clinical diagnosis and K-SADS interview, respectively. As the tables show, the most sensitive and specific subscale is the CBCL Total Problems. With regards to Total Problems scores it seems that the raw score of 26.5 could be considered as the cut off point with 68% sensitivity and 91% specificity.

The specificity of Attention Problems for attention deficit hyperactivity disorder (ADHD) was higher based on CBCL compared to TRF. Reversely, the TRF specificity of the Externalizing was higher than its counterpart on CBCL for ADHD+ oppositional defiant disorder (ODD). It seems that CBCL Internalizing was more sensitive than TRF Internalizing.

For ADHD, the parents reported Attention Problems scale yielded the greatest area under curve (AUCs) (0.88 for clinical diagnoses and 0.80 for K-SADS). It means that there is an 88% chance that the Attention Problems score of a randomly selected child with ADHD will be higher compared to a child without ADHD. This index was 0.70 based on TRF. Similarly, ADHD+ODD were best predicted by the Externalizing. The CBCL Total Problems scale best predicted any disorders. Internalizing was fair in predicting anxious and depressed children.

**Discussion**

This study was done to provide the validity and reliability and normative data of the child behavior checklist (parent and teacher report forms) in an Iranian sample. Our study seems to provide support for many consistencies between the Iranian results of the CBCL/TRF and the findings of other countries.

Rescorla et al[14] reported that the CBCL means of 31 countries ranged from 13.1 for Japan to 34.7 for Puerto Rico. They showed that the Iranian mean (27.5, reported by Minai[15]) was among 19 societies scored within 1 SD (5.7) of the averaged mean of 22.5. But our mean Total Problems score was 37.45 (SD=22.10). This high score may be due to the parents’ high expectations about their children’s behavior or lower thresholds for tolerating their kids.

In comparison with mean scores of TRF in 21 countries for ages 6-11 years, Rescorla et al [12] found that Iran, Thailand and Jamaica had the highest Total Problems mean scores. These results were the same on the Externalizing mean scores. Mean Total Problems score based on TRF in our study was 37.05 (SD=25.23), which was higher than the average mean of Rescorla’s results (21.6±6.2). Although the multicultural ASEBA findings have shown that the Es for differences among societies on the Internalizing exceeded for Externalizing [1], but our Internalizing findings were similar to the other societies.

In most countries, boys have been scored significantly higher than girls for CBCL and TRF

### Table 3: TRF Subscales at the Optimum Cut-off Scores for diagnosis based on the ROC Curve Analysis

| TRF Subscales | Diagnosis | Total Problems/ Any Disorders | Externalizing/ ADHD + ODD | Attention Problems/ ADHD | Internalizing/ Depressive Disorders |
|---------------|-----------|-------------------------------|-------------------------|-------------------------|-----------------------------------|
|               |           | Raw Score / T-Score           | Raw Score / T-Score     | Raw Score / T-Score     | Raw Score / T-Score               |
| **Cut-off**   | Clinical  | 20 / 50.5                     | 9.5 / 53.5              | 7.5                     | 8.5 / 58                          |
|               | K-SADS    | 22.5 / 51.5                   | 9.5 / 52.5              | 7.5                     | 7.5 / 56                          |
| **Sensitivity**| Clinical | 63% / 61%                     | 60% / 60%               | 58%                     | 50% / 54%                         |
|               | K-SADS    | 63.5% / 63%                   | 62% / 67%               | 58%                     | 52% / 52%                         |
| **Specificity**| Clinical | 55% / 55%                     | 75% / 84%               | 70%                     | 50% / 56%                         |
|               | K-SADS    | 50% / 53%                     | 73% / 77%               | 70%                     | 45% / 45%                         |
| **AUC**       | Clinical  | 0.664 / 0.45                 | 0.705 / 0.713           | 0.705                   | 0.502 / 0.459                     |
|               | K-SADS    | 0.502 / 0.49                 | 0.728 / 0.734           | 0.686                   | 0.450 / 0.503                     |
| **P-value**   | Clinical  | 0.009 / 0.1                   | 0.001 / 0.001           | 0.001                   | 1 / 0.5                           |
|               | K-SADS    | 1 / 1                         | 0.02 / 0.004            | 0.02                    | 0.5 / 0.9                         |

