



Academic Self Concept and Academic Achievement of Indian CBSE School Students

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ABSTRACT

Introduction: Student's self-concept about their academic capabilities plays an important role in academic achievement. Main objective of the study was to examine the relationship between academic self-concept and academic achievement.

Methods: The sample (Male 261, Female 320, aged 17-19 years) were drawn from 15 secondary schools affiliated with CBSE board, India. Academic achievement was measured by self-reported CGPA of the previous year. Academic self-concept was measured by Kample and Naik Academic Self Concept Scale (ASCS). Data obtained was analyzed with the help of SPSS (16th, version) and JASP (Version 0.14.1).

Results: Measurement model for ASCS was excellent fit in the samples [GFI=9971, CFI=.926, TLI=.897, RMSEA=1173(90%CI: Lower-0.1019: Upper-0.1333) and SRMR=0.0445]. The result of the study revealed that there was a positive relationship between academic self-concept and academic achievement ($r=117$) and this relationship was stronger for male students ($r=0.125$) than that of female students ($r = .091$). Academic self-concept accounted for 12.5% of the variance in the academic achievement. Moreover, gender differences in the academic self-concept of the students were also found ($P= 0.01$).

Conclusions: This finding suggests that students performed academically better when they had good level of academic self-concept. Female students had significantly higher academic self-concept than male students.

Keywords: Academic Self-Concept, Academic Achievement, Relationship, Measurement model

INTRODUCTION

Academic achievement is seen as an important indicator of education system of the country. It is important because it promotes the success of students in the current life as well as in his future¹. The society substantially emphasizes more on academic achievement of its citizen.² There are many cognitive and non- cognitive variables that influence the academic achievement of students. IQ and standardized test scores are traditionally the cognitive factors associated with the academic achievement.^{3, 4} There are few non- cognitive factors also which is found to be related with academic performance and is im-

portant to be considered⁵⁻⁷. An important non- cognitive factor is student's perception about their academic capabilities and the kind of self-concept that is constructed by the students based on their academic experience.⁸ So, further investigation required to understand the influence of self- concept and its significant role in the academic achievement of student.

Academic self-concept is a psychological concept that explains students' belief in their abilities in certain specific academic area such as maths, language etc. Wigfield & Karpethian stated academic self- concept as awareness and understanding of an individual in the academic settings and their feeling about the ca-

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pabilities and capacities to achieve better grades in academics.⁹

The Multi-dimensional model of self- concept indicates academic self as an important aspect of self contributing to an individuals' global self- concept along with social, emotional and physical self- concept. It was found that self- concept assisted to predict academic achievement and it further indicated that approximately one third of the variance in achievement was accounted by academic self- concept¹⁰. According to Hurllock self-concept comprises self-perception that includes the beliefs, feelings and attitudes that an individual recognizes as his traits.

Byrne and Shavelson defined academic self- concept as an evaluation of one's own perceived academic competence¹¹ whereas Cokley¹² defined academic self-concept as a student's view of his or her academic ability when compared with other students. Reynold defined academic self- concept as perceptions of individuals' capacity and competence level regarding his or her abilities within academic settings.¹³ Researches show that development of positive self- concept is prerequisite for performing well academically. A student needs a good academic self-concept so as to be successful academically.¹⁴

Studies conducted by Ahmed and Bruinsma on Asian and European graduate students found that there existed a significant relationship between academic self- concept and academic performance confirming that more a student feels positive about his academic abilities more is the academic achievement¹⁵. Chapman and Boersma stated that students with negative self- perceptions exhibit less confidence and negative attitude towards school¹⁶. Lui revealed that student with low academic self- concept have less self- confidence and are less motivated to learn which leads to less satisfying results.¹⁷ Many research studies support that academic self- concept is developed when students compare their abilities with others.

The stage of secondary school level or adolescence is a transition phase of an individual from childhood to maturity during which they face many psychological challenges that includes adjustment in social and school environment and complex relations with parents and peers. This phase is also characterized as a phase during which an adolescent evaluates his self and brings about reformation of his perception based on his experiences. In this context, it is imperative to investigate the relationship of academic self- concept with academic achievement of higher secondary students. The present study is conducted to find out relationship between academic self - concept and academic achievement of higher secondary school students.

