

Relation of Parental Education and Occupation with Mathematics Self-efficacy and Achievement of students

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Parents' educational level and working statuses, (often considered as important determinants of parenting practices) are mostly found to influence academic performances of the students (Smith et al., 1997). According to Bandura's social cognitive theory, self-efficacy beliefs influence the choices people make and the courses of action they pursue. Individuals tend to engage in tasks about which they feel competent and confident and avoid those in which they do not. The objective of the present paper is to study the effect of parental education and occupation on self-efficacy belief of mathematics and mathematics achievement tasks in different groups of school students studying in class IV. The study was conducted on male and female students selected from different districts of West Bengal. Children's perceptions of self-efficacy for solving mathematical problems and achievement for that were measured through specially constructed tests. The whole data were divided on the basis of parental education into four groups and also the data were divided on the basis of occupation into four groups. Most of the mothers were found to be house-wife. One-way ANOVA indicated that self-efficacy belief and achievement tasks of students differed with respect to parental education and occupation of fathers. Mothers' occupation had no effect on students' self-efficacy and achievement. Correlation coefficient showed the significant relationship between self-efficacy and achievement among maximum groups. Thus, the present study supports the parental education and occupation are significantly related with self-efficacy belief and achievement of students in mathematics. It can be said that students' efficacy judgments can be enhanced if parents are educationally qualified and professionally well-settled.

العلاقة بين مهنة ومستوى تعليم الوالدين وبين تحصيل الطلاب وإحساسهم بالكفاءة الذاتية في الرياضيات

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هدفت هذه الدراسة إلى تعرف أثر مهنة ومستوى تعليم الوالدين على تحصيل الطلاب وإحساسهم بالكفاءة الذاتية في الرياضيات. شملت عينة الدراسة طلابا ذكورا وإناثا من بعض المدارس في غرب البنجال. قام الباحثان بتصميم أدوات لقياس تحصيل الطلاب وإحساسهم بالكفاءة الذاتية في الرياضيات. وتم تقسيم مستوى تعليم الوالدين إلى أربعة مستويات، وكذلك تم تقسيم وظائفهم إلى أربعة مجموعات. أظهرت النتائج وجود علاقة بين تحصيل الطلاب وإحساسهم بالكفاءة الذاتية في الرياضيات وبين مستوى تعليم الوالدين وظيفه الأب، بينما لا يوجد أثر لوظيفة الأم. ومن ثم تظهر النتائج وجود علاقة إيجابية بين تحصيل الطلاب وإحساسهم بالكفاءة الذاتية في الرياضيات وبين مهنة ومستوى تعليم الوالدين.

INTRODUCTION

Parenting is a complex activity that includes many specific behaviors that work individually and together to influence child outcomes. Parenting is the process of promoting and supporting the physical, emotional, social, and intellectual development of a child from infancy to adulthood (Davis & Martin, 2000). Parenting may be defined as purposive activities aimed at ensuring the survival and development of children. Children follow the values imbibed by their parents. Their attitudes, values and interaction all determine child's behavioural pattern and personality. Parents set the stage for the development of many important personality characteristics and provide experiences both within and outside the home. Parenting behavior is a complex network of many variables, which exert great influence on parenting patterns (Kang & Jaswal, 2006). Educational level of parents and occupation of father are two of them. The most important function of parents on the one hand is to provide food, shelter and on the other hand educational guidance to the children. If both mother and father are educated, they cannot give only proper guidance in the field of education, but also help their children to grow as a complete person mentally and physically. They help to increase children's self-efficacy and achievement in their study.

Self-efficacy is the judgment of personal capabilities to organize and affect courses of action to attain goals. It is a multi-dimensional construct which influences human functioning directly or indirectly through its effects on other determinants (Bandura, 1997) such as motivation, attribution, self-regulation and emotion.

Parents of higher educational levels give their children more freedom

than those of lower educational levels. They can help the children in their education when they need it. Otherwise if the parents are less educated they could not help the children in their education. The children of less educated parents always have to depend on others for their study. If the children get help from their parents in their education they do well in their school performance. Their achievement levels become high. Parental education directly and positively influences the achievement of students (Jimerson, Egeland, & Teo, 1999; Kohn, 1963; Luster, Rhoades, & Haas, 1989). Drazen (1992) showed that level of parental education was related to the performance of their children in the area of reading and math achievement. Heller and Fantuzzo (1993) showed a high correlation between the level of parent education and the academic achievement of their children in the school. In 1993 a study by Benjamin revealed that a child's achievement in school, particularly reading level is influenced by the level of the mother's education which is one of the most important factors that affect child's achievement.

