Pakistan Journal of Psychological Research, 2017, Vol. 32, No. 1, 19-33

Translation and Validation of Child and Adolescent Disruptive Behaviour Inventory into Urdu Language

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The present study was carried out to translate and validate the Child and Adolescent Disruptive Behaviour Inventory (CADBI) V. 5.0 developed by Burns (2010) from English into Urdu language. The inventory had two forms CADBI - Parent (41 items) and CADBI - Teacher (42 items), each comprised of five subscales including Oppositional Defiant Disorder toward Adults, Oppositional Defiant Disorder toward Peers/Siblings, Attention Deficit Hyperactivity Disorder - Hyperactivity/Impulsivity, Attention Deficit Hyperactivity Disorder-Inattention, and Academic and Social Competence. The study was completed in two phases, in the first phase researcher translated the scale by following the standard procedure of back translation. In the 2nd phase, reliability and validity was determined. The internal consistency reliability of the Urdu version found to be satisfactory ranging from .86 to .92 for the subscales. Further, the cross-language validation of Urdu version with English original version also came out to be a highly significant correlation among subscales. The study has implication in the field of child and developmental psychology.

Keyword. Disruptive behavior, oppositional defiant behavior, attention deficit hyperactivity disorder, disruptive behaviour

The objective of the study was to translate and validate a scale for the assessment of disruptive behaviour in children and adolescent. The focalaim of translating The Child and Adolescent Disruptive

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The present study is a part of major study that focused at investigating a relationship between parenting practices, styles, and boys' disruptive (oppositional) behaviour.

The present study acknowledges the contribution of teachers, parents, and experts in assisting the translation process.

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Behaviour Inventory (CADBI; Burns, 2010) was to have an easily comprehendible tool in Urdu language equivalent (content) to the original English version that could aid in collecting data about children's behaviour. The present scale is unique in different aspects; most importantly it is equally useful for clinical and nonclinical population.

The CADBI comprised of five subscales, Oppositional Defiant Disorder (ODD) toward Adults (ODD-Adult) having 8 items; ODD toward Peers/Siblings (ODD-Peer) having 8 items; Attention Deficit Hyperactivity Disorder - Hyperactivity/Impulsivity (ADHD–H/I) having 9 items; Attention Deficit Hyperactivity Disorder - Inattention (ADHD-IN) having 9 items; Academic competence (AC) having 4 items on Parent version and 5 on Teacher version; and Social Competence (SC)subscale having 4 items on Parent version and 2 items on Teacher version. The two separate versions, Parent and Teacher(CADBI - Parent and CADBI - teacher), provide distinctive prospect by asking the rater (parent or teacher) to rate the occurrence of child's problem behavior which child shows during his/her interaction with people in the specific context of home or school.

The Scale gives the same description of symptoms as provided in the Diagnostic and Statistical Manual (4th ed., text rev.; DSM-IV-TR; American Psychiatric Association [APA] 2000), but in more elaborative style. To determine the clinical nature of problem, it further helps in investigating the intensity of impairment in the daily functioning of child as caused by the symptoms.

Although, there are large number of parent and teacher rated scales available to measure the symptoms of ADHD and ODD based on DSM-III (APA, 1980), (e.g., Burns, Walsh, Boe, Sommers-Flanagan, & Teegarden, 2001; DuPaul et al., 1997; DuPaul et al., 1998; Gomez, Harvey, Quick, Scharer, & Harris, 1999). However, the Child and CADBI; (Burns, Taylor, & Rusby, 2001) v. 2.3have gained its popularity in research (e.g., Burns, Gomez, Walsh,& Moura, 2003; Burns & Haynes, 2006; Burns & Walsh, 2002) for measuring breath of disruptive behaviours that were faced by children and adolescents including ODD and ADHD. The first author, Leonard Burns, has collected CADBI data in many studies in the United States and some other countries as well to achieve the psychometric properties of the inventory including validity and reliability.