TRF: Teacher Rating Form / ROC: Receiver Operating Characteristics / ADHD: Attention Deficit Hyperactivity Disorder / ODD: Oppositional Defiant Disorder / K-SADS: Kiddie Schedule for Affective Disorders and Schizophrenia / AUC: Area Under Curve
Table 4: CBCL Subscales at the Optimum cut-off Scores Based on the ROC Curve Analysis

| TRF Subscales | Diagnosis | Total Problems/Any Disorders | Externalizing/ADHD + ODD | Attention Problems/ADHD | Internalizing/Anxiety/Depressive Disorders |
|---------------|-----------|-----------------------------|-------------------------|-------------------------|-------------------------------------------|
|               | Raw Score | T- Score                    | Raw Score               | Raw Score               | Raw Score                                 |
|               |           |                             |                         |                         |                                           |
| Cut-off       | Clinical  | 26.5                        | 53.5                    | 12                      | 54                                        | 7.5                                      | 5.5                                      | 54.5                                    |
|               | K-SADS    | 26.5                        | 53.5                    | 12                      | 54                                        | 6.5                                      | 6.5                                      | 54.5                                    |
| Sensitivity   | Clinical  | 68%                         | 62%                     | 65%                     | 69%                                       | 63%                                      | 68%                                      | 55%                                    |
|               | K-SADS    | 64%                         | 64%                     | 67%                     | 67%                                       | 68%                                      | 57%                                      | 57%                                    |
| Specificity   | Clinical  | 91%                         | 91%                     | 65%                     | 65%                                       | 94%                                      | 40%                                      | 63%                                    |
|               | K-SADS    | 50%                         | 57%                     | 68%                     | 68%                                       | 74%                                      | 59%                                      | 65%                                    |
| AUC           | Clinical  | 0.779                       | 0.782                   | 0.771                   | 0.772                                     | 0.882                                    | 0.559                                    | 0.656                                  |
|               | K-SADS    | 0.561                       | 0.560                   | 0.782                   | 0.785                                     | 0.808                                    | 0.551                                    | 0.562                                  |
| P-value       | Clinical  | 0.009                       | 0.04                    | 0.001                   | 0.001                                     | <0.001                                   | 0.5                                      | 0.4                                    |
|               | K-SADS    | 0.4                         | 0.5                     | 0.001                   | 0.001                                     | <0.001                                   | 0.5                                      | 0.4                                    |

CBCL: Child Behavior Checklist / ROC: Receiver Operating Characteristics / ADHD: Attention Deficit Hyperactivity Disorder / ODD: Oppositional Defiant Disorder / K-SADS: Kiddie Schedule for Affective Disorders and Schizophrenia / AUC: Area Under Curve

Externalizing and Attention problems [12-14]. In our study, boys obtained significantly higher scores on Attention Problems, Delinquent Behavior, Aggressive Behavior, Externalizing and Total Problems. Although Rescorla [12,14] showed an exception for nearly equal mean scores for CBCL and TRF and YSR Attention Problems in Iranian girls and boys, but our study did not replicate their results.

Comparisons of TRF with CBCL findings in 31 countries showed that the mean Total Problems scores were very similar but the Internalizing findings were less consistent across many countries [12]. It was concluded that parents more likely than teachers reported Internalizing Problems for girls compared to boys. Our study did not show any differences between CBCL and TRF results on girls' and boys' Internalizing and its three syndromes (Anxious–Depressed, Withdrawn, Somatic Complaints).

With increase of age the Somatic Complaints, Anxious/Depressed, and Internalizing scores of our participants increased significantly. It may be due to the lower prevalence of internalizing syndrome in younger girls and expected increase in its onset during the adolescence. The most consistent age effects across societies, especially on the CBCL [12] were increase of Internalizing and decrease of Externalizing with age. Based on these findings the increased mean of total problems in our study could be interpreted by a) the higher scores of externalizing compared to internalizing between the ages 6 and 11 years, and b) the increase of internalizing and decrease of externalizing scores after the age of 11.

