ADAPTATION OF CHILD AND ADOLESCENT WORRY SCALE (CAWS) IN BANGLA

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Abstract

The present study aimed to adapt the Child and Adolescent Worry Scale (CAWS) to use in the context of Bangladesh. The original scale developed by Campbell and Rapee in 1994 consisted of 20 items and higher scores on the scale indicate higher anxiety. Standard procedure for adaptation was followed. Item analysis was done on school going 130 mainstream and special need children aged between 6 to 15 years. The Cronbach's Alpha and test-retest reliability was found to be .799 and .858 respectively for the adapted scale indicating high level of reliability. Criterion-related validity was measured by calculating concurrent and postdictive validity. Concurrent validity was measured by computing correlation (r= .912, p=.001) between the adapted scale and Beck Anxiety Inventory. Similarly, correlation value of postdictive validity was found to be .806, p=.001. Both measures ensured that the adapted scale measures the same construct as the original one. Moreover, the Mann-Whitney *U* test also indicated that the scale could differentiate between the mainstream and special need children regarding their worry/anxiety. Worry score was greater for the special need children than the other group (U= 608.50 at *p* =.001). It indicates that the adapted scale has good sensitivity to varying levels of anxiety severity. The psychometric properties of the Bangla CAWS suggest that professionals and the researchers can use the scale to assess children and adolescent's overall level of anxiety in Bangladeshi context.

Introduction

Anxiety disorders constitute a common psychiatric problem with a 12 months prevalence of 18.1% as diagnosed using DSM-IV criteria[1]. Numerous studies investigated the phenomenology, etiology, assessment, and treatment of anxiety disorders in adults[2] but childhood anxiety disorders were largely overlooked as disclosed in 25 years of research on childhood anxiety[3]. It was found that childhood anxiety disorders reflected only 10.2% of the total publications on anxiety disorders[3].

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Many researchers considered childhood anxiety disorders less relevant clinical phenomena due to the prevalence of fear and anxiety in youth[4]. This attitude, however, has changed in recent times, as it has been demonstrated that a significant number of children and adolescents suffer from acute fear and anxiety which warrants a diagnosis of an anxiety disorder. Indeed, community studies have found that anxiety disorders are the most frequent forms of psychopathology among the young population[5-6]. A significant proportion of childhood anxiety disorders have a persistent course and even last into adulthood[7].

Recent studies have used various questionnaires and interview measures to investigate childhood anxiety disorders in view of the prevailing diagnostic system, i.e. DSM[8]. Among them, the most widely used are Spence Child Anxiety Scale (SCAS)[9] and Screen for Child Anxiety Related Emotional Disorders (SCARED)[10]. Both assess children's anxiety disorder from the reports of children and their parents. There are also few interview instruments, such as the Anxiety Disorders Interview Schedule for DSM-IV: Child and Parent versions[11], all these are considered as the gold standard[3]. Some other well-known anxiety measures which are widely used in research studies include Child and Adolescent Worry Scale (CAWS)[12], Revised Children's Manifest Anxiety Scale (RCMAS)[13], and Beck Anxiety Inventory (BAI)[14]. There are few instruments to measure specific anxiety disorder, such as Social Anxiety Scale for Children-Revised (SASC-R)[15] and the Social Phobia and Anxiety Inventory for Children[16].

Majority of the measures which are used to assess childhood anxiety have been developed in English speaking countries. It is essential that these instruments undergo the standard adaptation procedure to ensure cultural equivalence before they are used to study childhood anxiety in Bangladesh. Research articles suggested some guidelines for adaptation procedure which are quite similar[16-19].

The adaptation of an existing instrument rather than developing a new one not only saves time and money but also allows to compare data from different samples and from different cultural backgrounds. This also allows to generalize research findings and to explore differences within an increasingly diverse population[20-21].

The CAWS was selected for adaptation based on some positive features. First, this is a brief measure with 20 items and therefore would ensure attentiveness in children while answering the questions. Second, the measure was developed directly from child samples rather than being modified from similar adult measures. Third, the measure is provided free of charge by the developer, which is an important consideration when working in a least developed country. Fourth, the measure has shown strong psychometric properties in community samples[12]. The adaptation was carried out following the guidelines suggested by Sousa & Rojjanasrirat[18].

