STUDY OF SELF-CONCEPT AND PERFORMANCE IN MATHEMATICS OF MIDDLE CLASS STUDENTS OF PARENTS IN TRANSFERABLE JOB

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Abstract: The self concept has been recognized as a key Psychological factor of the learners which contributes significantly in the academic achievements. The present study aims at to study the relationship between self concept and performance in mathematics of middle class students whose parents are in transferable job, as the children of transferable parents are subjected to frequent mobility causing them emotional stress and remain disadvantageous at many socio-emotional fronts. Mathematics is considered as a difficult subject comparatively among the majority of the learners consequently they remain anxious and stressful with the subject. There is unavoidable need to explore all the related aspects in teaching and learning of mathematics exhaustively so that the intricacies in learning of the subject could be simplified. 8 Schools were selected randomly in Faizabad district of Uttar Pradesh affiliated to CBSE board. A total of 231 (113 girls and 118 boys) students of class VIII standard whose parents were in interstate or intrastate transferable job formed the sample of the study. Children Self Concept scale (CSCS) developed and standardized by Dr SP Ahluwalia (1986) was used to collect the data on self concept, whereas the average scores of mathematics achieved by the students over the academic year was taken for the mathematics performance. ANOVA and t-test were statistical tools used to analyze the data. The result showed positive relationship between self concept and performance in mathematics. A significant difference was found between performance in mathematics of students having high and average self concepts and having high and low self concepts. However, gender was not found strong variable in relationship between self concept and performance in mathematics, as out of three comparisons only one was found significant. The study was concluded with discussion on the result and valuable suggestions.

Key Words: Self concept, performance, mathematics, transferable parents,

1. INTRODUCTION

Everyone in the world is striving either by thought or action or both to be successful, happier and better in future. There are many factors which contribute to our effective action and to achieve desired object. Out of the numerous components for a success, an important factor is the image of self, which is the intrinsic source of motivation, repertoire of energy to act and struggle against failures and odds. There is unrecognized wealth of talent and power dwells in our within which remain dormant and inactive; we need to channelize and harness it. "All power is within you, you can do anything and everything" - Swami Vivekananda. The development of the Self neither happens in vacuum nor is an innate trait but it is a product of various environmental interactions and garnered experiences of past and present. It has been repeatedly established that self-concept of an individual predicts the future course of action and advancements. The performance of students in academics is effectively regulated by their Self-Concept. Mathematics is a basis of social Sciences and Technology which is highly useful in not only studies of science but also provides skill and ability to handle our routine activities ranging from marketing, time management, cooking, arranging and decorating our living spaces to future budget and planning. Despite

being highly useful and one of the most worthy disciplines, it is considered as difficult subject by the learners. As evidently, the highest number of failures in mathematics establishes the fact. Numerous studies on causes, strategies and concepts of learning difficulties in mathematics have been carried out to assess and optimize the learning in the subject. One of the important psychological factors which affect our academic achievement and learning is a Self Concept. The self-concept of students has got a key place to orient and dedicate for the set objective. The present study is under taken on the performance in mathematics in relation to self concept for the wards of transferrable job parents who are subjected to frequent change of their society and area of living.

2. SELF-CONCEPT

Self-concept has got a cardinal and central place in our living. It is a proliferation of environmental interactions and stable experiences of present and past. Self-concept is a powerful internal cognition which propels us to act and sustain. Self concept is found as important and centre of individual belief, attitude and reaction towards personal and social life. It is a key in the progress of one's life (Aida Mehrad, 2016). “It is an organized consistent conceptual gestalt composed of perceptions of characteristics of 'I' or 'me' and the perceptions of the relationships of the 'I' or "Me' to others and to various aspects of life, together with the values attached to these perceptions. It is a gestalt which is available to awareness though not necessarily in awareness. It is a fluid and changing gestalt, a process, but at any given moment is a specific entity” (Rogers, 1959). Self-concept has got two sides of its development, first one is the existential self which starts shaping with as early as two or three months with feeling of its existence as a separate entity and the other one is Categorical self; after the existence feeling, awareness develops i.e. individual as a part of the society and world. A feeling of him or herself as object of the world with certain traits and properties creates self concept (Lewis, 1990). “The Individual's belief about himself, or herself, including the person's attributes and who and what the self is" (Baumeister, 1999). Self-concept is comprised of three components i.e. Self image: view about self. Self-esteem or worth: Associated value for self and the Ideal self: I were like this or that (Carl Rogers, 1959). Self-concept can be said as a totality of our belief, preferences, opinions thinking pattern and image of self-including how I would have been. Self-concept gets shaped by self-schemas (stable memories of individual experiences and belief) and constructs of past, present and future. Failure and success also impact on self-concept. Self-concept is a dynamic continuous process. Individuals’ Self concept may be different from reality or falsehood but a single potent factor in one’s course of action.