Although we did not consider the SES of families in our study, the parents' education and job in our study provided interesting results. The lower level of parents’ education correlated with higher CBCL and TRF Externalizing and Total scores of their children. It was true about the higher scores of parent reported Internalizing but not teacher reported ones. The house keeper mothers had children with higher scores on Internalizing and Total Problems subscales of CBCL. The level of education could affect the parents’ expectations and attributions about their kids' behaviors and symptoms or their understandings of the items of the checklist.

The internal consistency of CBCL and TRF Total Problems in our study (0.91) was higher than that reported by Minai [15] in Iran (0.83-0.85), but lower than that was reported in USA sample (0.97) [11] and multicultural research (0.94) [1]. The correlations among the CBCL and TRF subscales were consistent with known co morbidities.

The significant correlation between the CBCL/TRF scales in our study shows its good cross-informant agreement on children's behavior, which is similar to the inter-rater correlations for USA and the average of all societies [12].

In our sample, based on ROC analysis, the best convergences were between CBCL Attention Problems subscale and ADHD diagnosis regarding to both clinical and structured interviews. The convergence between CBCL Total Problems subscale and any disorders based on the clinical diagnosis was good. This was the same between CBCL Externalizing and ADHD+ODD diagnosis by K-SADS and clinical diagnosis. Taken together,
these findings support the utility of the CBCL to identify the youths who have the symptoms of ADHD and ODD or any disorders. The results of AUCs for TRF subscales were lower than the corresponding percentages of the CBCL subscale. These findings suggest the higher discriminative validity of the CBCL than the TRF in the diagnosis of these disorders. Chen et al found similar results regarding the high discriminative power of the CBCL Attention Problems subscale for ADHD [22], Hudziak et al confirmed the predictive power of the Attention Problems subscale for ADHD and the utility of low T-Scores (55) for efficiently discrimination of cases from no cases [23], Biederman et al showed that the CBCL Delinquent Behavior and Aggressive Behavior subscales predicted the structured interview derived diagnoses of conduct and bipolar disorder, the Anxious/Depressed and Aggressive Behavior subscales predicted major depression, and the Anxious/Depressed and Attention Problems subscales predicted anxiety disorders. They approved the CBCL as a screening tool to identify co morbid and non-co morbid cases of ADHD in a pediatrically referred population, as well [24],

In a study by Bird et al [25] using the CBCL to screen childhood psychopathology in the community, they suggested that for children 6-11 years old, the CBCL and TRF were equally informative but for the 12-16 year old adolescents, the CBCL provided better information and a distinct screening advantage over the TRF and YSR. Our study showed that for 6-11 year old children, parents gave more accurate information than teachers who spent less time with their students.

Our results showed that specificities of the Attention Problems, Total Problems and Externalizing subscales were consistently higher than their sensitivities. These findings suggest that these subscales perform better to rule out than to rule in the diagnosis of ADHD, any disorders, and ADHD+ODD. This finding limits the utility of the CBCL as a screening instrument, because the false positive cases lead to unnecessary follow up interventions. Our findings regarding the correlations among the CBCL and TRF subscales were consistent with the other studies.

In almost all the subscales which were analyzed based on ROC curve, we found that the sensitivities and specificities of the CBCL subscales including Internalizing were higher than the TRF except for the Externalizing/ADHD+ODD which was more specific according to TRF. Rescorla et al [12,14] suggested that across many countries, teachers and parents report similarly the externalizing behaviors of children but they vary in detecting the internalizing symptoms. This variation was more prominent across societies, and seems to be more culturally bound.

Our study was done on 6-11 year old children, so its findings could not be generalized to other age groups of the populations. Besides, it covered an urban community of the metropolitan capital city of Iran who were Persian speaking. This is a good idea to administer the CBCL/TRF to people in other cities with different languages and subcultures.

**Conclusion**

This study supports most multicultural CBCL/TRF findings. The boys obtained significantly higher scores on Externalizing and Total Problems. With increase of age Internalizing scores of our participants increased significantly. CBCL and TRF results on girls’ and boys’ Internalizing scores were the same. The sensitivities and specificities of the CBCL subscales were higher than the TRF except for Externalizing. CBCL is a valid and reliable instrument to consider psychiatric disorders in community samples.

