

THE PSYCHOMETRIC PROPERTIES OF THE ACADEMIC SELF-ESTEEM SCALE - BANGLA

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Abstract. The academic self-esteem is one of the key factors for better academic achievement. However, there is a scarcity of available measures for assessing students' academic self-esteem. The present study was undertaken to assess psychometric properties of the Academic Self-Esteem Scale (ASES) for use in Bangladesh context. The ASES was translated into Bangla following the guidelines of International Test Commission and the translated version was administered on a sample of 221 students who were selected from different universities via convenience sampling technique. Results explored that all items except one item of the ASES had sufficient item-total correlations. Exploratory factor analysis revealed only one component that met the criteria for inclusion as a factor. This scale has good internal consistency reliabilities, test-retest reliability, composite reliability, average variance extracted (AVE), standard error of measurement, and predictive validity. Differential item functioning test results suggested absence of item response bias between high and low achiever groups. This scale would be helpful to researchers, teachers, guardians, and students to assess their academic self-esteem.

Keywords: academic self-esteem, academic achievement, reliability, validity, item response bias

Introduction

Academic achievement is the extent to which a student, teacher or institution has attained their short or long-term educational goals. It is commonly measured through examinations or continuous assessments but there is no general agreement on how it is best evaluated or most important (Ward et al., 1996). There are several factors that have emerged as critical to student academic achievements such as-educational environment, learners' relation with teachers, peers, socioeconomic status, family income, gender, family relationship, social acceptance and most importantly learners' self –esteem (Rosado, 2013 as cited in Duraku & Hoxha, 2018).

Self-esteem can be defined as a psychological concept about a person's overall evaluation of his or her own worth either positive or negative manner (Baron & Byrne, 1991). It is equated to self-concept, self-regard, self-love, self-respect and self-integrity that can be yield as an observable trait within learners which inspire them to achieve academic goals. It was found in a research that academic achievement is strongly associated with a student's self-esteem (Alam, 2013; Arshad et al., 2015; Wigfield et al., 1991), self-concept (Rosen et al., 2010) and overall social acceptance which brings about self confidence that assists in high self-esteem in them (Leary & Baumeister, 2000). High academic self esteem manifested as willingness to express opinions, self-reported happiness, feeling of confidence, competence, working co-operatively in groups, goal directed behavior and it is basically shaped by individual perspectives, learning experiences and qualities of the self which may given rise to high academic performance among students (Sari et al., 2018). And low academic self esteem leads to feelings of unworthiness, depression and doubt among students (Frank, 2009; Frenzel & Rekrum, 2007; Rosenberg, 1965) and it increases the dependency attitude which results lower academic achievement (Joshi & Srivastava, 2009). Naz (2017) suggested that low self-esteem created

a down condition within students which put obstacles for understanding their full potentials. Low self esteem also has an unstable self-concept.¹⁾

There different measures for assessing self-esteem. Some of these are – the Rosenberg's Self-Esteem Scale, RSES (Rosenberg, 1965), the Rogers Rubin's Self Esteem Scale (Rosenberg, 1965), the Instability of Self-Esteem Scale, ISES (Chabrol et al., 2006), the Coopersmith Self-Esteem Inventory (SEI), the Academic Self- Esteem Scale (Tiwari, 2011) etc. The Academic Self- Esteem Scale (Tiwari, 2011) is one of the newly introduced and simple tool for assessing students' academic self-esteem. Recently, researchers are interested to use short assessing instrument for measuring academic self esteem and the Academic Self- Esteem Scale (Tiwari, 2011) comprised of only seven items. This scale has strong positive correlation with academic performance across the samples (Tiwari, 2011).

At present days researches have suggested that, low academic self esteem is responsible for developing psychiatric problems like- anxiety, depression and lack of attention among students (Orth et al., 2008) whereas high academic self esteem found to have an anxiety-buffering function among students in an academic setting (Dumont & Provost, 1999). So, it is an obvious need to take care of academic self- esteem of students for their better academic performance. However, there are few empirical investigations are available from Bangladeshi context to highlight academic self -esteem among learners and their relationship with academic performances. Beside this, there very few developed or adapted scales for assessing academic self esteem of Bangladeshi students. So, the present study aimed to assess the psychometric properties of the Bangla version of the Academic self-esteem scale (Tiwari, 2011). Objectives of the present study are: (i) to assess the item-discrimination of each item of the scale; (ii) to explore the factor structure of the scale; (iii) to assess the reliabilities of the scale; (iv) to assess the predictive validity of the scale;

and (v) to estimate the item response bias of the scale between low and high achiever groups.

Method

Participants

The participants ($N=221$, male 49.3%, female 50.7%) of the present study were selected from 4 academic years (2nd year=33%, 3rd year= 27.1%, 4th year= 29% and 5th year= 10.9%) through convenience sampling technique. Among participants, 35.5% students were selected from public university with exclusion criteria for national university, 37.4% from national university and 27.1% from private university. Among participants, 27.1% were residing in university residential halls, 2.3% were residing in private house beside the university, 7.5% were in private flat in city area, 5.1% were living with family in village and 58.9% were living with family in city. Participants' age mean was 22.87 years with standard deviation (SD) 12.97 years.