3. LEARNING MATHEMATICS

Mathematics is derived from Greek Ward "MATHEMA" which connotes its meaning as "Knowledge, Study and Learning". It is the branch of human enquiry involving the study of numbers, quantities, data, shape and space and their relationships, especially their generalization and abstractions and their application to situations in the real world (James Nicholson , 2014). Mathematics is a dynamic subject at par with science in its accuracy and reliability. It is highly worth in every endeavor of human beings. It is a deep source of intellectual advancement and amusement. In spite of so many values attached to the subject, it is not welcomed by the student. The high level of difficulties in conceptual comprehension of mathematics has been accepted unequivocally among its learners. Gafoor & Kurukkan (2015) found that 88% students at high school level hated the subject mathematics whereas only 6% showed their likings. Hilal et. al. (2012), in a research on the elementary school students, Maths Fear in Turkey, found that a quarter of the students were afraid of mathematics and have deep stress in the subject. There are undue stress and anxiety associated to the subject which affects the learning. Muthodi and Ngirande (2014)

studied the mathematics anxiety of students. On a sample of 120 (84 male and 36 female), data were gathered and analyzed using t-test, ANOVA and Chi-square. A high degree of mathematics anxiety was found among the students. Females were higher on the subject anxiety than male. There is need to explore all associated factors and their contribution in teaching and learning of mathematics as the subject is inescapable in studies of science and humanities.

4. SIGNIFICANCE OF THE STUDY ON THE WARDS OF PARENTS IN TRANSFERABLE JOB

The present study is taken on the sample of those students whose parents are in transferable job (interstate or intra state) in India. Consequently, they remain on frequent shift in their place of living, schools, friends and environment. The frequent changes on place of living, companions and schools have got adverse effect on the mental status of the children. Studies have corroborated that residential mobility and change of places have association of poor mental health than those who are comparatively stable (Jellyman and Spencer, 2008; Morris,et.al., 2018). Gasper, et. al. (2012) found that youths who frequently switching their schools are subjected to develop various negative behavior patterns and dropping out character. Residential Mobility has got significant bearing on the development of self as the environmental dynamism remains high for them. However, the study on such unique population has got less attention and documented limited. Oishi, et. al. (2007), studied the psychology of residential mobility and implications for the self. It was found that the residential mobility is a powerful explanatory construct in the creation of self, social relationship and well-being. Contrary to that, self-concept is also found positively associated with residential mobility. Personal history of residential mobility is connected to individual differences in self. The children of transferable parents possess unique traits of emotional status and remain disadvantageous on certain socio-emotional factors. Taking into account the uniqueness of the sample and population, the study was undertaken for the relationship between self concept and performance in mathematics.

5. LITERATURE REVIEW

Lee & Kung (2018) studied math self-concept and achievement in mathematics on longitudinal data. The study was taken on the Sample of 1256 7th grade Taiwanese students who declined to 1,211 in the eighth grades in the second wave of study. Findings indicated significant longitudinal effects of math self-concept on its achievements. Gender was found significant, boys achieved higher in math self-concept than girls. Yang (2017) observed that academic self-concept is positively associated to academic achievements out of cross sectional studies. But It is also documented that there were reciprocal relationships established between these two (self concept & academic achievements) through longitudinal studies. It was emphasized that there was need to extend the study for career related self-concept for career development. Lone & Lone (2016), a study was taken on a sample of 248 students of Jammu District, out of 9 randomly selected schools. The students were from class IXth & Xth standards. Self-concept tool developed by R.K. Saraswat was used to collect data. Significant relationship was revealed between self-concept and academic achievements. Agarwal & Teotia (2015) studied the academic achievements in relation to self-concept of secondary school students. On a sample of 400 students (200 Boys & 200 Girls) of IX standard, data were collected. Correlation and t-test were applied to analyze the data. A significant relationship was found between academic achievement and self-concept. Samuel (2014) examined self-concept and academic performance in mathematics among secondary school students of Ekiti-state in western Nigeria. The sample was finalized through stratified random sampling technique from urban and rural areas. A total of 400 students were taken. Self-concept inventory (SCI) was used to collect the data. Pearson product moment correlation and t-test were used. No significant relationship was found between self-concept and academic performance of students. Lawrence and Vimala (2013) studied the self-concept and achievement motivation