**Acknowledgment**

This study was supported by a grant from Tehran University of Medical Sciences. The authors thank the Institute for Cognitive Science Studies for their helpful supports. The authors also thank all children, parents, and teachers who participated in this study.

**Conflict of Interest:** None
References

1. Achenbach TM, Becker A, Döpfner M, et al. Multicultural assessment of child and adolescent psychopathology with ASEBA and SDQ instruments, research findings, applications, and future directions. J Child Psycho Psychiatry 2008;49(3):251-75.

2. Achenbach TM, Verhulst FC, Edelbrock C, et al. Epidemiological comparisons of American and Dutch children: II. Behavioral/emotional problems reported by teachers for ages 6 to 11. J Am Acad Child Adoles Psychiatry 1987;26(3):326-32.

3. Achenbach TM, Bird HR, Canino GJ, et al. Epidemiological comparisons of Puerto Rican and US mainland children: parent, teacher and self reports. J Am Acad Child Adoles Psychiatry 1990; 29(1):84-93.

4. Crijnen AA, Achenbach TM, Verhulst FC. Comparisons of problems reported by parents of children in 12 cultures: total problems, externalizing, and internalizing. J Am Acad Child Adoles Psychiatry 1997;36(9):1269-77.

5. Crijnen AAM, Achenbach TM, Verhulst FC. Problems reported by parents of children in multiple cultures: the Child Behavior Checklist syndrome constructs. Am J Psychiatry 1999;156(4):569-74.

6. Verhulst FC, Achenbach TM, Vander Ende J, et al. Comparison of problems reported by youths from seven countries. Am J Psychiatry 2003;160(8):1479-85.

7. Hudziak JJ, Van Beijstervelott CE, Althoff RR, et al. Genetic and environmental contributions to the Child Behavior Checklist Obsessive-Compulsive Scale: a cross-cultural twin study. Arch Gen Psychiatry 2004;61(6):608-16.

8. Bernd GH. Cross-cultural generalizability of CBCL syndromes across three continents: from the USA and Holland to Australia. J Abn Child Psycho 2000; 28(5):439-50.

9. Zukauskiene R, Ignataviciene K, Daukantaite D. Subscales scores of the Lithuanian version of CBCL - preliminary data on the emotional and behavioral problems in childhood and adolescence. Eur Child Adolesc Psychiatry 2003; 12(3):136-43.

10. Bilenberg N. The child behavior checklist (CBCL) and related material: standardization and validation in Danish population based and clinically based samples. Acta Psychia Scand 1999;398:2-52.

11. Achenbach TM, Rescorla LA. Manual for the ASEBA school-age forms and profiles. Burlington, VT: University of Vermont, Research Center for Children, Youths, and Families. 2001.

12. Rescorla LA, Achenbach TM, Ginzburg S, et al. Consistency of teacher – reported problems for students in 21 countries. School Psychology Review 2007;36(1):91-110.

13. Rescorla LA, Achenbach TM, Ivanova MY, et al. Epidemiological comparisons of problems and positive qualities reported by adolescents in 24 countries. J Cons Clin Psycho 2007;75(2):351-8.

14. Rescorla LA, Achenbach TM, Ivanova MY, et al. Behavioral and emotional problems reported by parents of children ages 6 to 16 in 31 societies. J Emo Behav Disord 2007;15(3):130-42.

15. Minaei A. Manual of ASEBA school-age forms for Iranian children. Tehran: Research Institute for Exceptional Children. 2005. (In Persian)

16. Shahrivar Z, Tehranidoost M, Pakhaz B, et al. Normative data and psychometric properties of the parent and teacher version of the strengths and difficulties questionnaire (SDQ) in an Iranian community sample. J Res in Med Sci 2009;14(2): 69-77.

17. Achenbach TM. Manual for the Child Behavior Checklist/4-18 and 1991 profile. Burlington, VT: University of Vermont, Department of Psychiatry. 1991a.

18. Achenbach TM. Manual for the teacher’s report form and 1991 profile. Burlington, VT: University of Vermont, Department of Psychiatry. 1991b.

19. Kaufman J, Birmaher B, Brent D, et al. Schedule for affective disorders and schizophrenia for school-age children present and lifetime version (K-SADS-PL) initial reliability and validity data. J Am Acad Child Adoles Psychiatry 1997;36(7):980-8.