Objective: The objective of the present study was to adapt the Child and Adolescent Worry Scale (CAWS) in Bangla to measure worry/anxiety among children and young adolescents.

Materials and Methods

For adaptation purpose school going 130 children were finally selected from different mainstream and special schools of Dhaka city. Among them, 99 were mainstream children and 31 were special need children. Their age range was 6 to 15 years with an average age of 9.36 (*SD*=2.883) years.

Table 1. Distribution of participants according to type and sex of children.

Child Type	Boy	Girl	Total
Normal	56	43	99
Special	20	11	31
Total	76	54	130

Convenient sampling technique was used to select the participants i.e. those who voluntarily agreed to participate in the study. Inclusion criteria were to include those children living with their parents and brought to school by the parents. It is recommended to use at least five subjects per item of the scale to conduct the psychometric testing of a new instrument[18-19]. Thus for 20 items of the CAWS initially nearly 200 participants were recruited. Finally, a sample size of 130 was chosen. Ethical approval was granted by the Ethics Review Committee of the Department and the concerned university Ethical Review Committee for Human Volunteer.

Child and adolescent worry scale (CAWS): The CAWS is a widely used anxiety scale for young children aged 6 to 16 with sound psychometric properties. The CAWS is a 20 item scale of negative outcomes which children could worry about. The instructions ask children to indicate how much they worry about each item on a three-point Likert scale (*0* = 'none' to *2* = 'a lot') giving a scoring range from 0 to 40. The scale is aided by a graphic at the top of the page which depicts a smiling face, a slightly worried face, and a very worried face representing each score. The scale has been shown to have two factors[12]. Factor 1 has been labeled as Physical Threat. It is defined by items characterized by worries related to death, pain and physical injury and Factor 2 is characterized by worries related to social embarrassment, loneliness and perfectionism and has been labeled as Social Threat. Internal consistency of the scale has been reported to be 0.92 for the Physical scale, which contains 9 items and 0.84 for the Social scale which contains 11 items and 0.89 for the total scale. The CAWS has high test-retest reliability

over seven days (0.90 for the physical scale and 0.84 for the social scale) and a moderate to strong reliability over a three-month interval (0.82 for the physical scale and 0.71 for the social scale). The CAWS has also been shown to have adequate validity correlating positively with the FSSC-R, the RCMAS and the STAIC [12]. High scores in the scale indicate a high level of anxiety.

The CAWS was modified in a study of children aged between 5 to 16 years. They developed three different versions of the scale[20]. In the original scale (worry wording) it was asked how much they worry about the items. The responses were *2* = A lot, *1* = A little, *0* = None. In the 2nd version (aversive wording) the items remained the same while the wordings of the question and responses were changed to "How bad it would be if". For example "How bad it would be if you make a mistake in front of the class?" The responses were changed to *2* = Very Bad, *1* = Quite Bad, and *0* = Not all that Bad. In the last version (frequency wording) the question was changed to "How often do you think about?" with responses being *2* = Everyday, *1* = Sometimes, and *0* = Never. Exploratory factor analysis showed the items in the different versions consistently loaded on the same physical and social factors. All items loaded on the same factors across all versions of the CAWS. Cronbach's coefficient alphas were derived for the three versions. Internal consistency of each scale for each age group and gender were ranging from 0.68 to 0.95. Reliabilities were high across all age group though younger age group had slightly low reliability. A significant difference was found between the wording groups, and between the age groups. Aversive wording scored highest, followed by the worry wording and then frequency[20].

Bangla Beck Anxiety Inventory for Youth (BAI-Y): This sub-scale of Beck Youth Inventories of Emotional and Social Impairment (BYI) is a self-report inventory of children aged between 5 to 16 years. It was developed for measuring the severity of anxiety among the psychiatric population[14]. Original BAI-Y has 21 items. It showed high internal consistency (0.92) and test-retest reliability (0.75). It also has good concurrent (0.51) and discriminant (0.25) validity. The Bangla BAI-Y was adapted on a sample of 198 participants. BAI-Y showed coefficient alpha of 0.87 which indicates high internal consistency. Test-retest reliability and validity of the scale were satisfactory[21]. This scale consists of 20 items. High scores on the scale indicate high anxiety.