of high school students. The sample of 200 students was drawn randomly. Data were collected using self-concept questionnaire developed by Rajkumar Saraswat & Achievement Motive Test (ACMT) by VP Bhargava. ANONA, t-test and correlation statistical techniques were used. A significant relationship was found between self-concept and achievement motivation. Sartawi,et.al. (2012), analyzed self-efficacy and motivation as a predictors for achievement in mathematics of fifth grade students in UAE. On an average age of 10.3 years, a total of 287 students were selected for the study. Self-efficacy and Motivation together evolved as high predictors as much as 32% of the variance of mathematics achievement. Obilor (2011) analyzed the relationship between self-concept and achievement in mathematics of senior secondary students in Port Harcourt Metropolis. 300 students formed the sample self-descriptive questionnaire developed by Marsh (1992) were taken for the data collection. t-test and correlation statistical tools were used for the analysis of data. The result showed that self-concept and mathematics, and general academic achievements were significantly related. Ikediashi (2010) studied Self-concept and Academic Achievement of Delinquent and Non-delinquent students. A total of 120 students (60 delinquent 60 non-delinquents) were taken for the study. For self-concept, Adolescent Personal Data Inventory (APDI) and Achievement Test Battery (ATB) for Academic Achievement were used. A significant difference of self concept between delinquent and non-delinquent was found. Further, they also differed significantly on their academic achievements. It was recommended to enhance the self-concept of the students in schools.

6. OBJECTIVES OF THE STUDY

(i) To study the self-concept of students of middle class who are the wards of transferable parents.

(ii) To study the relationship of Self-concept and performance in Mathematics.

(iii)To know the relationship of self-concept and performance in Mathematics in relation to gender.

(iv) To know the various levels of Self-concept with respect to performance in Mathematics.

7. HYPOTHESIS

The following null hypothesis was formulated:

H1: There is no significant difference in mathematic performance of students having various level of self-concept (i.e. high, average and low).

H2: There is no significant difference in mathematics performance of boys and girls having high self-concept.

H3: There is no significant difference in mathematics performance of boys and girls having average self-concept.

H4: There is no significant difference in mathematics performance of boys and girls having low self-concept.

8. METHODOLOGY

The descriptive statistical techniques were applied in the present study under the analysis technique; mean, standard deviation, t-test and ANOVA were used.

8.1 Sample

A total of 8 Schools affiliated to CBSE board having medium of instruction as English were randomly selected in Faizabad district of Uttar Pradesh. A total of 231 students (113 girls & 118 boys) studying in class VIII standard and whose parents were in interstate or intra state transferrable jobs formed the sample.

8.2 Tools used

Children's Self-Concept Scale (CSCS) developed by Dr. S.P. Ahluwalia (1986) was used as it is found highly reliable, valid and user friendly. It has got six sub scales as per the following details.

S.No	Area	Max Score	Minimum Score
1.	Behaviour	16	0
2.	Intellectual and School status	18	0
3.	Physical Appearance Attributes	12	0
4.	Anxiety	12	0
5.	Popularity	12	0
6.	Happiness and satisfaction	8	0
	Total	**78**	**0**

Reliability and Validity: The reliability on Test-retest for middle and high school students was established 0.83 and 0.88 respectively, whereas split half reliability for higher secondary school male and female students found 0.74 and 0.79 respectively. The tool was found significantly valid even beyond 0.01 level of confidence.

8.3 Performance in Mathematics

The scores obtained in monthly tests, half yearly and annual exams in mathematics by the students were taken, and further these scores were converted out of 100 maximum marks.

9. ANALYSIS AND RESULT

Self-concept scores of the students were analyzed as per the high, average and low, the details are as follows.

Table - 1

Self-concept scores distribution

Students	N	Mean
High Self-concept		
Girls	24	62.07
Boys	29	62.45
Total	**53**	**62.28**
Average Self-concept		
Girls	61	53.66
Boys	62	51.95
Total	**123**	**52.80**
Low Self-concept		
Girls	28	40.07
Boys	27	37.22
Total	**55**	**38.67**

Mean and SD for the performance scores as per high, average and low self-concept were calculated. The details are as follows.