20. Ambrossini PJ. Historical development and present status of the schedule for affective disorders and schizophrenia for school-age children (K-SADS). J Am Acad Child Adoles Psychiatry 2008;39(1):49-58.

21. Shahrivar Z, Kousha M, Moallemi Sh, et al. The reliability and validity of kiddie-schedule for affective disorders and schizophrenia – present and life-time version – Persian version. Child Adolesc Ment Health 2010;15(2):97-102.

22. Chen WJ, Faroone S, Biederman J, Tsuang M. Diagnostic accuracy of the Child Behavior Checklist scales for attention–deficit hyperactivity disorder: A receiver–operating characteristics analysis. J Cons Clin Psycho 1994; 62(5):1017-25.

23. Hudziak J, Copeland W, Stanger C, Wadsworth M. Screening for DSM-IV externalizing disorders with the Child Behavior Checklist, a receiver-operating characteristics analysis. J Child Psycho Psychiatry 2004;45(7):1299-307.

24. Biederman J, Monuteaux MC, Kendrick E, et al. The CBCL as a screen for psychiatric co-morbidity in pediatric patients with ADHD. Arch Dis Childh 2005;90(10):1010-5.

25. Bird HR, Gould MS, Rubio–Stúpec MA, et al. Screening for childhood psychopathology in the community using the Child Behavior Checklist. J Am Acad Child Adoles Psychiatry 1991;30(1):116-23.
Appendix

فهرست مشکلات رفتاری کودکان (والدین)

Child Behavior Checklist (CBCL)

والدین گرامی:
در زیر فهرستی از فقرات و حالات مختلف آورده شده است. جنابجمه هر کدام از آنها در مورد کودک با نویسنده شما در حال حاضر یا در طول 6 ماه گذشته وجود داشته است، آن را با علامت    متخصی نمایند.

| کد | موضوع                                                                 | بینفی  | موافق | خیر |
|----|------------------------------------------------------------------------|---------|--------|-----|
| 1  | چه گاهی از سین خود رفتار می‌کند.                                      |         | 0      | 1   |
| 2  | حساسیت (آرزوی) دارد (نوع حساسیت چگونه مشخص می‌شود).              |         | 0      | 1   |
| 3  | زیاد جه جه می‌کند.                                                     |         | 0      | 1   |
| 4  | اسم یا نام نفی دارد.                                                   |         | 0      | 1   |
| 5  | اگر کودک یا نوجوان سپر می‌رسی و میل داشت رفتار می‌کند.               |         | 0      | 1   |
| 6  | اگر کودک یا نوجوان دختر می‌کند و میل داشت رفتار می‌کند.               |         | 0      | 1   |
| 7  | بیرون از توالی مدفوع می‌کند.                                          |         | 0      | 1   |
| 8  | مزرع است و از خودش تعقیب می‌کند.                                    |         | 0      | 1   |
| 9  | نمی‌تواند حاشیه را جمع کند.                                            |         | 0      | 1   |
| 10 | نمی‌تواند توجه را برای مدت طولانی نگه دارد.                           |         | 0      | 1   |
| 11 | بعضی کاهشی را نمی‌تواند از داشتیت خارج کند (فکر و مانندی).         |         | 0      | 1   |
| 12 | نمی‌توانند آموزشی، بی‌قرار است با زیان فعال است.                     |         | 0      | 1   |
| 13 | گچ یا سردرگم است.                                                    |         | 0      | 1   |
| 14 | زیدار گری می‌کند.                                                     |         | 0      | 1   |
| 15 | با حیوانات پرحست.                                                     |         | 0      | 1   |
| 16 | نسبت به دیگران پرحست است. لزوم است و دیگران را آزار می‌دهد.        |         | 0      | 1   |
| 17 | خیال‌پردازی می‌کند.                                                    |         | 0      | 1   |
| 18 | عمده به خودش صدهم یا زنده از بین بردن خود را دارد.                 |         | 0      | 1   |
| 19 | دلش می‌خواهد یا زیاد توجه کند.                                       |         | 0      | 1   |
| 20 | وسایل خواب یا خوابی که نمی‌کند.                                       |         | 0      | 1   |
| 21 | وسایل دیدگان را خراب می‌کند.                                          |         | 0      | 1   |
| 22 | وسایل دیدگان را خراب می‌کند.                                          |         | 0      | 1   |
| 23 | در خانه نامه‌ای می‌کند (حرف گوش نمی‌دهد).                          |         | 0      | 1   |
| 24 | در مدرسه نامه‌ای می‌کند (حرف گوش نمی‌دهد).                        |         | 0      | 1   |
| 25 | خوب گذا نمی‌خورد.                                                     |         | 0      | 1   |
| 26 | با چهار دیگر سرگذاری ندارد.                                           |         | 0      | 1   |
| 27 | ار فاردار برد خود، پیش‌بانی نمی‌کند.                                 |         | 0      | 1   |
| 28 | خوداست.                                                               |         | 0      | 1   |
| 29 | آت و آشغال می‌خورند (منظر شریپن و نقش نیست) توضیح دهد.            |         | 0      | 1   |
| 30 | از حیوانات و صفات، خاص و غیر صنعتی (بیماری) می‌ترسد (توضیح دهد از چگونه تعیین شده) |         | 0      | 1   |
| 31 | از خانه کردن باید به سرپرست یا به اجرا دهد. می‌ترسد.              |         | 0      | 1   |
| 32 | احساس می‌کند که پایین از هر جهت بی‌پایی و نقص باشد.                |         | 0      | 1   |
| 33 | احساس می‌کند که هیچگونه یا را ندارد.                                |         | 0      | 1   |
| 34 | احساس می‌کند یا دیگران او را تقصیب می‌کند.                          |         | 0      | 1   |
| 35 | احساس می‌کند یا دیگران او را تقصیب می‌کند.                          |         | 0      | 1   |
| 36 | زیاد به خود صدمه می‌زنند. منعی نبوده است.                          |         | 0      | 1   |
روزنامه پرورش و پزشکی کودکان، شماره 21-3، اسفند 1390