OBJECTIVES

The research was conducted to study the academic self-concept of higher secondary school students and also to study the relationship of academic self- con-

cept with academic achievement of the students. The study also compared the academic self- concept of male and female higher secondary school students.

MATERIAL AND METHOD

A sample of the present study consisted of 581 students (320 women/261 men) studying in CBSE school of Raipur, India from 11th and 12th class. The age range of the participants was 17-19 years. Participants fulfilling the inclusion/exclusion criteria and who gave written informed consent were included for the study. The sampling technique applied for drawing out the sample was an incidental random sampling method.

Students of class 11 and 12, able to communicate, read, write and comprehend in English and willing to participate were selected. Participants associated with any chronic medical disorder and associated with any current or previous history of a psychiatric disorder were excluded.

In the present piece of research, the correlational research design was employed. Here, the criterion variable is Academic achievement; gender and academic self concept (Academic Ability, Academic Interests, Study, Examination, Academic Interaction, Academic Efforts, Curriculum, and Academic Future acted as predictive variables in this study.

Tools: Academic Self Concept (ASC): To measure the academic self-concept of secondary school students, the Academic Self Concept Scale (ASCS) developed by Kample and Naik¹⁸ was used. ASCS consisted of 57 items, distributed in 8 sub scales namely Academic Ability (9), Academic Interests (5), Study (11), Examination (7), Academic Interaction (10), Academic Efforts (5), Curriculum (6), and Academic Future (5) and Cronbach's alpha estimate of reliability for these sub scale is 0.86, 0.92, 0.88, 0.84, 0.87 0.90, 0.85, 0.87 respectively. The responses for each item were given on 5point Likert type and the value ranged from 5 (strongly Agree) to 1 (strongly disagree) according to the positive and negative items. The Cronbach's alpha estimate of reliability for the total scale is 0.93 which is good and acceptable in social science research situation.

Academic Achievement: To measure the academic achievement of the secondary school students, their previous year (class IX) Cumulative Grade Point Average (CGPA) score was taken and considered as the measurement of academic achievement.

Procedures: The data gathering process was begun by visiting each of the selected schools. First of all, the investigator contacted the principals and talked to them about the purpose of visit and the brief introduction of the research work. After taking the permission of the principal, investigator went to the respective class and ensured that students were seated properly. The students were contacted in the classroom of school and invited to participate in a survey. Participants were assured that their in-

volvement was voluntary and anonymous and that they maintained the right to withdraw their participation at any time. Written informed consent in printed Performa was obtained from the individual participants of the sample included in the study. This study was approved by the departmental research committee. The investigator explained the purpose of the research to the participants. Then after the instructions are given on the questionnaire were explained to them. The participant first completed Academic Self Concept Scale (ASCS) and then the academic achievement with demographic. At the completion of the inventory, participants were thanked for their contribution and provided with pertinent contact information should they want to request the results of the study upon completion.

Statistical Analysis: All 581 cases were included for data calculation. Pearson correlation and linear regression was used to examine the relationship of academic self concept with academic achievement. ANOVA was used to examine the differences in ASC between male and female. Data obtained was analyzed with the help of SPSS (16th) version, and JASP (Version 0.14.1) software was used for the estimation of variance through structure equation modeling. We conducted Confirmatory factor analysis (CFA) using the maximum likelihood method to examine the factor structure in sample. CFA was performed with the JASP (Version 0.14.1). The satisfactory indices of fitness of the CFA model was evaluated with the help of the goodness of fit index (GFI), comparative fit index (CFI), Tucker-Lewis index

(TLI), root mean square error of approximation (RMSEA) and Standardized root mean square residual (SRMR).

RESULTS

Two independent samples of students from 11th, and 12th classes were analyzed. Total 261 (44.9%) boys and 320 (51.1%) girls were selected in the study. The sample comprised of 294 (50.6%) 11th class students (mean age = 17.39, SD = .97, range from 16 to 18 years), and 287 (49.9%) 12th class students (mean age = 18.24, SD = .68, range from 17 to 19 years.).

First, a measurement model was tested for all samples using confirmatory factor analysis (CFA) with JASP (Version 0.14.1). In this model, an academic self concept scale (ASCS) predicts the eight measures comprised in the dimension: Academic Ability, Academic Interests, Study, Examination, Academic Interaction, Academic Efforts, Curriculum and Academic.