For translation and cultural validation, prescribed guidelines[18] were followed. Before proceeding written consent was taken from Marilyn Campbell, one of the developers.

Step 1: Translation of the SCAS (C and P version) into Bangla (Forward Translation): Four translators were assigned to translate the English CAWS into Bangla. They were fluent in both Bangla and English language. They have in-depth experience regarding both the culture and have a distinct background. Two translators were experts in psychological terminology and the content area of the construct. The other two were not from the arena

of psychology but familiar with colloquial phrases, jargons, and idiomatic expressions. Each one was given one version of CAWS to translate.

Step 2: Comparison of the translated versions of the scale: synthesis I: The instructions, the items and the response format of four sets of forward- translated versions of the scale with the original scale were compared by an expert panel consisting of an independent translator, the researcher, and other two subject matter specialists. They checked ambiguities and discrepancies of words, sentences, and meanings. Few modifications were made according to the consensus regarding the translation and thus 1st draft of CAWS was prepared.

Step 3: Blind Back Translation (Bangla to English): Again two sets of bilingual translators with distinct backgrounds were assigned separately to translate the Bangla CAWS to its original English language. They were completely blind to the original version. In each set one was a subject matter expert and the other one was a language expert. They produced English version of CAWS independently.

Step 4: Comparison of two sets of back-translated versions: Synthesis II: The back-translated four versions were again examined by the same expert panel strengthen with another research expert in the same field regarding format, wording, the grammatical structure of the sentences, the similarity in meaning, and relevance. Any ambiguities and discrepancies concerning each of the back-translations and the original scale were discussed and resolved through consensus among the panel members to derive at a pre-final version of the scale. Hence, the 2nd draft for Bangla CAWS was produced.

Step 5: Pilot testing of the pre-final versions of the Bangla CAWS (cognitive debriefing): The pre-final Bangla CAWS was pilot tested among 20 Bangla medium school children to evaluate the instructions, response options, and the items of the scale for lucidity. Each participant is asked to rate the instructions and the items using a dichotomous scale i.e. clear or unclear. The items or instructions that were marked as unclear were asked to provide suggestions on how to rewrite the statements to make the language clearer. The instructions, response format and the items that are found to be clear by at least 80% of the sample were retained and those found to be unclear by at least 20% of the sample were re-evaluated. These were scrutinized by an expert panel of 6 members consisting of the researcher, and other 5 members (two educational psychologists, two university teachers of psychology and one clinical psychologist) who were knowledgeable about the content areas of the construct and the target population. Their mother tongue was Bangla. The minimum inter-rater agreement required was 80% regarding the instructions, response format, and the items. One item was found to be unclear by 20% of the panel members which was revised and re-evaluated. Thus the newly translated and adapted Bangla CAWS was prepared.

Step 6.Field test (Psychometric testing in a sample of the target population): To find out the reliability and validity of the newly translated and adapted CAWS a field test was carried

out on a sample of 150 children. Discarding the incomplete responses and dropouts 130 children's filled in questionnaires were retained for further analysis.

