

A STUDY OF HOME ENVIRONMENT, INTELLIGENCE AND THEIR EFFECT ON ACADEMIC ACHIEVEMENT OF UNDER-GRADUATE STUDENTS

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Abstract

Main aim of study is to evaluate influence of home environment and intellectual ability on the academic achievement of children. Before selecting sample of the study, a heuristic survey of major colleges in Bhandara city was carried out. Two major colleges were selected where both boys and girls were taking education. After seeking necessary permission of respective authorities, lists of students were prepared. By using random number tables 80 students were selected on the basis of their demographic data mentioned in college registers. Age range of the Ss was 17 to 20 years. Home Environment Inventory constructed and developed by Karuna Shankar Mishra. and Culture Fair Test of 'g' constructed and standardized by R. B. Cattell and A.K.S. Cattell. In this study Culture Fair Test Scale 3, Form A was used. A 2x2 factorial design was used. Intelligence and dimensions of home environment were treated as independent variables. Mean and SD were also used as descriptive statistics. Result indicated that the data were treated by two-way ANOVA and the significant interaction of protectiveness the sub-factor of home environment tells us that in the process of developing or improving academic achievement, protectiveness (HE) home environment and intelligence functioned in collaboration with each other but on the sub-factor punishment the non-significant interaction effect points out, the fact that in the process of developing academic achievement, factors of punishment, home environment (HE) and intelligence functioned independently.

Keywords: Intelligence, home environment and academic achievement.

Introduction:

Education is deeply rooted within society and it cannot be desolated in any way. Knowledge, awareness, skills, values, interest, aptitude, creativity, intelligence and attitudes acquired through education enhances the desired quality of life. This quality could be increased with the quality of education with the development of the psychological variables such as the intelligence, creativity, self-concept and others. It is the creativity that has enhanced the quality of life and every aspect of life. The most important aspect of creativity is the ability to think or imagine in a different way, Abesha, A.G. (2012).

Academic Achievement:

Intelligence and academic achievement both are two faces of the same coin. Each child is unique and different in their mental ability. Different level of intelligence leads to increase different level of learning abilities. The present study is focusing on the relation between the intelligence and Academic achievement. Intelligence plays a very important role on their children's academic achievement. Different levels of intelligence are influencing in different level performance and curriculum achievement of the children. Faulty parenting also has an influence on a child's achievement. Over protective parents give children over-valuation, adoration, and delicate care. Black ham (1968) showed that these make a child weak in achievement and the child fails in coping with external expectations. It has gender variations also. Over protection is more harmful for boys than girls in terms of development (Kagan and Moss, 1962).

Intelligence:

Intelligence is the aggregate or global capacity of an individual to act purposefully, to think rationally and to deal effectively with the environment. General intellectual functioning (referred to as intelligence quotient) typically refers to one's global or overall level of intelligence. Intelligence quotient (IQ) is critical for independent participation in core activities such as education, self-care, and in later life, employment and living independently. Measures of 'Global IQ' reflect an individual's overall 'ability to understand complex ideas, to adapt effectively to the environment, to learn from experience, to engage in various forms of reasoning, and to overcome obstacles by taking thought', Asawa k., Pujara P., Thakkar J.P., pandya B. G., Sharma A.R., Pareek S., Tak A., M. and Maniar R. (2014).

• Wells: "Intelligence is the property of recombining our behaviour pattern so as to act better in a novel situation." • In William stern's opinion, Intelligence is the ability to adjust oneself to a new situation".

Home environment:

Home environment refers to aspects of people's domestic lives that contribute to their living conditions. These factors may be physical (poverty, psychological conditions due to parenting; social circumstances (Empty nest, living alone etc or wider cultural patterns of life related to the location (Suburban environments, Urban Environments).

The word "home" can be used for various types of residential community institutions in which people can live, such as nursing homes, group homes (orphanages for children, retirement homes for seniors, prisons for criminals, treatment facilities, etc.), and foster homes.