There are many goodness-of-fit indices to evaluate suitability of model according to CFA results. Several goodness-of-fit index values are recommended to be utilized to perform suitability of the model due to strong and weak aspects of suitability indices in differentiating theoretical model and real data¹⁵. Values over 0.95 for Comparative Fit Index (CFI), Incremental Fit Index (IFI), Relative Fit Index (RFI), Normed Fit Index (NFI), Non-Normed Fit Index (NNFI) indicate goodness-of-fit and values between 0.90 and 0.94 indicate acceptable fit.

Table 1: Parameter estimates (Factor loadings) for Eight-factor ASCS among school going students

Indicator	Estimate	Std. Error	z-value	P Value	95% CI		Std. Est. (all)	R ²
					Lower	Upper		
Academic Ability (AcA)	3.16	0.18	17.25	<0.001	2.8	3.52	0.66	0.44
Academic Interest (AcIntr)	2.55	0.13	19.61	<0.001	2.29	2.8	0.73	0.53
Study (Std)	5.12	0.2	25.54	<0.001	4.72	5.51	0.87	0.75
Examination (Exm)	2.91	0.14	21.28	<0.001	2.64	3.17	0.77	0.59
Academic Interactions (AcIntrc)	3.12	0.17	18.45	<0.001	2.79	3.46	0.69	0.48
Academic Efforts (AcE)	1.54	0.09	16.15	<0.001	1.35	1.72	0.63	0.39
Curriculum (Crr)	1.83	0.12	15.13	<0.001	1.59	2.07	0.59	0.35
Academic Future (AcF)	1.86	0.11	17.51	<0.001	1.66	2.07	0.67	0.45

CI=Confidence Interval

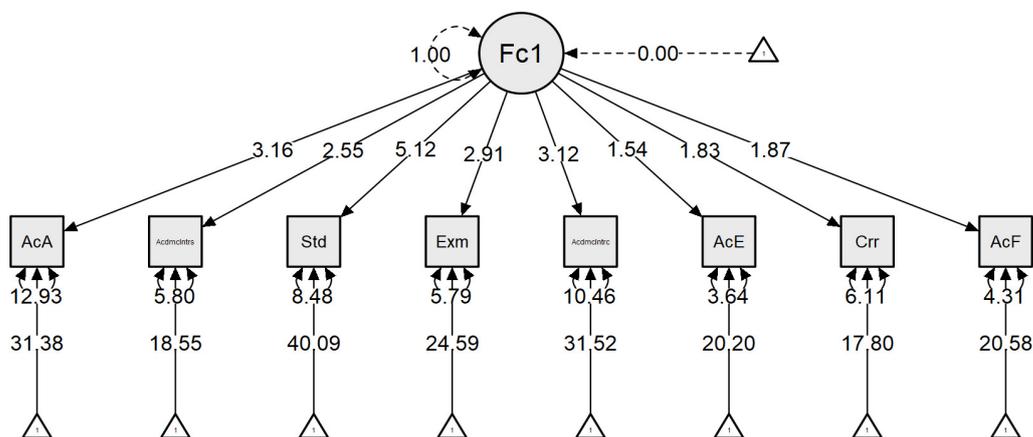


Figure 1: Eight-factor ASC model among school going students

Table: 2 Model fit indices of Confirmatory Factor Analysis

Fit indices	
Index	Value
Comparative Fit Index (CFI)	0.93
Tucker-Lewis Index (TLI)	0.89
Bentler-Bonett Non-normed Fit Index (NNFI)	0.89
Bentler-Bonett Normed Fit Index (NFI)	0.91
Parsimony Normed Fit Index (PNFI)	0.66
Bollen's Relative Fit Index (RFI)	0.88
Bollen's Incremental Fit Index (IFI)	0.93
Relative Noncentrality Index (RNI)	0.93
Other fit measures	
Metric	Value
Root mean square error of approximation (RMSEA)	0.11
RMSEA 90% CI lower bound	0.10
RMSEA 90% CI upper bound	0.13
RMSEA p-value	<0.001
Standardized root mean square residual (SRMR)	0.04
Hoelter's critical N ($\alpha = .05$)	102.49
Hoelter's critical N ($\alpha = .01$)	122.37
Goodness of fit index (GFI)	0.99
McDonald fit index (MFI)	0.87
Expected cross validation index (ECVI)	0.39