The flowchart of the adaptation process of CAWS is presented in Fig. 1.
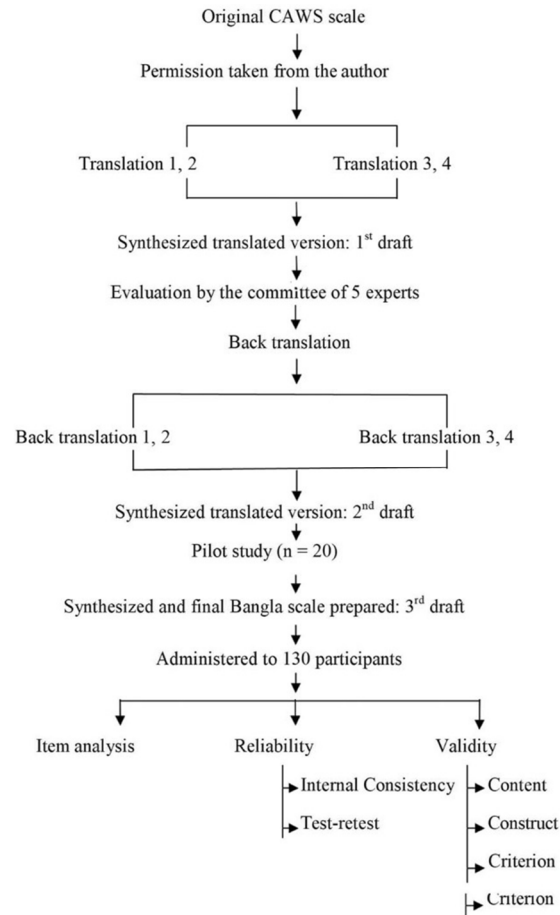
Fig. 1. Procedure of Bangla Adaptation of CAWS.

Data collection tool contained one demographic information sheet, the Bangla CAWS, and Bangla BAI-Y for the children. Permission was granted from the school authorities to collect data. Written consent from the parents and children was obtained before participating in the study. Items were read aloud for young and special need children by one of the research assistants while the other assisted children where necessary. For older children they themselves filled in the questionnaires under the constant supervision of the researcher. The researcher was present during all the administration in order to assist any children who faced difficulties in completing the

scales. They were verbally instructed to respond to each item by indicating how true are the statement/item for them by choosing one of the responses- never, sometimes, often and always. The researcher ensured that there is no right or wrong answers and they answer every item honestly. Approximately within 20 minutes both the questionnaires (Bangla CAWS and Bangla BAI-Y) were completed. Two weeks later Bangla CAWS was administered on the same sample (N=70). The number of participants decreased due to one school authority's withdrawal of permission to conduct the retest as theyhad exams.

Data processing and analysis: All data were analyzed by SPSS computer program. The data analyses were done in several steps. At first all responses were screened manually to detect incomplete/ambiguous data. Descriptive statistics were calculated for a description of the data. (Frequency and percentage were used to describe categorical variables while median and inter-quartile range was used to depict continuous variables. As worry scores were not normally distributed (i.e. the parametric assumption of normality was not satisfied), Spearman's rank order correlation (i.e. nonparametric correlation) was used. Item analysis was computed for selecting items for inclusion in the final scale. To determine the reliability of the Bangla CAWS, internal consistency (Cronbach Alpha) and Test-retest reliability were calculated. To determine the concurrent validity Spearman's Correlation Coefficient rho was calculated among the Bangla CAWS and the Bangla BAI-Y. To establish postdictive validity correlation between CAWS Test 2 and BAI-Y (criterion measure) was calculated. Mann-Whitney U test was used (instead of independent t-test) to determine whether the scale significantly differentiates the level of anxieties between normal and special children.

Results and Discussion

Descriptive Statistics: Correlation coefficients were determined between CAWS scores (at Test 1 and Test 2). In Test 1 for 130 sample median was found to be 11 and inter-quartile range (IQR) from 10 to 14. In Test 2 (N=70) median was 10.5 and Inter-quartile range (IQR) from 8 to 14.25.

Item analysis: Item analysis is used to determine the quality of a test by looking at each individual item and determining statistically if they are sound. It helps to identify individual items that are not good and whether or not they should be discarded, kept, or revised. To attain this, corrected item-total correlations were examined and presented in the table below. Cronbach Alpha was found to be 0.799. In Cronbach alpha if item deleted all 20 items except one (item no. 9) shows value equal to/less than the calculated value. Item no. 9 is found to be problematic for it showed low item-total correlation (.085) and increased Cronbach alpha (.805). The item was revised and on the basis of the judges' agreement the revised item was retained. The item analysis of the CAWS is presented in Table 2.

Table 2. Item analysis of the Bangla CAWS.