Parents who are employed can provide all the facilities to their children whatever they need. If the children have a healthy diet they can concentrate on their study properly. If they got good numbers of books they can learn more. All the factors depend on the occupational conditions of the parents. Smith et al. (1997) found association of family income and parents' education with children's academic achievement was mediated by the home environment. The mediation effect was stronger for maternal education than for family income.

From the above studies it is observed that parental education and occupation of parents has an important

role to play in achievement of the students in the area of mathematics. But it has not been studied how mathematics self-efficacy is related with parental education and occupation of parents particularly in primary school students of West Bengal. Therefore, the objective of the study is to find out the relationship of parental education and occupation with mathematics self-efficacy and achievement of students of West Bengal.

METHOD

- ❖ Participants - Participants of the study were primary school students selected from both urban and rural areas of different districts of West Bengal. 446 students reading at the terminal class of primary school i.e. in class IV were randomly chosen from the selected urban and rural schools of the different districts. Due to some missing information and outliers the final sample size was found to be 388, out of which there were 169 boys and 219 girl students. The mean age of the students is 9.46 years (S.D. = .81).
- ❖ Measures used - The following measures were used in this study: -
 - *Self-efficacy judgments:* - Children's perceptions of self-efficacy for solving mathematics problems on subtraction, division and simplification (2 questions for each dimension) were measured. Each question was shown to each student for ten seconds respectively to know the self-efficacy perception of these students about these questions. Then efficacy judgment for each student on all the six questions were taken on a four-point scale - ranging from 1 to 4 with verbal descriptors as 1 = Not sure, 2 = Maybe, 3 = Pretty sure, and 4 = Real sure. The children were shown the

problems in such a way that they could judge their capabilities to solve the problems. However, they were asked not to solve the problems at that time. The alpha coefficient of the scale in this study was found to be 0.87.

- *Achievement test for mathematics:* - Achievement measures in the area of mathematics for subtraction, division and simplification were constructed. Two problems for each dimension subtraction, division and simplification were prepared which were not from the textbooks used in the school, but were based on the syllabus. These six problems; two each from subtraction, division and simplification were given to the students to solve and they were provided sheets of paper for solving the problems. There was no time limit but they were instructed to solve the problems as quickly as they can. The alpha coefficient of the measure in this study was found to be 0.78.

Besides these, some biographical information like age, gender, parental education, socioeconomic condition of the family, etc. were also taken from the students. Initially rapport was established with the students and then the data were collected in the classroom of the selected schools.

RESULTS

The data collected from the students of three districts were first scrutinized and then raw scores were calculated. The whole data were divided on the basis of parental education into four groups namely, (i) up to class 10, (ii) Secondary to Higher Secondary (iii) Graduation and Post Graduation and (iv) Illiterate. And the data were divided on the basis of occupation into four groups namely, (i) service, (ii) business,

(iii) cultivator, (iv) daily wage laborers. Most of the mothers were found to be house-wife. Means and standards deviations for different groups of parental education and occupation on self-efficacy and achievement were

calculated separately. One-way ANOVA was done to see the significant differences among these four groups on self-efficacy and achievement in mathematics and the results are presented in Table - 1.

Table 1: F - values of parental education and occupation on self-efficacy and achievement among all groups of students

	Dimensions	Urban Boys (N = 69)	Urban Girls (N =106)	Rural Boys (N = 100)	Rural Girls (N =113)
Father's education	Self-efficacy	6.84**	19.05**	8.95**	2.78*
	Achievement	7.42**	24.12**	5.96**	3.33*
Mother's education	Self-efficacy	3.92**	14.82**	6.89**	5.79**
	Achievement	3.21**	24.12**	6.94**	4.14**
Father's occupation	Self-efficacy	21.59**	35.14**	4.09**	.64
	Achievement	7.68**	40.09**	4.19**	3.64*
Mother's occupation	Self-efficacy	.40	1.84	.01	1.94
	Achievement	.04	1.78	.06	.01

* Significant at 0.05 level ** Significant at 0.01 level

From the Table 1 it is found that parental education and occupation have significant effects on self-efficacy and achievement among all the groups. It indicates that different levels of education of parents help students to build their self-efficacy and to achieve success in their studies. As because most of the mothers are found to be housewife so there is no significant effect of mother's occupation on student's self-efficacy and achievement.