Standardized Root Mean Square Residual (SRMR) less than 0.05 indicate goodness-of-fit and values between 0.06 and 0.08 indicate acceptable fit¹⁹⁻²². Several types of research have suggested that all the indexes are supposed to be above 0.90 to be a good fit²³⁻²⁶ as cited in Kumar & Shrivastava²⁷. Values for Root Mean Square Error of Approximation (RMSEA) should be accepted in the range of 0.05 to 1.00 the lower value is said to be a good level.

Model fit was excellent in the samples (see table -3) Figure 1 and table 1 shows the regression weights. All values depicted in Fig.1 and table-2 for the all school going students - academic ability, academic interests, study, examinations, Academic interaction,

academic efforts, academic future and academic future subscales show the largest values (>.62). Curriculum, shows the lowest weight for the sample (.59). It can be said that eight factorial structure of the scale is preserved in this sample of Indian school students according to these criteria. Standardized factor loads, z-value and R² values regarding CFA are presented in Table 1 and goodness-of-fit index values are presented in Table 2.

Table-3 shows that the correlation between academic self-concept and academic achievement of secondary school students was positive ($r = .117$) and significant at 0.01 level of significance. Moreover, this relationship was also significantly positive for both male students at 0.05 level of significance. Here investigator found an important fact that the correlation was stronger for male students ($r = .125$) than that of female students ($r = .091$).

To determine the predicting effect of academic self-concept on the Academic Achievement, linear regression (Method= Enter) was used. Table-4 shows that the model was statistically significant ($F = 9.930$, $P < .01$, $R^2 = .122$). Academic self-concept accounted for 12.5% of the variance in the academic achievement that students received. This finding suggests that students performed academically better when they had good level of academic self-concept.

Table-5 shows that the calculated F-value ($F = 12.140$) was significant at 0.01 level of significance so null hypothesis was rejected. Therefore, it was inferred that there was significant difference between male and female secondary students' mean score of academic self-concept. Further, Table 5 show that the mean score of females ($M = 207$) was greater than the mean score of male students ($M = 201$). Hence it is concluded that female students had significantly higher academic self-concept than the male students.

Table 3: Correlation between academic self concept and academic achievement

ASCS	Academic Achievement					
	Pearson Correlation			Sig. (2-tailed)		
	Total	Female	Male	Total	Female	Male
Academic Ability	.21**	.19**	.24**	0.000	0.001	0.000
Academic Interest	-0.013	0	-0.058	0.758	0.993	0.352
Study	0.074	-0.017	.144*	0.073	0.764	0.020
Examination	0.056	0.045	0.056	0.179	0.422	0.370
Academic Interactions	.239**	.252**	.219**	0.000	0.000	0.000
Academic Efforts	.090*	.115*	0.045	0.029	0.040	0.468
Curriculum	-0.044	-0.095	-0.01	0.290	0.089	0.867
Academic Future	-0.015	-0.021	-0.031	0.716	0.705	0.622
ASCS	.117**	0.091	.125*	0.005	0.106	0.044

(**= $P < .01$ & *= $P < .05$)

Table 4: Linear Regression Analysis Predicting Academic Achievement (N= 581)

Model	R	R Square	Adjusted R Square	F	Sig.	Durbin-Watson
1	0.35	0.12	0.11	9.93	0.000	1.63

Predictors: (Constant), Academic Future, Academic Interactions, Curriculum, Academic Efforts, Academic Interest, Academic Ability, Examination, Study
Dependent Variable: Academic Achievement

Table 5: Comparison between Academic self-concept of Male and Female secondary school students