Measures

In the present study, all participants completed a questionnaire booklet that comprised of the Academic self-esteem scale (Tiwari, 2011) Bangla (translation procedure described below in the 'Procedure' section), and a sheet for personal information including participants' age, gender, residence, educational institution types, and last year academic results.

The Academic Self-Esteem Scale (ASE) is used for measuring the academic self-esteem which is interconnected with a student's self-concept and academic performances. It was originally developed by Tiwari (2011). It contained 7 items to assess the academic self-esteem of students. Respondents need to express their experiences on a 5 point Likert type scale (1= strongly disagree, 2= disagree, 3= uncertain, 4= agree, 5= strongly agree). The total scores are ranged from 1 to 35. The highest score indicates higher level of self-

esteem. The Academic Self-Esteem Scale has acceptable psychometric properties having alpha Reliability .85 as author reported in his study.

Procedure

The Academic Self-Esteem Scale, ASES (Tiwari, 2011) was translated into Bangla language. The rules and guidelines of the International Test Commission (ITC, 2018) for the translation and adaptation of measurement instruments from one language to another language and from one culture to another culture were strictly followed. The ASES was translated from English to Bangla by two independent translators who have excellent command over both languages well. Their joint efforts were worthy in selecting the best words, phrases, expressions while translating the scale. Then two translated measures were converted into one. The translated Bangla version of the ASES was back translated from Bangla to English by other two experts. Then their translations were converted into one and examined to assess whether there was any disparity in meaning between original scale and back translated version. From this assessment, it was apparent that there was no disparity in meaning. Then, the translated Bangla version of the ASES was administered on a sample of 20 students from Chittagong University by purposively. The Cronbach's Alpha was found .89. After getting positive results from pilot study, the questionnaire booklet, described above, was administered on the sample following the ethical guidelines of the American Psychological Association (APA). Study objectives were explained to participants and they had right to withdraw their response at any stage of the research.

Statistical analysis

The IBM SPSS 20.0, Microsoft Office Excel, and jMetrik were used analyze the data. Item analysis (item total correlations, Cronbach's alpha,

split-half reliability), exploratory factor analysis, Pearson product moment correlation coefficient, differential item functioning (DIF) test were performed to assess the psychometric properties of the Academic self-esteem scale Bangla. Average variance extracted (AVE), composite reliability (CR), and standard error of measurement were calculated also.

The corrected-item total correlations of items were assessed through item analysis. Accepted level of the corrected item-total correlation is .2 (Kline, 2015). To explore the factor structure of the ASE Bangla, the exploratory factor analysis (EFA) was performed. Before performing this test, determinant value, *Kaiser-Meyer-Olkin (KMO)* measure of sampling adequacy, and significance of the *Bartlett's test of sphericity* were examined to assess the suitability of data for the EFA. The recommended determinant value is $>.0001$ (Yong & Pearce, 2013). The *KMO* score of .70 or above is expected as this value suggested that the sample was adequate to run the EFA. Kaiser (1974) suggested that the *KMO* score below .50 unacceptable, .50 as miserable, .60 as mediocre, .70 as middling, .80 as meritorious, .90 as marvelous or superb. The *Barlett's test of sphericity* compares the original correlation matrix with the identity matrix. A significant *Barlett's test of sphericity* ($p < .001$) score suggests both matrices are not same and study variables are suitable to apply to factor analysis (Field, 2017). In EFA, the explored component(s) which had Eigen value of 1 or >1 (the Kaiser-Guttman criterion), at least three items with factor loading .4 or $>.4$ was considered as factors. Factor loadings were used to calculate the average variance extracted (AVE) ($\geq .5$ accepted; Bagozzi & Yi, 1988), and the composite reliability ($\geq .7$ accepted; Bagozzi & Yi (1988).

The Pearson product moment correlation coefficient was used to assess the test-retest reliability and predictive validity of the scale under study. The reliability of the ASE Bangla was assessed through Cronbach's Alpha ($\geq .7$ accepted; Nunnally (1978), split half reliability through Spearman-Brown formula ($\geq .7$ accepted; Furr, 2011), and test-retest reliability. Moreover, standard

error of measurement (SEM) ($SEM < SD/2$ is accepted; Wang et al. (2012) was calculated.

The differential item functioning (DIF) test was performed to assess the item response bias between low achiever group and high achiever group. Students having results below 3.00 were considered as low achiever group and students having results of 3.5 or above considered as high achiever group. DIF indicates whether an item is biased and unfair for a group of test examinees. The Mantel-Haenszel χ^2 (≤ 3.84 accepted as non-significant; Penfield²) was used to assess the DIF contrast.

Results

Item analysis

Table 1 shows that all items except item 7 of the Academic self-esteem scale Bangla had acceptable item-total correlation ($< .2$). Further analyses were conducted excluding item 7.

