ADAPTATION OF THE DEO-MOHAN ACHIEVEMENT MOTIVATION (N-ACH) SCALE FOR URBAN STUDENTS IN BANGLADESH

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Abstract

Achievement motivation is a major secondary drive that makes a person strive towards challenging goals and achieving success. So, it is necessary to learn the measures of achievement motivation of the adolescents and take steps accordingly in the educational setting for their betterment. There is a lack of measuring tools of achievement motivation in Bangladesh. Considering the significance of the tool, the current study aimed to adapt the Deo-Mohan Achievement Motivation (n-Ach) scale in the Bangladeshi cultural perspective. The scale was adapted following the ITC guidelines and was administered on 228 adolescents aged from 13 to 19 years. The sample was chosen using the purposive and convenient sampling techniques. Collected data indicated satisfactory reliability (Cronbach's alpha, test-retest reliability coefficient). Item analysis was done by calculating the item-total correlation. Content validity was checked by experts and correlation with Rosenberg self-esteem scale was measured to see the concurrent validity. Exploratory factor analysis was done to see the construct validity. Factor analysis results revealed that the 10 factors of the Bangla n-Ach scale together explained 58.33% of the total variance. Thus, the adapted version of Deo-Mohan Achievement Motivation (n-Ach) Scale is expected to be a reliable and valid scale to measure achievement motivation of Bangladeshi adolescents.

Keywords: achievement motivation, adolescent, adaptation, reliability, validity

Achievement motivation is considered as a vital issue in the psychological and educational research field. It refers to one's motivation to engage in activities to meet realistic goals and have a sense of accomplishment. The concept was developed and

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popularized by the American psychologist David McClelland. Achievement motivation refers to individual's characteristic of continuing strive to be successful in competition with others (McClelland, Atkinson, Clark, & Lowell, 1953). Individual with high achievement motivation sets a particular standard of excellence and rigorously strives to consummate unique accomplishments (Atkinson, 1957). Achievement motivation is an important social need and learned tendency (Newcomb, 1964). It also directly influences academic performance (McClelland, 1961). Individuals with high achievement motivation perform better in academic activities (Kołodziej, 2010; Tella, 2007). The theory of needs explains the motivation and stresses the types of needs and the approaches to satisfy them. The theory stresses the three important factors given below (McClelland et al., 1953):

1. Need for Achievement (n-Ach): It is a learned characteristic in which an individual strives to achieve something difficult and obtains satisfaction by achieving challenging goals.

2. Need for Affiliation (n-Aff): It refers to the need of the individuals to establish interpersonal relationships. High n-Aff tendency is associated with a strong desire to be loved (Feldman, 2017).

3. Need for Power (n-Pow): The need for power is the tendency to have authority, control, and inducing others (Feldman, 2017).

The term *Need for Achievement* (n-Ach) was first used by Henry Murray (1938). The theory was formulated by McClelland and his associates. It is largely concerned with motivation. McClelland argued that the need for achievement, power and affiliation varies from person to person. Achievement motivation can lead to economic and professional success (McClelland, 1985). Research suggests that, from the measure of achievement motivation, predictions like student's academic performance, variables related to entrepreneurial behavior or a country's economic growth can be made. Achievement oriented individuals tend to master complex tasks and find solution in difficult situations. They usually set precise goals and show long term involvement in achieving those specific goals. Achievement motivation is positively related with self-esteem. Several studies conducted on high school students and under graduates in different countries (India, Ghana, Iran) show that self-esteem is positively correlated with achievement motivation (Ajayi, 2002; Aktop & Erman, 2006; Coopersmith, 1967; Stericker & Johnson 1977). Studies also show that self-esteem significantly predicts achievement motivation (Odame-Mensah, 2019).

Researchers have shown interest to find out if the levels of achievement motivation vary across gender: male and female. Several previous studies showed contradictory results regarding the effect of gender difference on achievement motivation. Some studies showed significant variation in achievement motivation scores across gender (Shekhar & Devi, 2012; Wani, 2015). On the other hand, some research revealed non-significant variation in achievement motivation scores between boys and girls (Kaushik & Rani, 2005; Nagarathanamma & Rao, 2007). Research on Bangladeshi students showed non-significant difference between male and female according to achievement motivation score (Anjuman, 2006).