The study by Burns, Desmul, Walsh, Silpakit, and Ussahawanitchakit (2009) for Thai adolescents demonstrated invariance of like-item loadings, intercepts, and residuals as well as invariance of like-factor variances, covariances, and factor means

between mother's and father's rating of the same child. In addition, the between - parent factor correlations showed convergent and discriminant validity for the ADHD-IN, ADHD-H/I, and ODD factors between mothers and fathers within each sample and similar results were found (Burns et al., 2008) for mothers' and fathers' ratings of Brazilian, Thai, and American children, which provides an additional maintenance for the construct validity of the inventory.

Cronbach Alphas for the various studies using the parent and teacher versions of CADBI showed the high reliability (e.g., Moura& Burns, 2010) for mothers rating in Brazilian sample (CADBI-IN, -H/I,ODD-Adult, ODD-Peer, and AC found Cronbach alphas (.93, .91, .90, .90 and .89, respectively).

Advantage of CADBI over Other Measures

The rating scales measuring ADHD and ODD have similarities and differences when comparing with CADBI; it appears that there are differences that may influence their content validity. These differences include how the symptoms are defined on the scale, the rating anchors used to quantify symptoms, and the time interval for the ratings.

There were two major problems associated with wording of the symptoms of ADHD and ODD as they appear in the DSM-IV. According to Burns et al. (2003), the first problem was that the content of DSM-IV did not seem to be appropriate to the situation of the rater. An additional problem observed was related to the symptoms that is, the scales failed to measure the clinical meaning of the symptoms. Other problem was associated with the rating anchors used to quantify the symptoms of ADHD and ODD. They found that scales currently in practice were using a variety of rating anchors that had potential associated problems.

The more subjective anchors (e.g., never or rarely, sometimes, often, very often) are problematic because individuals who giverating are free to define anchors as they choose (Burns et al., 2001; Schwarz, 1999). Alternately, frequency count rating anchors as introduced by Burns et al. (2001) in their rating scale (e.g., never in the past month, 1 to 2 times in the past month, 3 to 4 times in the past month, 2 to 6 times per week, 1 time per day, 2 to 5 times per day, 6 to 9 times per day, 10 or more times per 6 times per week, 1 time per day, 2 to 5 times per day, 6 to 9 times per day, 10 or more times per day) with short time intervals, preferably the past month, provide consistency and direction when rating symptoms.

The CADBI has numerous benefits on other measuring tools, for example, the Child Behaviour Checklist (Achenbach, 1991). One major benefit implicates that it has similar account of behaviours as presented by diagnostic criteria in the DSM-IV-TR. Another possible advantage involves the frequency count of the CADBI. According to Burns et al. (2001), a rating procedure based on frequency counts for a specific time interval is conceptually better way to measure these symptoms. With this procedure, the rating person indicates the occurrence of the symptoms on a frequency of occurrence scale (e. g., never, once, twice, once per month, once per week, once per day, and many times per day). Since the rating descriptors define frequency, this type of rating procedure reduces the ambiguity in response options, thereby, decreasing subjectivity in measuring procedures. The subjective procedures adopted in other scales do not provide a meaningful way to measure the more serious level of ODD and CD symptoms as well.

To sum up, CADBI takes into account all of the major components of reliability and validity including content validity of rating scales including the way symptoms are defined, rating anchors, content appropriate situational questions appropriate to the rater, as well as good construct validity (convergent and discriminant) of teachers', mothers', and fathers' ratings of children from multiple countries (i.e., Brazil, Thailand, and the United States) as mentioned earlier. Keeping in view the sound psychometric characteristics of the Inventory, the present study was designed to translate CADBI into Urdu language to be used for Pakistani population. Following are the objectives:

a) **Phase 1:** Translation of CADBI (Burns, 2010) both teacher and parent versions into Urdu language.
b) **Phase 2:** Establishing the psychometric properties of CADBI-Urdu.

Method

Phase 1: Translation of CADBI

Permission of author of CADBI (Burns, 2010) was sought for translation. Researcher prepared two translation options for each item of CADBI. The international standard translation guidelines approved by Mapi Research Institute (2012) were followed. The translation of the scales was completed in five steps: 1) Forward translations, 2) reconciliation/consensus building, 3) back translation, and 4)

comparison of back translation with original CADBI, and 5) preparation of final versions.