Table - 2

Mean & SD of Performance scores in mathematics of the Students

Students	N	Mean	SD
High Self-concept			
Girls	24	72	12.82
Boys	29	70.48	9.5
Total	**53**	**71**	**11.16**
Average Self-concept			
Girls	61	57.34	15
Boys	62	55	15.13
Total	**123**	**56.18**	**15.12**
Low Self-concept			
Girls	28	54	14.54
Boys	27	46.56	11.54
Total	**55**	**50.4**	**13.67**

Figure: 1

Comparative Self-Concept Scores of the Students

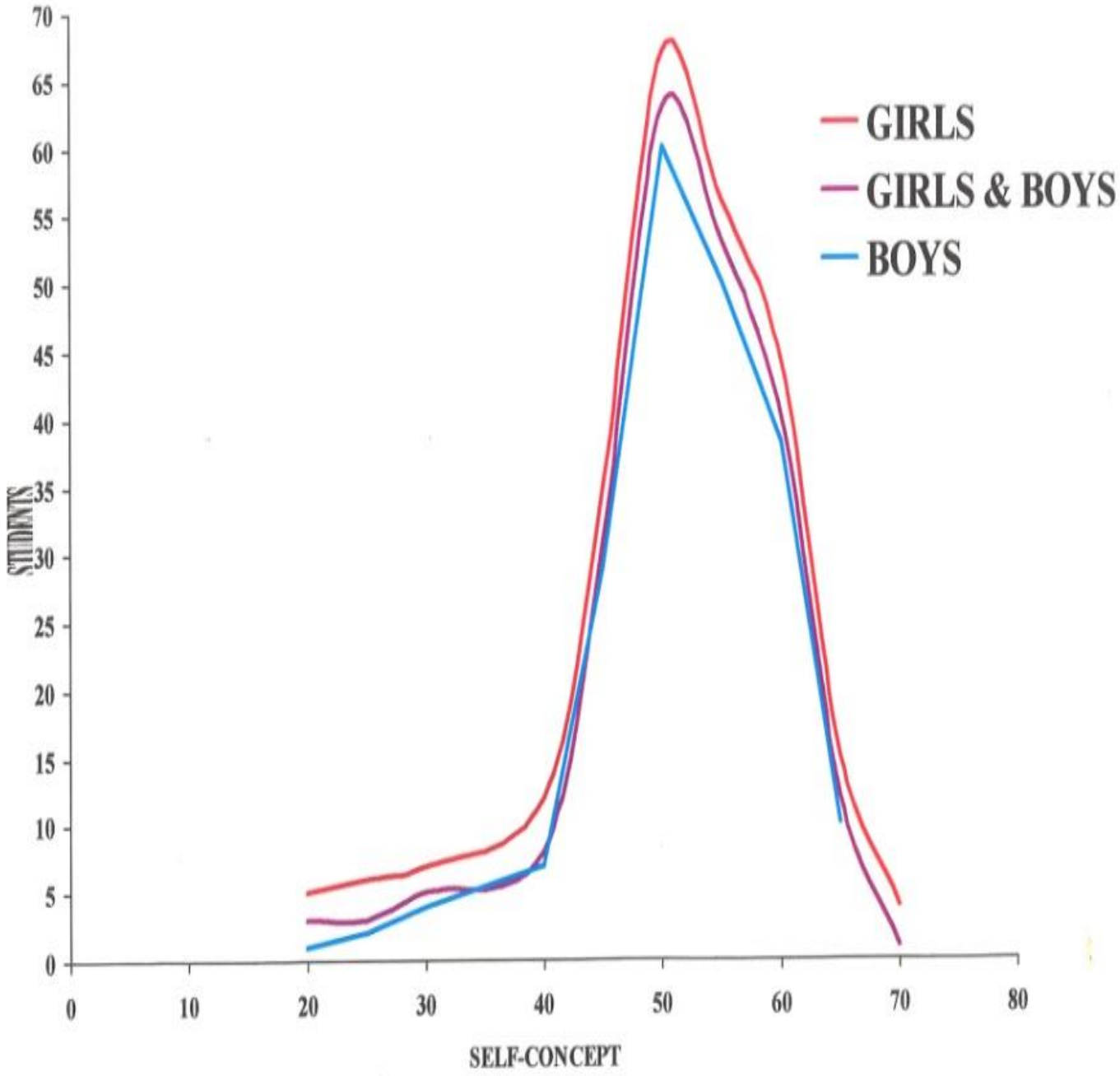


Figure-2
Mathematics Scores of the Student

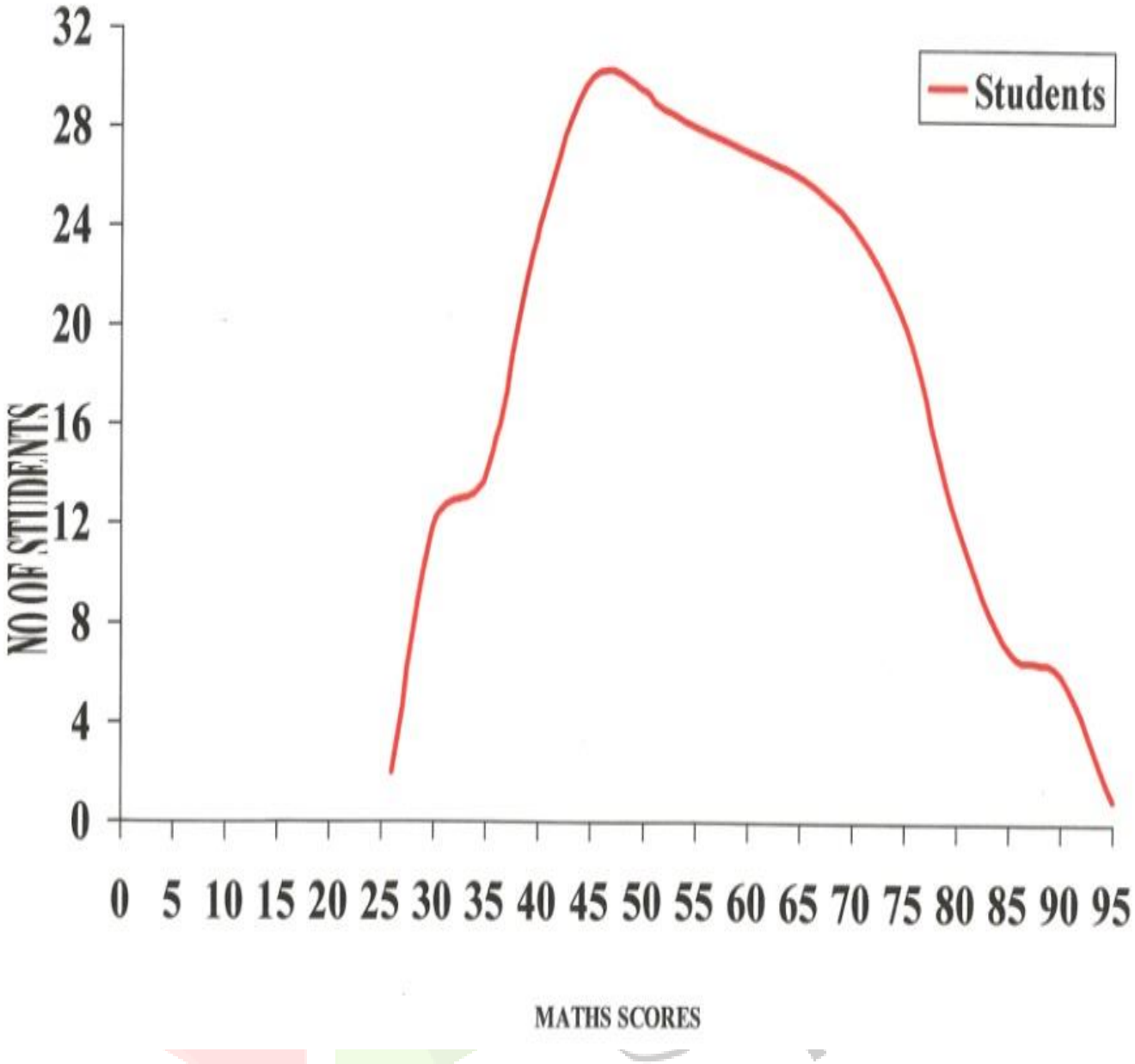
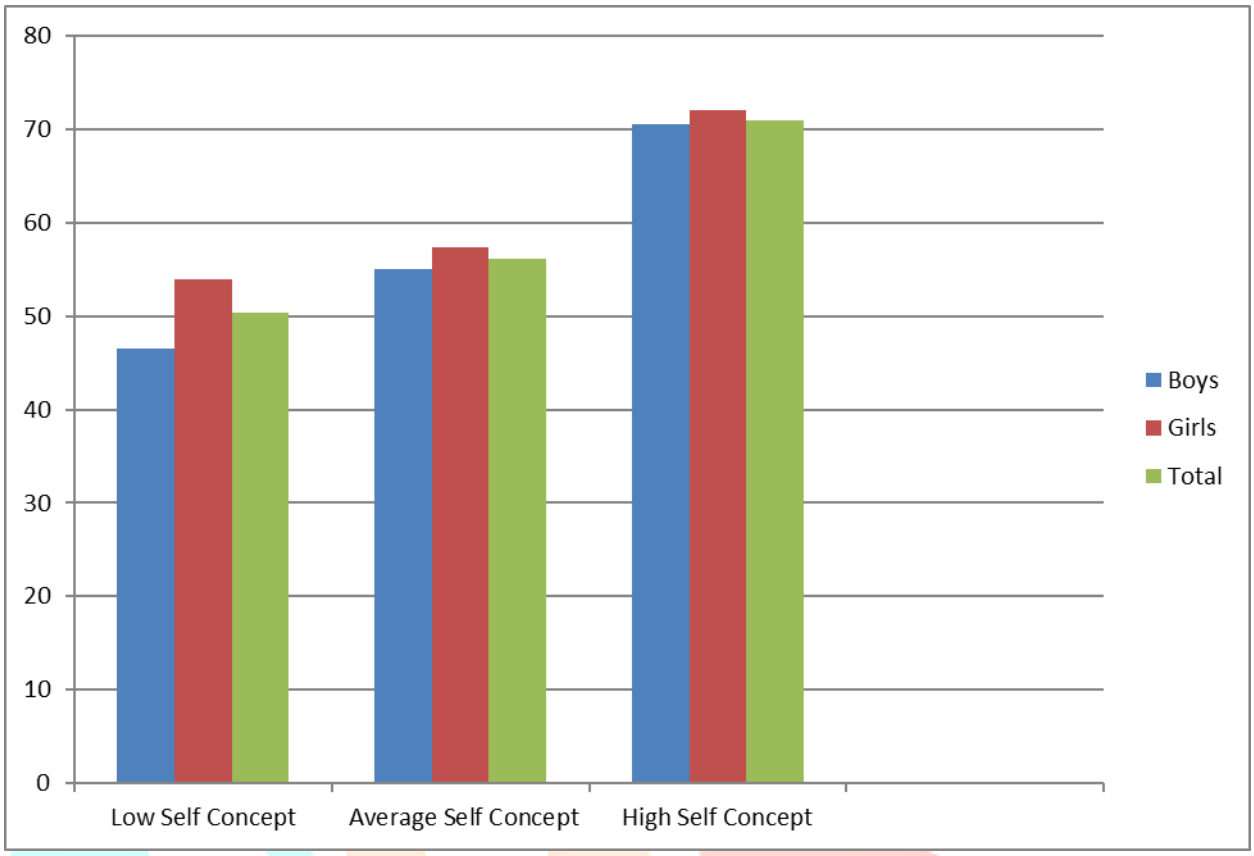