From the Post Hoc analysis it is found that urban boys and urban girls whose fathers and mothers are graduate and post graduate are significantly higher on mathematics self-efficacy and achievement than the students whose fathers read up to class 10 and also than the students whose fathers are illiterate. Students whose fathers are in service and business are significantly higher on self-efficacy and achievement than the students whose fathers are cultivators.

Rural boy students whose fathers are graduate and post graduate

are significantly higher on self-efficacy than the students whose fathers read up to class 10 and also than the students whose fathers are illiterate. Rural girl students whose fathers passed secondary or higher secondary are significantly higher on self-efficacy than the students whose fathers are illiterate on achievement. The rural boy and girl students whose mothers study up to class 10 are also significantly higher on self-efficacy and achievement than the students whose mothers are illiterate. Rural boy and girl students whose fathers are in service or business are significantly higher on self-efficacy and achievement than the students whose fathers are cultivators.

To see the relation between self-efficacy and achievement among all the groups of parental education and occupation correlation coefficient were done and the results were presented in Table 2.

Table 2:

Correlation coefficient between self-efficacy and achievement among all the groups of students

Dimension	group	Total (N = 388)		Boys (N = 169)		Girls (N = 219)	
		N	r- values	N	values	N	values
Father's education	1	219	.52**	101	.43**	118	.58**
	2	44	.63**	20	.47**	24	.74**
	3	83	.29**	25	.17	58	.45**
	4	42	.42**	23	.36	19	.57*
Mother's education	1	180	.60**	80	.49**	100	.66**
	2	60	.60**	14	.50	52	.70**
	3	29	.26	13	.50	16	.49
	4	113	.43**	62	.40**	51	.46**
Father's occupation	1	93	.64**	34	.65**	59	.70**
	2	119	.65**	55	.48**	64	.79**
	3	96	.46**	34	.51**	62	.43**
	4	80	.44**	46	.27	34	.66**
Mother's occupation	1	353	.66**	148	.54**	205	.75**
	2	35	.61**	21	.61**	14	.67**

Father's education:

- 1 = up to class 10
- 2 = Madhyamick & H.S.
- 3 = Graduation & Post Graduation
- 4 = Illiterate

Father's occupation:

- 1 = Service
- 2 = Business
- 3 = Cultivator
- 4 = Daily wage laborer

Mother's education:

- 1 = up to class 10
- 2 = Madhyamick & H.S.
- 3 = Graduation & Post Graduation
- 4 = Illiterate

Mother's occupation:

- 1 = Housewife
- 2 = Working

From the Table 2 it is found that there are highly significant relationship between self-efficacy and achievement among maximum groups. There is no significant correlation between self-efficacy and achievement of the students whose mothers study up to graduation and post graduation.

DISCUSSION

The findings of the study suggest that the different levels of education of parents help students to enhance their self-efficacy and achievement in mathematics. Father's education and occupation have much more significant effect on mathematics

self-efficacy and achievement than mother's education and achievement except in case of rural girls. As because most of the mothers belong to housewife group they have no effect on their children's self-efficacy and achievement. They are most of the time busy with their household works. So maybe they don't get time to help their children in their education. The students whose parents are graduate and post graduate are significantly higher on self-efficacy and achievement in majority of the groups. It is due to the education, because when parents are highly educated they encourage children to their education and try to enhance their

self-efficacy. They also help students in solving their mathematical problems. So these students get help both from school and parents and they automatically perform better than the other students. The students whose fathers are in service or business do better than the students whose fathers are cultivator. There is no significant effect of father's occupation on self-efficacy in rural girls. This is may be due to the fact that girls are not been taken seriously for study. So may be the fathers do not encourage them much to build their self-efficacy.

The results indicated highly significant correlations among self-efficacy and achievement in mathematics of the students. But there is no significant correlation has been found between self-efficacy and achievement in mathematics of the students whose mothers study up to graduation and post graduation. This is may be due to that higher education of mothers does not promote students to increase their

self-efficacy or to achieve success in mathematics.

CONCLUSION

From the study it can be concluded that parental education and occupation of father has significant effect on self-efficacy and achievement in mathematics of the students. As because most of the mothers are housewives they have no significant effect on children's self-efficacy and achievement. Significant relationship has been found among self-efficacy and achievement in mathematics of most of the groups. So it can be said that students' efficacy judgments can be enhanced if parents are educationally qualified and professionally well-settled.

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