Forward translation. For the translation of key words from English to Urdu, two dictionaries including The Oxford English to Urdu dictionary by Haqqee (2011) and The Popular English Urdu Dictionary (Haq, 1987) were consulted. For each item, two choices in Urdu were made, keeping in view the readability and conceptual equivalence to the original scale. This process generated 82 items of original CADBI 41 for both Teacher and Parent versions. CADBI Parent Version comprised of 42 items with similar content as of Teacher Version (41 items). The only difference was of situation; there were only five items (item # 2, 39, 40, 41, & 42) requiring reconsideration that is the behavior was same, however, the situation was different. For instance, on item no. 2 attention skills were assessed in home situation rather in school "…has difficulty keeping attention focused on homework or other home activities such as chores". Thus, there were only two words homework and other home activities chores that required translation

Urdu translations of these items were presented to (a) teachers (n = 5) and subject matter experts (n = 5) for Teacher Version of CADBI; and (b) parents (n = 5), and subject matter experts (n = 5) for Parent Version of CADBI to select the most suitable option for each item. They assisted researcher in the procedure of appropriate translation selection. Teachers and parents were included as they were going to be raters for the respective versions in future, thereby, their participation deemed to be an essential requirement. They were bilingual Pakistani, living in Lahore city, ages between 25 and 50 years. For teachers (Class III to Class X) and parents minimum qualification requirement was intermediate. Experts were university teachers including two from Urdu, two from English, and one from Psychology Department. They were briefed about the variables and also about the rationale of the research with the following instructions:

"There is a list of items consisting of behavioural and other problems related to attention and activity level of children. Each item is translated twice providing two options. Kindly see which one of the two translations is closer in terms of meaning and conceptual clarity to the original English scale and if you do not find any of them satisfactory in translation with the original, please suggest alternate translation".

Further, they were instructed to check the accuracy of Urdu translation in terms of understanding and usage of vocabulary for an ordinary person. Finally, to seek their keen participation, they were

encouraged to take part in the research project highly being a appreciated task and that their contribution would be duly acknowledged.

Reconciliation/consensus building. After getting the judgment of teachers and experts on each translated item, the percentage of agreement among teachers and among experts was calculated separately by the researcher. This procedure of inter-rater reliability according to Keyton et al. (2004) determines that the information being collected is being collected in a consistent manner.

The responses on each item given by five experts and five teachers/parents were compared by the researcher. Out of two options, the option receiving highest percentage of agreement was selected for the initial form of Urdu CADBI. In case where percentage was equal, however, the two groups differed on response selection; the preference was given to teachers/parents as they were the raters of this inventory. Items obtaining 60 to 100% agreement were retained for further process.

There only was one item where changes were suggested by the expert that was item – 12 "Runs about or climbs" was translated as [*apni dhun mein*] that was replaced with [*nichla nahi bethhta*].The change was incorporated. The researcher discussed it with supervisor and agreed on the suggested translation which was found to be more suitable and familiar in Urdu language for such kinds of behaviour

For CADBI - Parent Version (CADBI-P), out of total 5 items, 3 items showed 100% agreement between parents and experts on option selection, while rest of two items obtained 80% agreement. All items were retained and initial Version was prepared. This shows that two groups of translators did not differ with each other for selecting an option between two translations for each item.

Back translation. To ensure the precision of translation, Back translation of the Urdu versions (Teacher and Parent) into English was carried out according to the standard procedure in which three bilingual individuals, who were unfamiliar with the original scale, re-translated Urdu initial version back to the original language. To avoid possible biases, the sequence just described in the procedure of for word translation was repeated with 3 bilinguals who carried out the parallel back-translation procedure. They were given the following instructions:

"There is a list of items comprising of behavioural and other problems related to attention and activity level of children, you are requested to translate each item in to English keeping in view that it reflects the true meaning and essence. Kindly do it very carefully,

your contribution is highly appreciated in developing a scale that is useful for local population".