Figure-3
Comparative Mathematics Scores Distribution
As per high, average & low self-concept



H1: There is no significant difference in mathematics performance of students having various level of self-concept (i.e. high, average and low).

To test the hypothesis ANOVA was applied

Table - 3

ANOVA: Performance in Mathematics with High, Average & Low Self-concept

Score of Variation	S.S.	d. f.	M.S.	F-Ratio	1% F Limit	sign
Between sample	27074.6	2	13537.7	98.6	4.6	0.01
Within sample	31302.5	228	137.3			
Total	**58377.1**	**230**				

From the above table it is found that the F-value is significant at 0.01 level. Therefore, the null hypothesis was rejected and alternate hypothesis was accepted. To find the significant difference between means of performance of mathematics under various levels of self concept, further analysis was taken using t-test.

Table - 4

t- Tests: Performance in mathematics between students having high & average, average & low and high & low levels of self-concept

Students (with self-concept)	N	Mean	SD	t-value	sign
High	53	71	11.16	7.24	**0.01**
Average	123	56.16	15.12		

Average	123	56.16	15.12	2.5	NS
Low	55	50.4	13.67		
High	53	71	11.16	8.58	**0.01**
Low	55	50.4	13.67		

From the table 4, it is found that students with high and average self-concept differed significantly in their performance in mathematics. Same way, students with high and low self-concept too differed significantly in their scores of mathematics, whereas, no significant difference could be established between performance in mathematics of students having average and low self-concept.

H2: There is no significant difference in mathematics performance of Boys and Girls having high self-concept.

Table - 5
t-Test: Performance in mathematics between Boys & Girls having High self-concept

Students	N	Mean	SD	t-value	sign
Boys	29	70.48	9.5	0.49	NS
Girls	24	72	12.82		

From the above table, it is observed that the mean difference of scores of mathematics between Boys and Girls is 1.52 and t-value is 0.49, which is not significant. Therefore the null hypothesis was accepted.

H3: There is no significant difference in mathematics performance of boys and girls having average self-concept.

Table - 6
t-Test : Performance in mathematics between Boys & Girls having Average self-concept

Students	N	Mean	SD	t-value	sign
Boys	62	55	15.13	0.87	NS
Girls	61	57.34	15		

From the above table it is found that the mean difference of mathematics scores is 2.34 with t-value 0.87, which is again not significant. Therefore, the null hypothesis was accepted.

H4: There is no significant difference in mathematics performance of boys and girls having low self-concept.

Table - 7
t-Test : Performance in mathematics between Boys & Girls having Low self-concept

Students	N	Mean	SD	t-value	sign
Boys	27	46.56	11.54	2.09	**0.05**
Girls	28	54	14.54		

The difference of scores in mathematics between Boys & Girls in the above Table is 7.46 and t-value 2.09, which is found significant at 0.05 level. Therefore, the null hypothesis was rejected and it was concluded that the difference was significant.

Table - 8
Significant Differences in Performance of Mathematics

S.No	Students With	Performance in Maths
1.	High & Average self-concept	Sign (p =0.01)
2.	High & Low self-concept	Sign (p =0.01)
3.	Boys & Girls with Low self-concept	Sign (p =0.05)

10. DISCUSSION

The students with different levels of self-concept perform differently in their subject Mathematics. Students with high self-concept and students with Average self-concept have shown variation in their achievements. Students with high self-concept found performing better than students keeping Average self-concept in mathematics. At the same time, students with High & Low self-concepts were also seen variant in their performances in mathematics significantly, categorically students with high self-concept performed higher in mathematics than students having low self-concept. However, gender is seen having low bearing on relationship between self-concept and performance in mathematics. It is observed that the Boys and Girls with high and average self-concept did not differ in their performances in the subject; only Boys & Girls of low self-concept differed in their mathematics scores significantly. Girls were found a head than Boys in the performance in mathematics with both having low self-concept.

11. CONCLUSION

The self-concept of the children cannot be ignored, as empirically it can be said that it has got a lion's share in predicting and performing the most difficult subjects like mathematics. A positive relationship between self-concept and performance in mathematics could be drawn in the present study in most of the comparisons. The findings mostly corroborated many earlier studies as mentioned under literature reviews. Following are concluded.

1. The different levels of self-concept have got significance in the performance of mathematics of class VIII standard students studying in CBSE affiliated schools.
2. However, gender based self-concept and performance in mathematics have week relationship, as only difference of performance scores in mathematics of Boys & Girls were significant for those having low self-concept.
3. The relationship between self-concept and achievements in mathematics is direct and proportionate.
4. The students with high & average and high & low self-concepts differed significantly in their performances in the subject.
5. The Boys and Girls having low self-concept differed significantly in their achievements in mathematics.

12. SUGGESTIONS

Empirically, it has been established that the self concept of an individual has effect on the learning and performance. The self-concept is found at a central place in the behavior of students, which can facilitate the desired progress and achievements significantly. The following are recommended.

1. School administration and planning bodies to device a system for enhancing the self of students.

2. Students are to be facilitated to show case themselves in their talents. The children who are socially or economically marginalized and backward are provided with ample opportunities in co-curricular activities.
3. The students are to be inculcated with scientific bent of mind, to be educated about facts and ability to self analysis.
4. They are to be taught through projects and group activities which would develop healthy team spirit within and outside the ambit of the school.
5. The children are to be provided the feeling of usefulness and importance, compassion, cooperation, dignity of Labor and the knowledge of orderliness among the people and society.

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