Attention Deficit/ Hyperactivity Disorder (ADHD) in DSM-5: A Trial for Cultural Adaptation in Bangladesh

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ABSTRACT
The aim of this study was to adapt Attention deficiency/hyperactivity disorder criteria in DSM 5 for measuring ADHD level of children of Bangladesh. Data were collected from 238 students ages between 5 to 17 years of three different schools of Dhaka city. Psychometric properties were measured through Cronbach's alpha (0.748), split-half (0.785), test-retest (0.793), which were satisfactory, respectively at 0.05, 0.05 and 0.01 level of significance. The demonstration of construct validity with Conner's Parent Rating Scale (CPRS-R) was 0.659 also satisfactory. Thus psychometric results support that ADHD criteria in Bangla is suitable for use in Bangladeshi context. Mental health professionals can use Bangla adapted ADHD criteria as a useful tool to assess children's attention deficiency and hyperactivity.

KEYWORDS: *Adaptation, Attention deficiency, Hyperactivity, mental health workers*

INTRODUCTION
One of the most rife and intensively studied childhood developmental disorders is attention deficit hyperactivity disorder (ADHD) (Barkley, 2003). It is characterized by a pertinacious practice of inattention, and/or hyperactivity-impulsivity, to a degree that causes significant deterioration of functional execution at more than one setting (American Psychological Association [APA], 2013). Approximated preponderance rates of ADHD deviate greatly (Froehlich et al., 2007); however, the results of population surveys suggest that in most cultures ADHD happens in about 5% of children (APA, 2013).

ADHD is often companioned by deficits other than those subsumed under the ADHD diagnosis showing by the literature. In fact, one of the most frequently explored aspects of this disorder is the subject of co-occurring deficits (Adesman, 2003; Gillberg et al., 2004). Determinations of both clinical and community studies have unveiled extremely elevated rates of co-occurrence between ADHD and other neuro-developmental disorders, predominantly related to motor (e.g., Pitcher et al., 2003), language (e.g., Cohen et al., 2000), cognitive (e.g., Frazier et al., 2004) and sensory functioning (e.g., Yochman et al., 2006). As well as

children with ADHD frequently meet the criteria for sensory modulation disorder (SMD) pertaining to the sensory domain (Miller et al., 2001).

Ensues of behavioral measures such as parent questionnaires, have signaled that children with ADHD are more sensitive to sensory stimulants, such as tactile, visual, auditory and oral relatively than typical children (Dunn and Bennet, 2002; Yochman et al., 2004).

For conducting assessment it is a general unanimity that well standardized behavior rating scales are substantive to evaluate the children with attention deficit hyperactivity disorder (ADHD).

Method
Conferring with the guidelines of International Test Commission (2005), researcher complied six steps in the adaptation operation of ADHD criteria based on DSM-5 into Bangla.

Step one: Confirmation of same construct: Obtainable literature like scientific journal articles, periodicals, books, and culturally adapted scales published on ADHD functions

were confabbed to ascertain whether the constructs of the original ADHD function carry the same meanings for Bangladeshi people and their culture. Panels of experts (who are comrade on ADHD criteria and test adaptation) were involved to accomplish the construct equivalence. They evaluate each and every items of the scale and ensure its conceptions similarity. All of their judgments were adhering a unanimity was found which fetch that the construct under the current study really do exist. The experts also recommend that the same definition could be equally applicable to language and cultural group of Bangladesh.

Step two: Forward translation: For rend the original RFS from English to Bangla, 2 professional translators, who are graduated from English department of Dhaka University, were picked out and they were absolutely dim about who the other person is doing translation. Translators' mother tongue has to be Bangla and they have to be familiar with American language, literature, and culture both criteria were followed before selection of the translators. They independently translated the English version of the criteria of ADHD to Bangla without consulting one another. Both of the translators put much iterative effort in selecting the best words, expressions, or items to translate their respective translated versions. Hence, the preliminary Bangla version inventory was prepared. Soon afterward a professor of Linguistics from University of Dhaka was conferred to check for the language and sentence structure and quality of translation, and conceptual equivalence of words or phrases, but not a word-for-word translation. Tracing the expert's opinion, some modifications were done which uphold the items' expression, suitability to assess the construct in Bangladeshi culture.