Comparison of back translation with original CADBI. Three back translations were then compared with the original CADBI to obtain a concordance score for degree of agreement among raters. This process of back translation was followed to ensure content validity of the scale to achieve conceptual equivalence between two scales. The following quantifying procedure was followed to obtain concordance (see Ahmed, 2010).

The *complete concordance* which was complete agreement on all three back translations in comparison with the source language. This resulted in 34 items where all experts showed complete concordance with the original. In *majority concordance*, two back translators gave agreement showing 75% concordance and total four items obtained majority concordance, thus were retained. *Divided concordance*, if the agreement was less than 75%. There were only four items requiring some reconsideration. These were discussed in a committee made up of two Psychology professors. They collaboratively decided few changes in the translation of key word. These items were given to another bilingual person who retranslate them back in to English.

Final versions. The two teachers in Psychology and researcher participated in the discussion to prepare the final version. None of the item showed any serious reconsideration. The percentage of agreement among three back translator experts that is, Expert 1 and 2 was 87% and between Expert 2 and 3 was 92% for CADBI-T. Similarly,on CADBI-P, the percentage agreement between Expert1 and 2 was 80% and between Expert 2 and 3 was again 80%. Incase where meaning of back translated item was judged identical even though the vocabulary differed slightly, the decision was made in the favor of retaining the item without any further change.

There were no cultural differences observed since the Inventory was based on well-established diagnostic protocol of DSM-IV TR that had world-wide recognition at the time when study was conducted.

Phase 2: Establishing Psychometric Properties of CADBI-Urdu

In this phase, psychometric properties including internal consistency and equivalence between original CADBI and Urdu translated CADBI that is cross-language validation, were carried out.

Establishing internal consistency. To estimate the internal consistency, Cronbach's alpha and item - total correlations were computed for CADBI-T and CADBI-P separately.

Forty five children (20 boys and 15 girls) aged 10 to 14 years (M = 12.35, SD = 1.32) were drawn from two public schools of Lahore. The teachers were asked to randomly select a child from their classes. The teachers (n = 35) and mothers (n = 35) rated the children's behaviour independently. Selected children's mothers were contacted to have their consent to participate in the study. Due to some personal reasons, 10 mothers could not complete the inventory; thus, 10 additional mothers of some other children were contacted. Therefore, the mothers' and teachers' ratings about child's behaviour were not perfectly of the same child. Mothers' academic qualification ranged from 12 to 14 years and most of them were house-wives. The teachers' education ranged from 12-18 years. Participation was voluntary and anonymous.

Table 1

Cronbach Alpha Coefficients of Subscales of CADBI-T and CADBI-P Urdu Version

			CADBI-P (n = 35)			CADBI-T (n = 35)
Subscales	k	α	*M*(*SD*)	k	α	*M*(*SD*)
ADHD-IN	9	.88	27.97(12.46)	9	.92	38.6(13.49)
ADHD-H/I	9	.88	31.31(14.22)	9	.91	36.14(13.79)
ODD-Adult	8	.86	24.88(10.92)	8	.90	25.28(11.71)
ODD-Peers/Sibling)	8	.87	25.71(10.59)	8	.89	29.31(0.58)
AC	4	.70	19.00(12.6)	5	.73	16.55(4.7)
SC	4	.74	28.00(16.28)	2	.71	8.22(1.7)

Note. k = No of items; ADHD-IN = Attention Deficit Hyperactivity Disorder-Inattention skills; ADHD-H/I = Attention Deficit Hyperactivity Disorder-Hyperactivity/Impulsivity level; ODD-Adults = Oppositional Defiance Behaviour toward adults; ODD-Peers/Siblings = Oppositional Defiance Behaviour toward Peers/Siblings; AC = Academic Competence; SC = Social Competence.

Table 1 shows that Cronbach alpha coefficients for subscales for CADBI–P ranged from .70 to .88 and for CADBI-T ranged from .71 to .92 showing adequate reliability for all subscales.