**موضوع**

| کد | مطلب |
|----|--------|
| 37 | زیاد جنگ و دعوا می‌کند. |
| 38 | زیاد سر به سرش می‌گذرد و زیاد مورد آزار و تعصب درگران فرار می‌کنند. |
| 39 | دور و پیچیده‌ای که در سر در است. درست می‌کند. |
| 40 | صدایی که منجر به جاودان درد نموداری که به شدت آنها نیستند. |
| 41 | بدون فکر عمل می‌کند. |
| 42 | نهایتاً را دوست دارد. |
| 43 | درون می‌گوید، خلبانی و تقلب می‌کند. درگران را گول می‌زند. |
| 44 | عادات به تأخیر جویدان دارد. |
| 45 | زیاد حساس، است. روت عملی و هیچ‌چیزهایی می‌شود. |
| 46 | حرکات پر شکوه به‌طور غیرعادی در اندازه بدن خود دارد. |
| 47 | خواب‌های وحشتناک می‌بیند. |
| 48 | بچه‌های دیگر اما دوست ندارند. |
| 49 | بی‌بیست دارد. |
| 50 | بی‌بیست و خاطرات می‌شود. |
| 51 | احساس سرگرمی می‌کند. |
| 52 | زیاد حساس، گاهی می‌کند. |
| 53 | زیاد عیان‌گره می‌خورد (برخوردار). |
| 54 | به‌شمار از احساس خستگی می‌کند. |
| 55 | اضافه وزن دارد. |
| 56 | از مشکلات و ناراحتی‌های جسمی زیر در خود شکایت دارد (مشکلاتی که به نظر پزشک جسمی می‌توهم و علت عصبی دارد). |
| 57 | الف: درد در نقاط مختلف بدن. |
| 58 | ج: حالات نهایی، احساس حال به هم خوردن. |
| 59 | د: ناراحتی‌هایی که در مورد وضعیت چشمنه جوش با دیگر مشکلات بیشتر از کنونی مشاهده می‌گردد. |
| 60 | ج: سایر ناراحتی‌هایی که به‌طور گردشی مشاهده می‌گردد. |
| 61 | بی‌دلیل بر دیگر کنکاری می‌کند. |
| 62 | با بی‌بیست، بی‌بیست و چهار سنتی‌متر بیشتر از می‌روید و آنها را زخم می‌کند. |
| 63 | با آلت ناسیل خود در حوض دیگران در می‌روید و بازی می‌کند. |
| 64 | با آلت ناسیل خود دراداری می‌کند. |
| 65 | در دارندگان صعبای است. |
| 66 | دست و با لیف است. |
| 67 | ترجمه‌ای دهد با به‌خاطرات گوگرگان از خودش باشد. |
| 68 | ترجمه‌ای دهد با به‌خاطرات گرگرگان از خودش باشد. |
| 69 | ترجمه‌ای دهد با به‌خاطرات گرگرگان از خودش باشد. |
| 70 | از صحت کردن با افراد غیره در خودش می‌کند. |
| 71 | خودش را مجبور به بعضی اعمال می‌پذیرد (اعمال وسیع). |
| 72 | از مرزن فرار می‌کند. |
| 73 | رزید جسد می‌کند. |
| 74 | در مدرسه و تدریس است. مطالعات را نا می‌گیرد. |
| 75 | در زمینه فارغ‌التحصیل مشکلاتی را می‌دارد. |
| 76 | در زمینه فارغ‌التحصیل مشکلاتی را می‌دارد. |
| 77 | در زمینه فارغ‌التحصیل مشکلاتی را می‌دارد. |
| 78 | مشکلات جنسی می‌دارد (توضیح دهد). |
در رشد و رونق‌های دیگر، یکی از بینتای روی پیش‌بینی می‌شود.