Step three: Back translation: Again three professional translators were enrolled who without consulting one another severally translated the Bangla version of the ADHD criteria to English. The translators' mother tongue was Bangla, but their medium of education was English. As a result, all of them belong to a good command in both English and Bangla language and they were assigned to the task of translating the Bangla version into English. A panel comprising of three members having expertise in psychometrics and proficiency in English judged the equivalence of the original English version and the back-translated version of the ADHD criteria. High degree of unanimity among the panel members was observed and the back-translated version of the ADHD criteria was found to be very much like the original one which sinaling the correctness of forward translation. The Bangla version was then conceived as fix to use for next processes.

Step four: Pre-testing and cognitive interviewing: Before administering the finalized Bangla version of ADHD to a large group of sample a pre-test was accomplished on a group of 30 convenient samples which let in male and female (age range 6 to 18 years) having rural urban composition. Objectives and significance were conveyed to the participants and their parents before they took part in this study. Participants and their parents who showed their sake were selected as participants. To have primary validity evidence for each of the of ADHD criteria, three methods were hired videlicet, the scale administration, semi-structured interview and item analysis. Scale administration- In this part of the study translated Bangla version of ADHD criteria was administered to the respondents in convenient

session in IPNA. A group of 3 educational psychologists and 1 counselor who are trained for assessment, observation techniques and data collection were employed to administer this scale. All of them were trained well before the administration. At first, informed consents were taken and then participants were asked to read the instructions on the top of the ADHD criteria very carefully. Then participants were also orally taught to make it clear what they have to do here. They were made insured that the information collected from them would be kept strictly confidential and would be used only for the research purpose. The questionnaire was doled out individually to each parent. They were instructed to answer every question honestly and to select only one response for each question. Participant's responses to each item indicate how frequently the statement was true for their child. They were instructed that if their answer is NEVER for any statement of the questionnaire they have to rate that statement as 0, If their answer is RARELY rate as 1, OFTEN as 2, and if their answer is VERY FREQUENTLY they have to rate the statement as 3 where there is nothing as right or wrong answer here. They were told to answer as truthfully as possible and work relatively quickly. The participants were accorded to ask questions about words or concepts which they did not understand during the administration period. Then the words, expressions or sentences that the participants asked about were noted to check whether it was necessary to modify them. Approximately 15-20 minutes were taken by the participants to complete their task. Interview- To find out whether any word, concept, or expression that needs to be addressed further because of its difficulty, confusion, un acceptableness or offensiveness, the present study used person to person interview method. If there is anything that participants do not understand or confusing, they were expected to put their alternatives or they were asked "how would you ask the question if you were prepare this item?" Through this procedure contextualization of their language was make ensure. Item analysis-afterwards the completion of administering the scale, participant's responses in each item were analyzed to determine corrected item-to-total correlation which indicated the appropriateness of each item. To sort it out which items are not able to measure what the whole scale is supposed to measure, item to total score correlation was calculated. And items which show low or negative correlation were paid extra attention and modified. Item analyses for this questionnaire revealed that a total of 5 items had low positive correlation and 4 items had negative correlation with total score. Interestingly, these were the items which the respondents found baffling and difficult. However, internal consistency reliability (alpha coefficient) for each factor was good ranging from .49 to .72. The panel members who worked in the back translation phase as evaluators had modified the language of the defective items in unanimities with each other.