Rationale of the Study

In educational setting, achievement motivation is considered as an important concept. It differs from person to person. It is also associated with important concepts like self-esteem, academic performance, self-concept etc. Measuring achievement motivation can help to determine high and low motivated students and necessary initiatives can be taken to help the low motivated students to improve their achievement motivation. There is a lack of tools to measure achievement motivation of Bangladeshi adolescents. Hence, the present study aimed to adapt the n-Ach scale to measure the achievement motivation of urban students (adolescents) in Bangladesh.

Objective of the study

The objective of the current study was to translate and adapt the Achievement Motivation Scale (n-Ach) in the context of Bangladeshi culture.

Method

Participants

As the original n-Ach scale was developed for adolescents, the Bangla version of this scale was administered on a total of 228 adolescents selected from Dhaka city, aged 13-19 years. Purposive and convenience sampling techniques were used to select 228 participants. Among them, 115 were female (50.44%) and 113 (49.56%) were male. 3 participants did not complete the questionnaire. Therefore, the final sample consisted of 225 participants.

The sample size used in the present study can be considered adequate based on the opinion of several experts and researchers. The minimum required sample

size in factor analysis has been recommended from 100 (Gorsuch, 1983; Kline, 1979) to 250 (Cattell, 1978). The recommendation for participants to items/variables ratio varies from 2:1 (Guilford, 1956; Kline, 1979) to 10:1 (Marascuilo & Levin, 1983; Nunnally, 1978). In the present study, the sample size may be considered as adequate and satisfactory because the number of participants was more than 4 times the number of n-Ach items or variables.

Measures

Data were collected with the following measures – Personal Information Form, Bangla version of the Deo-Mohon Achievement Motivation (n-Aach) Scale and Bangla version of the Rosenberg Self-esteem Scale.

Personal Information Form: This form was used for collecting information regarding the participants' name, gender, age, class, roll, height, weight, and name of their educational institution.

The Deo-Mohon Achievement Motivation (n-Ach) Scale: Pratibha Deo and Asha Mohan (1985) have developed the Deo-Mohan Achievement Motivation Scale (n-Ach). It is a self-rated, 50-item scale for measuring the need for achievement in adolescents. The original scale consists of 15 factors- 'academic motivation', 'need for achievement', 'academic challenge', 'achievement anxiety', 'importance of grades', 'meaningfulness of task', 'relevance of school/college to future goals', 'attitude towards education', 'work methods', attitude towards teachers', 'interpersonal relations', 'individual concern', 'general interest', 'dramatics' and 'sports'. Among the 50 items, 37 items are positive and 13 (item number 1, 12, 13, 14, 17, 18, 19, 20, 21, 22, 32, 34, 37) are negative. Each positive item has 5 responses to rate 4 for 'always', 3 for 'frequently', 2 for 'sometimes' 1 for 'rarely' and 0 for 'never'. The scoring was reverse for the negative items, i. e., 0 to 4 for the responses, 'always' to 'never' accordingly. Higher score indicates higher achievement motivation. The test-retest reliability of the original scale is .78 for girls, .67 for boys and .69 for mixed group. Cronbach's coefficient alpha was .86 for overall male and female. The item validity was .54. The scale yields a correlation coefficient of .75 with the Aberdeen Academic Motivation Inventory of Entwistle (1968). The results support that the original scale of achievement motivation is sufficiently valid to measure achievement motivation of adolescents.

Bangla version of the Rosenberg Self-esteem Scale: The Bangla version of the Rosenberg's (1965) self-esteem scale was adapted by Ilyas (2003). It is a self-

rated, 10-item scale developed for adolescents in which 5 items are positive (1, 3, 4, 7, 10) and 5 items are negative. Each item has 4 responses: 'strongly agree', 'agree', 'disagree' and 'strongly disagree'. The scoring for positive item is 3 to 0 for the responses, 'strongly agree to strongly disagree' accordingly and the reverse scoring (0 to 3) for the negative items. The score ranges from 0 to 30. Higher score indicates higher self-esteem. The significant correlation ($r = .760$, $p < .005$) between the scores of English and Bangla versions of the scale indicates satisfactory translation reliability. The Cronbach's alpha for the Bangla version of the scale was .87 which indicates the internal consistency of the scale.