۱۸۰ در صورت کردن در بین گلما مساوی دارد (مثل یک لکت زبان دارد).

۱۸۱ بدن هدف به جای خبره می‌شود.

۱۸۲ در منزل بدون اجازه وسایل را بر می‌دارد (دردی می‌کند).

۱۸۳ خارج از منزل بدون اجازه وسایل را بر می‌دارد (دردی می‌کند).

۱۸۴ چیزهای باره که احساس ندارد حضور می‌کند.

۱۸۵ رفتارهای معیوب و غرب دارد (توجه دیده).

۱۸۶ عفونی معیوب و غرب دارد (توجه دیده).

۱۸۷ که شک و یکنده‌ای.

۱۸۸ در خاک و با احساسات اعیان‌های تازگانی دارد.

۱۸۹ زیاد فهر می‌کند و احساس است.

۱۹۰ نبگدگان و شکاک است.

۱۹۱ فضح می‌دهد یا در صحیح‌شان، کلمات رسید و وقیحانه به گزار می‌برد.

۱۹۲ می‌گوید از زندگی‌سیر شده است و حرفه‌ای ملود کننده می‌کند.

۱۹۳ زیاد صحبت می‌کند.

۱۹۴ در خواب را یا صحبت می‌کند (توجه دیده).

۱۹۵ دیگران را معنی و ادیان می‌کند.

۱۹۶ بی زنین با ندماج است.

۱۹۷ راجع به مساله جنی زیاد فکر می‌کند.

۱۹۸ مردم را تهدید می‌کند.

۱۹۹ انگشت شست خود را می‌کند.

۲۰۰ فوقالعاده به نمیر و مرز پیدا کرده است.

۲۰۱ در خواب رفتن مسکن شده.

۲۰۲ از مرده گریزان است و قرار می‌گیرد.

۲۰۳ کوته‌های و کم آرزو است.

۲۰۴ ناراحت، توقیف و افسردگی است.

۲۰۵ بیست از حسن بر سر و صدا است.

۲۰۶ مواد مخدر مصرف می‌کند.

۲۰۷ خراب‌هایی می‌کند.

۲۰۸ در روز شناور را خرس می‌کند.

۲۰۹ شب ادراری دارد.

۲۱۰ ناهار می‌کند.

۲۱۱ اگر کودک یا نوجوان پسر است، «از می‌کنید دختر باند».

۲۱۲ اگر کودک یا نوجوان دختر است، «از می‌کنید پسر باند».

۲۱۳ با دیگران ازدحام بردار خون می‌کند و گونه‌گیر است.

۲۱۴ مشکلات دیگری دارد که در فهرست بالا نیامده آنها را نویسید.