Table 2

Item-to-Total Correlations for Subscales of CADBI-P and CADBI-T Urdu Version

ADHD-IN		ADHD-H/I		ODD -Adult		ODD – Peer/Sibling		AC		SC	
Item	*r*	Item	*r*	Item	*r*	Item	*r*	Item	*r*	Item	*r*
CADBI P											
1	.79	10	.69	19	.68	27	.70	35	.68	39	.82
2	.84	11	.68	20	.65	28	.83	36	.68	40	.86
3	.74	12	.77	21	.62	29	.50	37	.81	41	.78
4	.87	13	.73	22	.69	30	.76	38	.71	42	.76
5	.78	14	.75	23	.74	31	.83	39			
6	.68	15	.79	24	.76	32	.70				
7	.55	16	.65	25	.81	33	.79				
8	.63	17	.68	26	.75						
9	.61	18	.75								
CADBI – T											
1	.78	10	.61	19	.79	27	.64	35	.78	39	-
2	.84	11	.90	20	.79	28	.74	36	.63	40	.82
3	.81	12	.82	21	.62	29	.78	37	.70	41	.68
4	.78	13	.76	22	.78	30	.83	38	.69	42	-
5	.83	14	.81	23	.84	31	.70	39	.66		
6	.80	15	.92	24	.79	32	.85				
7	.63	16	.65	25	.71	33	.65				
8	.85	17	.71	26	.82						
9	.72	18	.75								

Note. All items are significant at $p < .01$.ADHD-IN = Attention Deficit Hyperactivity Disorder-Inattention skills; ADHD-H/I = Attention Deficit Hyperactivity Disorder-Hyperactivity/Impulsivity level; ODD-Adults = Oppositional Defiance Behaviour toward adults; ODD-Peers/Siblings = Oppositional Defiance Behaviour toward Peers/Siblings; AC = Academic Competence; SC = Social Competence.

Table 2 indicates that each item of respective subscale for CADBI-P and CADBI-T correlates significantly with respective total score on subscale, hence, shows construct validity of the Urdu version.

Cross-language validation. The content validity of the scale has already been established through the process of back translation as it requires no statistical test, whereas, it is the qualitative assessment of the test (Berg & Latin, 1994). In this case, the similarity of meaning between the original and the translated scale, and the high percentage of agreement among three back translations on most of items of CADBI was an indication of content validity of the scale. Further, cross-language validation was established by calculating correlation between the scores of the original English and translated Urdu scale.

For equivalence between original CADBI and Urdu translated CADBI, cross-language validation using Pearson Product Moment Correlation was computed.

Sample. Two independent groups of teachers and parents (n= 48; 24 in each group) of school-going children with an age range of 10 to 14 years (M = 12.53, SD = 1.10) were included in the sample. According to Dörnyei and Csizér (2012), "how large should the sample be?" There is no hard-and-fast rule in setting the optimal sample size. In the survey research literature, a range of between 1% and 10% of the population is usually mentioned as the "magic" sampling fraction

Teachers' age range was 24-38 years and for their educational level 56% were postgraduates and 44% were graduates. Parents' age range was 28-56 years; there were 15 mothers and 9 fathers. Most parents were highly educated that is, 54% were post-graduates, 42% were graduates, and 4% were M.Phil degree holders.

Procedure. The sample was drawn from two schools; teachers were approached individually at work place and parents at home. Teachers who gave consent were asked to randomly select a child from their classes to have rating of his/her behaviour and were asked to get consent from parents to participate in the study as well. All parents gave consent, however, three of them lacked in formal education, thereby got dropped, and hence, further parents of three other children were contacted. These three children were not rated by teachers. To compare the responses on English and Urdu versions, the original CADBI English and CADBI Urdu both teacher's and parent's versions were administered on two groups of participants (24 parents and 24 teachers). A counter balanced design was used; both groups of 24 participants were further divided in to two groups (12+12). Half of the participants filled in English form first followed by Urdu version, whereas other filled in Urdu form first followed by English version. There was a one week gap between two administrations.

Results. Pearson Product Moment Correlations was calculated between Urdu and original English version of the scales and results are presented in the Table 3.

The results show that all subscales of CADBI Urdu are positively and significantly correlated with their respective English subscales for both parent and teacher version. It suggests that Urdu version measures the constructs as similar as to the original versions as these are designed to measure.