Review of Literature:

Joshi, S., and Srivastava, R. (2009), conducted a study which revealed that there is positive and significant relationship between academic achievement and intelligence of intellectually gifted students. Further, the study revealed that there is significant gender difference in academic achievement of intellectually gifted students in favour of girls. Binet A. (1916). found that the fluid intelligence could be decomposed in such a way that the resulting components showed different properties and contributed differently to the prediction of academic performance. Results also corroborated the influence of intelligence on academic achievement. Kamble (2014) conducted a study on the impact of family environment on academic performance. The result of the study revealed that family environment has a positive impact on academic achievement. It also found that, good quality of family environment had more significant positive correlation with 'high' level of academic performance and had more significant positive effect on 'high' level of scholastic achievement of students. Singh (2013) conducted a study on the impact of family environment on academic achievement of secondary school science students. The result found that school performance has significant and positive relationship with students. Chawla (2012) conducted a study to test the relationship between family environment and academic achievements among 200 randomly selected students. The result found that family environment score was positively correlated with the academic achievement of the students.

Aim of the study:

Main aim of study is to evaluate influence of home environment and intellectual ability on the academic achievement of children.

Objectives of study:

- To measure protectiveness dimension of home environment and examine whether children brought up in high protective environment and those brought up in low protective environment differ from each other significantly on academic achievement or not.
- To find out whether the Ss classified as having relatively high IQ and those having relatively low IQ and brought up under high or low protective home environment differ from each other significantly on academic achievement or not.
- To measure punishment dimension of home environment and search whether children brought up in high punishment environment and those brought up in low punishment environment differ from each other significantly on academic achievement or not.
- To search whether the Ss classified as having relatively high IQ and those having low IQ, and were brought up under high and low punishment home environment differ from each other significantly or not on academic achievement.

Hypotheses:

Assuming that the other factors are kept constant, it is hypothesized that,

- Children brought up in high protective home environment have significantly low academic achievement than those brought up in low protective environment.
- Under the dimension of protectiveness, the Ss categorized as having high IQ have significantly better academic achievement than those categorized as low IQ.
- Children brought up in high punishment dimension of home environment have significantly low academic achievement than the children brought up in low punishment dimension of home environment.
- Under the home environment dimension of punishment, the Ss categorized as high IQ have significantly better academic achievement than the Ss categorized as low IQ.

Methodology:

1) Sample:

Before selecting sample of the study, a heuristic survey of major colleges in Bhandara city was carried out. Two major colleges were selected where both males and females were taking education. After seeking necessary permission of respective authorities, lists of students were prepared. By using random number tables 127 students were selected on the basis of their demographic data mentioned in college registers. This precaution was taken to select the Ss coming from more or less similar background. These selected Ss were administered one scale and one test. Home environment inventory was administered to understand the nature of home environment in which the Ss were developed. Culture Fair Test of Intelligence was administered to measure intelligence of the Ss. Since, in the study a factorial design was used, the total sample was divided into four classified groups on the basis of specific dimension of home environment and IQ obtained by the Ss. Of the ten dimensions of home environment only in the first two dimensions were used in this study. In case of first two dimensions, in each case minimum cell frequency was found around 20. Hence in each of the four classified group's equal cell frequency was kept. In the groups having more than 20 cell frequency, the extra subjects were deleted randomly. Finally, effective sample consisted of 80 Ss only. Age range of the Ss was 17 to 20 years. Male female ratio was odd. Educational standards were undergraduates.

Tools Used for Data Collection:

Following well developed psychological instruments were used for data collection.

Home Environment Inventory:

The inventory was constructed and developed by Karuna Shankar Mishra. The inventory consists of 100 statements. Each statement is provided with five alternatives namely, mostly, usually, seldom, very less, and never. Each statement is framed in such a way that it depicts one of the ten dimensions of home environment. According to author, the inventory measures ten dimensions of home environment. The ten dimensions are – control, protectiveness, punishment, conformity, social isolation, reward, deprivation of privileges, nurturance, rejection and permissiveness. Related to each dimension there are ten statements. Scoring procedures suggests to assign 4 scores to 'mostly' response, 3 score to 'usually', 2 score to 'seldom' 1 score to 'very less' and zero score to never responses. The author computed split half reliability for each of the ten dimensions. High to very high reliability coefficients were reported, minimum value of reliability coefficient was 0.73 for permissive dimension, and maximum value was 0.95 for punishment dimension.

Culture Fair Test of 'g':

This is an intelligence test, constructed and standardized by R. B. Cattell and A.K.S. Cattell. In this study Culture Fair Test Scale 3, Form A was used. The scale consists of four subscales. In the first subscale there are three practice examples and thirteen problems. In order to understand the instructions, the S had to practice on the three examples. When the ready signal is given the S has to work on problems as fast as he/she can. For each subscale there is a fixed time. In subtest no. 2, there are only two practice examples, and 14 problems. Subtest no. 3 has three practice examples and 13 problems whereas in subtest no. 4 there are three practice examples and only ten problems. This is a highly reliable test of intelligence. The authors have reported several reliability coefficients. Its validity is very high.