ASCS	Female		Male		Total		P value
	Mean ± SD	95% CI*	Mean ± SD	95% CI*	Mean ± SD	95% CI*	
Academic Ability	31.52 ± 4.63	31.01 - 32.03	31.19 ± 4.98	30.58 - 31.80	31.38 ± 4.79	30.98 - 31.77	0.410
Academic Interest	19.12 ± 3.34	18.76 - 19.49	17.85 ± 3.58	17.41 - 18.29	18.55 ± 3.51	18.26 - 18.84	0.000
Study	40.97 ± 5.50	40.36 - 41.57	39.02 ± 6.17	38.27 - 39.77	40.09 ± 5.89	39.61 - 40.57	0.000
Examination	24.83 ± 3.60	24.44 - 25.23	24.27 ± 3.97	23.79 - 24.76	24.58 ± 3.78	24.28 - 24.89	0.074
Academic Interactions	31.66 ± 4.64	31.15 - 32.17	31.36 ± 4.33	30.83 - 31.88	31.52 ± 4.50	31.16 - 31.89	0.415
Academic Efforts	20.52 ± 2.28	20.27 - 20.77	19.80 ± 2.60	19.48 - 20.12	20.19 ± 2.45	20.00 - 20.40	0.000
Curriculum	18.17 ± 3.03	17.84 - 18.51	17.33 ± 3.08	16.96 - 17.71	17.79 ± 3.08	17.55 - 18.05	0.001
Academic Future	20.91 ± 2.46	20.65 - 21.19	20.16 ± 3.11	19.79 - 20.54	20.58 ± 2.79	20.35 - 20.81	0.001
Total ASCS	207.7 ± 22.3	205.3 - 210.2	201.0 ± 24.2	198.1 - 203.9	204.7 ± 23.4	202.8 - 206.6	0.001

*95% Confidence Interval for Mean

DISCUSSION

Confirmatory factor analysis was performed to determine confirmation of eight factorial structure in a sample consisting of Indian school students. It was concluded that eight factorial structure is preserved by CFA. Our findings indicate that ASCS has similar psychometric properties with its original version. The result of the present study demonstrate a significant positive relationship ($r = .23$, $p > .01$) between academic self-concept and academic achievement of secondary school students. This study is consisted with the findings of Reynolds²⁸, Tan & Yates²⁹, Marsh³⁰ and Cokley³¹ that have shown a positive and significant relationship between academic self-concept and academic achievement in their respective studies. The significant positive relationship of academic self-concept with academic achievement was found in the Indian adolescent and also found in western countries such as Canada³² and Germany^{33,34} and Asian countries such as China³⁵ and Hong Kong³⁶. Beyond cognitive factors like intelligence, there are other factors responsible for individual differences in academic achievement. Students who have better understanding of their potential and academic abilities develop a positive academic self-concept which results in high problem solving ability, are more competent, passionate and confident in achieving higher grades in exams and therefore they excel in exams. On the other hand students who perceive themselves with poor academic abilities are less confident, feel stressed in accepting academic challenges due to which they become incompetent and are unable to perform well in their academics leading to low academic achievement. Academic achievement is influenced by positive or negative academic self-concept possessed by students.

In the present study significant difference in the academic self-concept was observed between male and female students. It means that both male and female students at secondary level were not same in the view they hold about their academic belief and capabilities. Findings of earlier research studies like Marsh³⁷, Lau³⁸, and Ireson & Hallam³⁹ are in line with the result of the present study who reported female students have higher academic self-concept than male students. Other than result of the present study not support to the findings of Kling et. al.,⁴⁰ who reported that the male students had a higher

academic self-concept than female students. The results of the present study not support to the finding of the study done by Hossaini⁴¹ which revealed that gender does not influence the self-concept and self-concept does not play any significant role to influence academic achievement. Low academic self-concept of male can be attributed to social contextual factor which considers male to be the main wage earner of the family, while female members are considered to play a supportive role as a mother. This societal expectation influences the aspirations, selection of course and future careers of male which may affect their psychological aspects like stress and fear of failure which may further lead to low academic self-concept. In contrary females are found to be more affected by opinion of others and try to avoid behavior which may receive negative reactions from others. They tend to be more committed, work hard and show zeal and confidence in academic activities to receive praise and appreciation from their teachers, parents and peers which leads to high academic self-concept.

CONCLUSION

The academic self-concept scale has an eight-factor structure and this form can be used as a valid and reliable measuring means in evaluating academic self-concept in CBSE school students. This finding suggests that students performed academically better when they had good level of academic self-concept. Further this study also concluded that there was difference in the academic self-concept between male and female students. Female students had significantly higher academic self-concept than male students.

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