Adaptation Process

The adaptation of the achievement motivation scale (n-ach) was a multistage process. The International Test Commission (ITC) Guidelines were followed. The adaptation process included the following steps.

1. *Forward translation:* The Achievement Motivation Scale was translated by the first author in Bangla and further modifications were made by the second author. Easy translation without altering the meaning was given priority.

2. *Consulting with experts:* The forward translation was judged by 5 faculty members of the Department of Psychology, University of Dhaka. Some words and items were changed according to their suggestion. Some translated items were further revised consulting with a professor of Psychology, University of Dhaka. A faculty member of the Department of Linguistics, University of Dhaka assessed the linguistic and semantic equivalence, structure of the sentences and the grammar.

3. *Back translation:* Two translators fluent in both Bangla and English, were chosen who translated the Bangla version of the Achievement Motivation scale to English. Their translations were compared with the original scale (English version) which indicated a good congruence between the Bangla and the English versions of the scale.

Administration

The Bangla version of the achievement motivation (n-Ach) scale was administered on 228 participants. At first, participants were asked if they were willingly participating in the research and an informed consent was taken from them. After that they were given verbal instructions about how to fill-up the questionnaire. They were asked to fill-up the personal information sheet first and then read the questions carefully and response accordingly. There was no time

constraint for responding to the questionnaire. Participants were given assurance that their information would be used only for research purpose and maintained with confidentiality. They were also requested to respond honestly. They were asked to raise hands if they faced difficulty in understanding any item. After completing the questionnaire, they were thanked for their cooperation. Duration of answering the questionnaire lasted from 30 to 50 minutes.

Results

Item Analysis

The internal consistency of the Bangla version of the n-Ach scale was calculated by determining the corrected item-total correlation (see Table1).

Table 1: Corrected Item-total Correlation of the n-Ach Scale

Items	Corrected Item-total Correlation	Items	Corrected item-total Correlation
Item 1	.475	Item 26	.546
Item 2	.487	Item 27	.557
Item 3	.484	Item 28	.498
Item 4	.507	Item 29	.580
Item 5	.442	Item 30	.475
Item 6	.477	Item 31	.353
Item 7	.397	Item 32	.408
Item 8	.422	Item 33	.594
Item 9	.519	Item 34*	.152
Item 10	.357	Item 35	.439
Item 11	.410	Item 36	.343
Item 12	.256	Item 37*	.197
Item 13*	.112	Item 38	.410
Item 14	.386	Item 39	.468
Item 15	.413	Item 40	.340
Item 16	.288	Item 41	.316
Item 17	.434	Item 42	.231
Item 18	.460	Item 43*	-.083
Item 19	.384	Item 44*	.189
Item 20	.429	Item 45	.217
Item 21	.434	Item 46	.249
Item 22*	-.226	Item 47	.345
Item 23*	-.162	Item 48	.249
Item 24	.387	Item 49*	.164
Item 25*	-.077	Item 50	.291

Note: *Dropped items in the Bangla version of the scale due to negative item-total correlation

From the values of the item-total correlation, 9 items (Items- 13, 22, 23, 25, 34, 37, 43, 44, 49) were detected to have negative or low ($r < .2$) correlation score. Hence, these items were dropped. Rest of the 41 items were found to have corrected item-total correlation above .2 showing good internal consistency.

Reliability of the Scale

The reliability coefficients of the Bangla version of the n-Ach scale were determined by Cronbach's alpha and test-retest methods.

Cronbach's Alpha: The Cronbach's alpha was found .902 for the 41 items of the Bangla version of the n-Ach scale which is satisfactory (shown in Table 2).

Table 2: Cronbach's Alpha of the Bangla n-Ach Scale

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.902	.907	41

Test- retest Reliability: Among the 225 participants the scale was re-administered on 26 (boys = 12 and girls = 14) participants in 3 weeks interval. The test- retest reliability coefficient was .905 which is very high and satisfactory.