Procedure of Data Collection:

The Ss were called in small groups of 10 to 15 only. Their seating arrangement was made in a classroom. Sufficient distance between two students was kept so that one can't see the responses written by the other. Through informal conversation rapport was established. Copies of Home Environment Inventory and culture fair test Scale 3, Form A were distributed among them. They were given following instructions:

"Incidences given on the following pages describe the atmosphere of your house. These incidences are related with you and your parent's behaviour. Your parents, till today, might have done these behaviours '**Mostly, Usually, Seldom, Very less, or Never**'. Read every behaviour statement carefully and think how many times your parents have used this. Give your answer by putting a cross mark in the box given under '**Mostly, Usually, Seldom, Very less, or Never**' against each statement. So cross (x) is marked under the box 'Mostly', No answer is right or wrong for any behaviour. Answer quickly. Ask, if there is any doubt. There was no time limit. Sufficient time was given to the Ss to write the responses. Filled copies of the inventory were collected at the end.

Immediately after completion of home environment inventory copies of Culture Fair Test were distributed among the Ss. The Ss were told not to open the booklet unless they are asked to do so. For the four subtests they were instructed.

In order to know about academic achievement of the Ss, marks obtained by them in the last final examination were collected from the office records.

Variables under study:

Since this was a factorial design, some of the variables were treated as independent variables and some were dependent variables. Independent variables were protectiveness, punishment and intelligence. Each independent variable was varied at two levels. Dependent variables were gender and academic achievement.

Research design:

A 2x2 factorial design was used. Intelligence and dimensions of home environment were treated as independent variables. Each dimension was treated independently, and was varied at two levels.

Statistical Treatment of Data:

Mean and SD were used as descriptive statistics; for drawing conclusions Two Way Analysis of Variance was used.

Results and Discussion:

Present study is related with three major factors, they are types of home environment, intelligence, and academic achievement. Of these three factors the first two were treated as independent variables and gender as well as academic achievement as dependent variable. The first type of home environment was protectiveness. It was varied at two levels and denoted as A1 and A2; here A1 stands for high protectiveness and A2 stands for low protectiveness. While B1 stands for high intelligence and B2 stands for low intelligence. Means and SDs obtained by the four classified groups on academic achievement are presented in the following table.

Table No. 1: Means and SDs Obtained by Four Classified Groups (Protectiveness)

	A1 B1	A1 B2	A2 B1	A2 B2
\bar{X}	45.50	43.10	48.70	44.55
S	2.06	1.92	1.63	1.70

A1 = High Protectiveness A2 = Low Protectiveness

B1 = High IQ B2 = Low IQ

The four classified groups shown in table no.1 are based on two independent variables, namely protectiveness, home environment(HE) and intelligence. Each of the two independent variables were varied at two levels. Following the earlier mentioned criteria of P40, P60 the Ss were classified as having high protectiveness HE and low protectiveness HE, likewise, those having HI and LI. Means and SDs obtained on academic achievement measure by the four classified groups are shown in table No.1. It could be seen that most of the groups obtained more or less similar mean values, but group A2B1 had relatively large mean value. With 48.70 mean and 1.63 SD, this group seems to be superior to other three groups. But since the remaining three groups had more or less similar mean values, the groups might not differ from each other significantly. Still, to be on the safer side, the data were treated by two-way ANOVA. Summary of ANOVA is presented in following table.

Table No. 2: Summary of Two-Way ANOVA for Academic Achievement (Protectiveness)

Source of Variation	SS	Df	MS	F
A: Protectiveness	108.11	1	108.11	32.10**
B: IQ	214.51	1	214.51	63.70**
A x B:	15.35	1	15.35	4.55*
Within:	255.95	76	3.37	
Total	593.92	79		

* Significant at .05 level

** Significant at .01 level

Main effect A represents protectiveness HE, which was varied at two levels as high protectiveness HE and low protectiveness HE. It was believed that these two broad groups differ significantly from each other on academic achievement. From the F value obtained by main effect A it is clear that the two groups differ significantly from each other. Main effect A is associated with an F value of 32.10, which for 1 and 76 df is significant beyond 0.01 level. It means the mean values obtained by the two broad groups differ significantly from each other. Difference in the means of these groups can't be attributed to the factor of chance. Those Ss coming from low protectiveness HE had significantly better academic achievement than the Ss coming from high protectiveness HE.