Item	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Cronbach's alpha if item deleted
Item 1	10.96	29.526	.450	.786
Item 2	11.02	28.162	.559	.778
Item 3	11.07	29.026	.420	.787
Item 4	11.46	31.227	.241	.797
Item 5	11.26	30.551	.294	.795
Item 6	11.06	30.182	.285	.796
Item 7	11.45	30.993	.278	.795
Item 8	11.07	28.825	.475	.784
Item 9	10.81	31.955	.085	.805
Item 10	11.24	29.470	.444	.786
Item 11	11.09	28.720	.557	.779
Item 12	10.95	30.470	.286	.795
Item 13	10.95	28.928	.488	.783
Item 14	11.33	30.239	.334	.792
Item 15	10.97	28.666	.523	.781
Item 16	11.30	30.646	.258	.797
Item 17	10.91	29.867	.337	.792
Item 18	11.29	30.596	.258	.797
Item 19	10.95	30.036	.311	.794
Item 20	11.02	30.000	.325	.793

Test-retest Reliability: Test-retest reliability of Bangla CAWS with an interval of 15 days showed Spearman's rho r value of 0.858 where p = .001. This suggests the scale have high reliability over a time period.

Content validity: Content validity refers to the extent to which the items of a measure reflect the content of the concept that is being measured. The items of the scale measure the construct anxiety as judged by the expert panel.

Concurrent validity: In order to assess the concurrent validity of the Bangla CAWS, it was correlated with an established measure BAI-Y. The correlation coefficient was found to be 0.912 (*p*=.001) in CAWS Test 1 and BAI-Y which indicates excellent correlation among the scales. Therefore, it can be said firmly that the newly developed scale measures the same construct.

Postdictive validity: Another kind of criterion validity is postdictive validity. It measures whether the test is a valid measure of something that happened before i.e. it correlates between the present administered test with a criterion measure that took place in past. Since CAWS Test 2 was administered after BAI-Y (criterion measure), the correlation coefficient between them was a measure of postdictive validity. In case of CAWS Test 2 and BAI-Y calculated value of r was 0.806 (p=.001) which was not excellent as the previous value. In the first case the sample size was 130, while in the second case sample size was reduced to 70. One school withdrew their permission to conduct retest because of exam preparation. It may have an impact on the result.

Mann-Whitney U test: The Mann–Whitney *U* test is a nonparametric test of the null hypothesis that it is equally likely that a randomly selected value from one sample will be less than or greater than a randomly selected value from a second sample. Mann-Whitney test indicates that worry score is greater for the special children (Mdn = 17, IQR= 20-12) than the normal children (Mdn =9, IQR= 12-7), U= 608.50 at p =.001.

The present study adapted a 20-item self report instrument named CAWS to measure worry in children. Item analyses indicated that all the items except one (item no.9) were good items. In the original English version scale, item no. 9 was "dying". At first, it was translated as "mara jabo". Considering item analysis findings, judges rephrased it to "ami more jabo" and agreed to keep it in the main scale. Studies indicate that Cronbach's alpha of at least 0.80 is recommended for individual purposes, whereas for research purpose reliabilities of 0.70 or higher is adequate[22].The internal consistency (Cronbach's alpha) of the total Bangla version scale was .799 which met the criteria of both individual and research purposes and is very similar (0.89) to the original total scale[12] and other studies[23]. Temporal stability of Bangla CAWS was 0.858 which also resonates with the original scale[12]. Concurrent (.912) and postdictive validity (.806) of the Bangla scale were excellent too. Low validity coefficient for postdictive validity might be due to reduced sample size resulting from the non- participation of a sampled school in the retest phase. The adapted scale distinguished between the level of anxiety of normal/community and special need children indicating that it has good sensitivity to varying levels of anxiety severity.

Limitations and future directions: One limitation of the present study was that the Bangla version scale was not factor analyzed. The psychometric properties of the Bangla CAWS suggest that professionals and the researchers can use the scale to assess children's overall level of anxiety in Bangladeshi context. Moreover, further studies can be carried out with large representative sample including rural and urban, normal and clinically diagnosed children.

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