Validity of the Scale

The validity of the Bangla version of the n-Ach was determined by the following methods:

Content validity: The Bangla version of the n-Ach scale was evaluated by an expert panel of 9 faculty members of the Department of Psychology, University of Dhaka, Bangladesh. The evaluation and remarks of the expert panel assured the content validity of the scale.

Factorial Validity: Construct validity of the scale was determined through exploratory factor analysis.

To justify the suitability of factor analysis, the KMO measure of sampling adequacy was calculated (Table 3). The KMO measure indicated a value of .850 which is much greater than the recommended value of .60 (Kaiser, 1970). The Bartlett's test of sphericity indicated a chi-square (χ^2) value of 3268.108 ($p < .001$). All these values together support that correlation matrix is not an identity matrix and is significant for factor analysis.

Table 3: Values of the KMO and Bartlett's Test

Kaiser-Meyer-Olkin measure of sampling adequacy.		.850
	Approx. Chi-Square	3268.108
Bartlett's Test of Sphericity	df	820
	Sig.	.000

The rotated component matrix of the Bangla n-Ach scale is shown in Table 4.

Table 4: Rotated Component Matrix

Items	Component									
	1	2	3	4	5	6	7	8	9	10
Item 18	.776									
Item 20	.766									
Item 19	.722									
Item 21	.701									
Item 1	.633									
Item 32	.609		.362							
Item 14	.554		.345							
Item 29	.543	.353	.349							
Item 17	.487								.319	
Item 28	.450		.426							
Item 3	.392									
Item 8		.698								
Item 10		.611								
Item 5		.607								
Item 30		.582								
Item 7		.563			.320					
Item 39		.541			.319					
Item 4		.515								
Item 26	.327		.654							
Item 9			.594							
Item 2	.330		.522							
Item 27	.312		.507		.359					
Item 47				.744						
Item 46				.726						

Items	Component									
	1	2	3	4	5	6	7	8	9	10
Item 50			.311	.660						
Item 42				.538						
Item 11					.719					
Item 48					.488					
Item 24						.717				
Item 38						.612	.346			
Item 35					.364	.407				
Item 41							.585			
Item 31						.354	.556			
Item 6			.301		.392		.461			
Item 33							.350			
Item 45								.813		
Item 40					.357			.438		
Item 12									.726	
Item 36									.590	
Item 16										.770
Item 15					.357					.492

Factor loadings <.03 were suppressed.

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser normalization.

Rotation converged in 12 iterations.

Table 4 shows that the 41 items of the Bangla version of the n-Ach scale falls in 10 factors. These 10 factors together accounted for 58.33% of the total variance (data not shown). Some factors did not conceptually fit with the corresponding factors of the original scale. Hence, new names were given to the factors according to their nature following the concepts of Achievement motivation theory. Before labelling, items that cross loaded between different factors were identified. The cross loaded items were grouped in the factors that had greater loading and best conceptual fit. N-Ach Item 6 cross-loaded in factor 3, 5 and 7. Although it had greater factor loading in factor 7, it was grouped in factor 3 for its best conceptual fit. The factors identified in the Bangla n-Ach scale were- 'academic motivation' (items-1, 3, 14, 17, 18, 19, 20, 21, 28, 29, 32), 'need for