Step five: Pre-testing II: Again following two methods namely scale administration and item analysis, the revised overture Bangla version of ADHD was administered on couple of respondents as second pre-testing. Scale administration- A total of 44 samples (age range 4-18; 46% male and 54% female; 30% rural and 70% urban) were selected purposively following convenient sampling method to administer the whole scale. Same procedure like the first pre-testing was followed this time for scale administration and data collection. Item analysis - Item analysis in the second pre-testing showed a marked improvement from

statistical as well as conceptual framing. Internal consistency of the whole scale ranged from .69 to .89 which better in comparison to first pre-testing. On the other hand, satisfactory levels of corrected item-to-total correlation coefficients were observed for almost all the items except for two items. Then these items were revised once again through expert opinion and included in the main scale and then continued for field test.

Step six: Field test: Following confirmed from two times of the pre-tests, now the Bangla version of ADHD is absolutely applicable for the Bangladeshi population, a field test was carried out to determine reliability and validity of the Bangla version ADHD scale. Purposive and convenience sampling technique was used to collect data from 256 students three different schools of Dhaka city (after data cleaning finally 238 respondents retained for data analysis) aged between 5 years and 17 years. Although nature of the sampling was incidental but one inclusion criteria were applied during sample selection had no severe physical or mental condition that might interfere with the assessment.

Result and Discussion

The study included 238 children (149 males, 89 females) with a mean age of 8 years (range 5 to 17 years). Of these 238 children, 190 (79.8%) were 5 years of age or older. Proportion according to educational background of the whole sample, 70 (29.4%) had started schooling recently, 96 (40.3%) were in primary education, and 72 (30.3%) had continued education in secondary level.

Descriptive statistics of the study variables show that the mean score for all 238 respondents was 56.41 with a standard deviation of 6.587. The lowest possible score is 0 and highest possible score is 60.

The corrected item-total correlation coefficients presented in table 1 show highly significant correlation coefficient values for all items except one item (item no 5). This item was revised. High Alpha coefficient value was indicative of high internal consistency (Table 2). The test-retest reliability coefficient (0.793) also shows stability of the scale over time.

Table 1:

Items of ADHD criteria	Corrected item-total Correlation	Cronbach's alpha if item deleted
Item 1	0.440	0.726
Item 2	0.332	0.738
Item 3	0.273	0.741
Item 4	0.167	0.757
Item 5	0.371	0.736
Item 6	0.313	0.758
Item 7	0.251	0.733
Item 8	0.418	0.748
Item 9	0.361	0.726
Item 10	0.271	0.738
Item 11	0.382	0.747
Item 12	0.373	0.728
Item 13	0.372	0.722
Item 14	0.394	0.731
Item 15	0.458	0.738
Item 16	0.428	0.728
Item 17	0.389	0.739
Item 18	0.432	0.737
Item 19	0.396	0.732
Item 20	0.321	0.738

Table 2: Reliability coefficient of the Bangla version of ADHD criteria

Scale	Cronbach's alpha reliability coefficient	Split-half reliability coefficient (Spearman-Brown)	Test-retest reliability coefficient
ADHD criteria based on DSM 5	0.748*	0.785*	0.793**

**p<0.01 and *p<0.05

Inter-judge agreement about the content of the Bangla scale was indicative of the content validity. Construct validity (Table 3) was tested by correlating the Bangla ADHD criteria with Conner's Parent Rating Scale (CPRS-R) using a Pearson's Bivariate correlation. There was a significant positive correlation between the ADHD and the Conner's Parent rating scale (r=0.659, N=238, P<0.05).

Table 3: Pearson correlation for construct validity

	Conner's Parent Rating Scale (CPRS-R)
ADHD criteria based on DSM 5	0.659**

**p<0.01

Thus the adapted Bangla scale proved to be a reliable and valid measure of ADHD criteria meeting the benchmark criteria set out for adapting measures. Overall the scale should provide educational and medical professionals with concise and robust measure of ADHD that can assess the child's hyperactive behavior and interventions for the children. The study has a number of recommendations. The instrument needs to be further tested in larger and more diverse populations with qualitative measures. Also with further research the scale's sensitivity and discriminate validity can be established and from which some diagnostic features may emerge.

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