Table 1. Corrected item-total correlations, factor loading, and Mantel-Haenszel χ^2 of the Academic Self-esteem Scale Bangla

Items	Corrected item-total correlations	Factor loading	DIF Statistics	
			Mantel-Haenszel χ^2	p value
Item1	.560	.797	2.37	.12
Item2	.323	.583	.16	.69
Item3	.663	.851	1.03	.31
Item4	.448	.648	2.26	.13
Item5	.572	.735	.53	.47
Item6	.525	.727	.16	.69
Item7	.158			

Extraction Method: Principal Component Analysis; Eigen value = 3.187; Variance extracted = 53.118; one component extracted.

Factor analysis

The correlation matrix of 6 items (93.33% coefficients were above .30 and no coefficient above .90 that possesses the multicollinearity problem), the determinant value (.125), the *Kaiser-Meyer-Olkin (KMO)* measure of sampling adequacy (.807), and the *Bartlett's test of sphericity* ($\chi^2= 451.18$, $df = 15$, $p < .001$) suggested that the collected data of this study were fit for *exploratory factor analysis*. Among extracted components, only one component met the criteria for inclusion as a factor. Table 1 shows the factor loadings of the scale that ranged from .583 to .851 (eigen value=3.187, variance, 53.118).

Reliabilities

The Cronbach alpha of this measure was .818, split half reliability through Spearman-Brown coefficient was .817, test-retest reliability was .822 (n=27, 1month gap), average variance extracted (AVE) was .531, composite reliability was .870, and standard error of measurement (SEM) was 2.23 ($SEM < 5.237/2$ acceptable). Above mentioned reliability scores suggested that this ASE Bangla had good reliabilities.

Predictive validity

The ASE Bangla had good predictive validity as this scale moderately correlated with the last academic achievement ($r=.456$, $p < .001$).

Differential item functioning (DIF)

Table 1 shows that the Mantel-Haenszel χ^2 statistics ranged from .16 (p -value = .69) to 2.37 (p -value = .12). These non-significant Mantel-Haenszel χ^2 values suggested the non-DIF contrast between high achiever and low achiever groups.

Discussion

The present study was designed to assess the psychometric properties of the Bangla version of the Academic self-esteem scale (Tiwari, 2011). Corrected item-total correlations from Table 1 suggested that all items except item7 had good item discrimination ability. Item discrimination is the degree to which an item differentiates correctly among test takers in the behavior that the test is designed to measure (Anastasi & Urbina, 1997). An item having item-total correlation value at least .3 or above indicates that this item discriminates sufficiently between high scorers and low scorers in the test that contains the item. Results of the Exploratory Factor Analysis (EFA) in Table 1 suggested that among extracted components, only one component met the criteria for inclusion as a factor. This suggested that the scale under study is a unidimensional scale in Bangladesh context.

Results regarding reliabilities showed that the ASES Bangla had good reliabilities such as cronbach's alpha, split-half reliability through Spearman brown formula, test-retest reliability, composite reliability, etc. George & Mallery (2003) suggested that $\alpha \leq .9$ is excellent, $.9 > \alpha \leq .8$ is good, $.8 > \alpha \leq .7$ is acceptable, $.7 > \alpha \leq .6$ is questionable, $.6 > \alpha \leq .5$ is poor, and $.5 >$ is unacceptable". Nunnally (1978) suggested that a reliability of .70 or higher would be expected before using the instrument. Furr (2011) opined that values between .70-.80 are sufficient to use. Tiwari (2011) found satisfactory internal consistency reliability across the samples (Cronbach's alpha ranged from .84 to .85) of the ASE scale. The ASE Bangla version had good predictive validity as this scale moderately correlated with the last academic achievement. High scorers in this instrument would be higher achiever in their academic examinations. Results from Table 1 also suggested that items were free from item response bias between higher achiever and lower achiever. This item had no favor to any specific group.

Limitations of the study

This study has some limitations too. A major limitation existed regarding sample selection. This study comprised of a sample of university students only. Sample size of the present study was not sufficient to apply more tests for assessing psychometric properties like the confirmatory factor analysis, the latent class analysis, the Rasch analysis, etc. In this study, self-report data were used that left chance for social desirability bias, method bias, memory recall bias, etc. Some limitations like economical, time, and manpower hindered the study in different ways. Future researchers should incorporate the relationship of the Academic self-esteem scale (ASES) with different variables or situations. Moreover, this research will help future researchers to be focused re-searching on this field. Despite these limitations, the findings illustrated that the Academic self-esteem scale (ASES) Bangla is a valid and reliable instrument for assessing academic self esteem of Bangladeshi students. This measure would help contribute in academic achievement of students which will also help to improve the psychological wellbeing of learners.

NOTES

1. <https://www.simplypsychology.org/self-esteem.html>
2. https://soe.uncg.edu/wp-content/uploads/2015/12/DIFASManual_V5.pdf

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