Table 3

Correlations Coefficients between Urdu Translated CADBI and Original CADBI in English

Subscales	*r*
CADBI-Teacher	
Inattention	.96**
Hyperactivity/Impulsivity	.94**
Behaviour toward adults	.95**
Behaviour toward peer	.95**
School adjustment (academic + social competence)	.61**
CADBI- Parent	
Inattention	.95**
Hyperactivity/Impulsivity	.94**
Behaviour toward adults	.94**
Behaviour toward peer	.97**
Home adjustment (academic + social competence)	.88**

Note. $^{**}p \leq 0.01$.

Discussion

The present study focused at translating and validating CABDI (Burns, 2010). The study was the part of the major study which was designed to investigate a relationship between parenting styles/ practices and disruptive oppositional behavior in Pakistani boys.

The present study achieved its objectives in two phases. The content equivalence of the scale was achieved through different stages of test translation starting in Phase-1, achieving consensus among group of bilingual translators (parents, teachers, experts) in selecting the most appropriate translation out of two translations for each item, and ending at computing agreement among back translators which came out to be high in percentage. The method of content equivalence to establish content validity of the scale used was followed by many researchers (e.g., Chang, Chau, & Holroyd, 1999; Phillips, de Hernandez, & de Ardon, 1994). The process of content validation, further corroborating from Berg and Latin (1994) requires no statistical test as it is the qualitative assessment of the test.

Since the researcher was more concerned for obtaining equivalence in meanings and interpretations of the instrument, therefore, the first phase of translation was a time taking process. The Inventory had to be used by general public, thus, representative group of bilingual teachers and parents were included in the process of translation. There were a few words where researcher felt difficulty in

finding appropriate and easy Urdu translation, for example, "fidgets, squirms, butts into others, etc.", however, the issue was resolved with the help of bilingual experts. The process of consensus development among two groups of bilinguals helped to reduce the problem of item translation. The similar has been reported by Sireci and Berberoglu (2000) about using bilinguals that is, to reduce the lack of assurance that the different language versions of instruments are equivalent; an attempt to evaluate translated-adapted items by means of bilingual respondents is a useful way. They argued that the same examinees responding to both language versions of an item reduce the problem of item translation difference.

Besides, some affirmative evidence of content validity of the Scale was also obtained by the item-to-total correlation. According to Anastasi (1997), significant item-to-total correlations indicate that scales are valid and measure what they intend to measure. Reliability analysis and internal consistency of each factor of CADBI was determined by calculating Alpha Coefficient and item-total correlations in Phase - 2. All subscales of both parent and teacher versions depicted good to excellent Alpha coefficients. These results are partially in line with previous research (see e.g., Moura & Burns, 2010; Shipp, Burns, & Desmul, 2010) for depicting high reliability coefficient on parent and teacher version.

Finally, correlation between responses on English original and Urdu translated versions as indicator of cross-language validation showed significant positive correlation in Phase-II. It can be readily observed that all items had fairly high significant correlations (.61 to .97).

Conclusion

In conclusion, the present study achieved its objectives by translating a reliable and valid tool for screening disruptive behavior in the Pakistani children. Indeed the process of translation does not work like an automatic machine where input generates an output automatically, translation necessarily involves difference as well as similarity. Within the constraints of time and money, the Urdu CADBI is semantically and conceptually equivalent to the source instrument.

Limitations and Suggestions

The study had certain limitations in terms of sample size and the sampling method. The sample was not randomly drawn. The sample

was well educated and belonged to middle class urban area, thus, the findings to the population that are more heterogeneous in terms of residential locality (rural versus urban) cannot be generalized. To determine the construct validity (convergent and discriminant) and do confirmatory factor analysis, future studies need to focus on larger sample across the country.

Implications

The measure so translated and validated can be used by clinician and researchers to study disruptive behaviours of children in Pakistan whereby two separate versions would help in taking ratings from parents and teachers for the given child. This holds important implications in the field of clinical psychology, child development, and psychopathology.

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Received May 15, 2015

Revision received June 13, 2017