achievement' (items- 4, 5, 7, 8, 10, 30, 39), 'work methods'(items- 2, 6, 9, 26, 27), 'interest in sports' (items- 42, 46, 47, 50), 'attitude towards competition' (items- 11,48) , 'success seeking' (items- 24, 35, 38) , 'attitude towards scholar personalities'(items- 31, 33, 41), ' interest in extracurricular activities' (items- 40, 45) , ' need to excel' (items- 12, 36), 'relevance of tasks' (items- 15, 16).
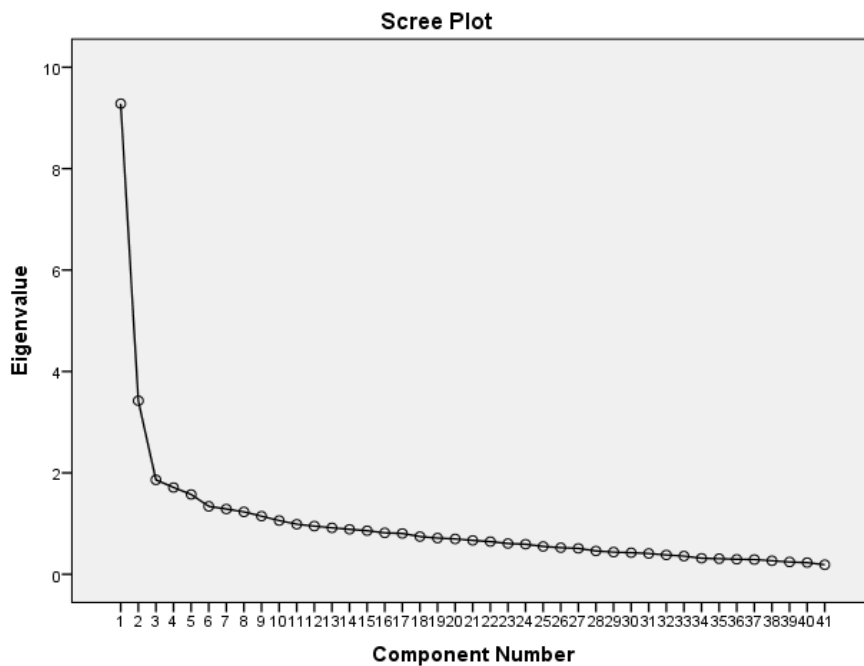
A scree plot of the components is shown in Figure 1.

Figure 1: Scree plot of Eigen values of scale component

Concurrent Validity

The Bangla version of the Rosenberg self-esteem scale was administered on the participants. The Pearson product moment correlation ($r = .311$, $p < .001$) is significant which shows that a positive correlation exists between the scores of self-esteem and achievement motivation.

Discussion

Achievement motivation is an important secondary drive that makes an individual to strive for success and accomplish challenging tasks. Adolescents are the future of the nation. It is important to learn their achievement motivation and

work accordingly in the education system for a bright future of the country. So, the need of a reliable and valid scale for measuring adolescents' achievement motivation is evident. Hence, the present study was conducted to adapt the Deo-Mohan Achievement Motivation (n-Ach) Scale in the context of Bangladesh. The adaptation was done following the guidelines of the International Testing Commission (ITC). The test was administered on 228 school students. The item analysis result showed that 9 items of the Bangla version of the scale had a low ($r < .2$) or negative item-total correlation. Hence, these items were deleted, and the final scale of the Bangla n-Ach scale consisted of 41 items. The high value of Cronbach's alpha and test-retest reliability coefficient established the reliability of the scale.

The content validity was established by the evaluation of the expert panel and the positive correlation between the Bangla n-Ach scale and the Bangla version of Rosenberg self-esteem scale provided the concurrent validity of the scale. The independent sample test indicates that there is no significant variation between male and female in achievement motivation. This finding is supported by a previous research conducted in Bangladesh (Anjuman, 2006)

The values of the KMO and the Bartlett's test indicated that the matrix was significant for factor analysis. The Bangla version of the n-Ach scale had 10 factors that explained 58.33% of the total variance. Not all the items of the adapted scale conceptually fit with the factors of the original scale. One possible reason could be the different perceptions about the same concept across cultures. The factors of the Bangla n-Ach scale were given new names according to their nature: 'academic motivation', 'need for achievement', 'work methods', 'interest in sports', 'attitude towards competition', 'success seeking', 'attitude towards scholar personalities', 'interest in extra-curricular activities', 'need to excel' and 'relevance of tasks'. The Bangla version of the Achievement Motivation scale had 32 positive items and 9 negative (1, 12, 13, 16, 17, 18, 19, 20, 28) items. The established reliability and validity proved the adapted Bangla version of the Deo-Mohan Achievement Scale (n-Ach) as a valid instrument to measure achievement motivation in adolescents.

The Deo-Mohan Achievement Scale (n-Ach) was adapted for urban students in Bangladesh, particularly for those studying in the city of Dhaka. Due to time constraint, it was not possible to expand the study to rural participants. Thus, the obtained data do not allow us to determine rural variance so as to compare with

urban variance. Hence, a future extensive study can be carried out with a larger sample covering both rural and urban areas that would allow us to make such a comparison. However, it is worth noting that the exclusion of rural participants does not demerit the present study.

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