Factor of intelligence was denoted by main effect B. this factor was also varied at two levels. It was assumed that the H1 & L1 groups differ significantly from each other on academic achievement measure. Main effect B is associated with an F value of 63.70, which is much larger than what is required to be significant at 0.01 level, when the df are 1 and 76. It shows that H1 and L1 groups differ significantly from

each other on academic achievement measure. From the mean values it is clear that the H1 group was significantly superior to L1 group in academic achievement. These results also demonstrate that there is strong association between intelligence and academic achievement.

Summary of ANOVA shows that interaction AxB is significant ($F=4.55$, $df = 1 \text{ \& } 76$, $p < 0.05$). This significant interaction tells us that in the process of developing or improving academic achievement protectiveness HE and intelligence functioned in collaboration with each other.

There is no dearth of homes in India, in which parents even today feel that punishment is necessary for disciplining the children. Obviously one of the types of home environment is punishment. Considering the degree of punishment, the Ss were divided into two broad groups, namely high punishment HE and low punishment HE. Considering the factor of punishment, HE and intelligence the Ss were divided into four classified groups. Means and SDs obtained by the four classified groups are displayed in the following table.

Table No. 3: Means and SDs Obtained by Four Classified Groups (Punishment)

	A1 B1	A1 B2	A2 B1	A2 B2
\bar{X}	44.85	43.00	48.20	45.35
S	2.73	2.10	2.12	1.60

A1 = High Punishment A2 = Low Punishment

B1 = High IQ B2 = Low IQ

Careful examination of means and SDs given in table no. 3 tells us that distribution of scores in each of the four classified groups was more or less normal. The data could be easily treated by parametric statistical techniques. In three groups namely A1B1 and A2B2 the mean values are more or less similar. Only group A2B1 had shown relatively large mean value ($\bar{X}=48.20$, $SD=2.12$). Lowest mean value was obtained by Gr. A1B2 ($\bar{X}=43.00$, $SD=2.10$). Though three groups obtained more or less similar mean values, difference in the highest and lowest mean values is large; hence it is difficult to say whether the groups differ significantly or not, from one another. When the data were treated by two-way ANOVA, the picture became clear. Summary of ANOVA is given in the following table.

Table No. 4: Summary of Two-Way ANOVA for Academic Achievement (Punishment)

Source of Variation	SS	Df	MS	F
A : Punishment	162.45	1	162.45	33.89**
B : IQ	110.45	1	110.45	23.04**
A x B :	5.00	1	5.00	1.04
Within :	364.30	76	4.79	
Total	642.20	79		

**** Significant at .01 level**

In the summary of ANOVA given in the above table factor of punishment HE is represented by main effect A. it has brought out significant results ($F=33.89$, $df= 1 \text{ \& } 76$, $p < 0.01$). Difference in the means obtained by broad groups high punishment HE and low punishment HE is so large it can't be attributed to the factor of chance only. In other words, the difference in the means of these groups had occurred primarily due to the difference in the degree of punishment in two different home environments. These results are in congruence with the assumption of study.

Factor of intelligence was also found strongly associated with academic achievement. This could be observed from the results yielded by main effect B, which represents the factor of intelligence. From summary of ANOVA one could see that main effect B yielded an F value of 23.04, which for 1 and 76 df is significant at 0.01 level. It is a clear indication that the H1 & L1 groups differ significantly from each other regarding their academic achievement. The mean value obtained by H1 group is larger than the mean value obtained by L1 groups. So, without hesitation it could be asserted that, in academic achievement H1 group was significantly superior to that of L1 group. These results support the assumption of study. Interaction AxB was non-significant ($F=1.04$, $df= 1 \text{ \& } 76$, $p > 0.05$). This non-significant interaction effect points out the fact that in the process of developing academic achievement, factors of punishment HE and intelligence functioned independently.

Conclusion:

Eighty Ss served as effective sample of study. Age range of the Ss was 17 to 20 years. They were administered home environment inventory, and Culture Fair Test of intelligence. Since a 2x2 factorial design was used the sample was distributed into four classified groups. The IVs were home environment and

intelligence, each was varied at two levels. First, the data were treated by mean and standard deviation, and finally by two-way ANOVA. On the basis of results following conclusions were drawn.

- Means and SDs obtained on academic achievement measure by the four classified groups are shown that most of the groups obtained more or less similar mean values, but group of low protectiveness and high intelligence (A2B1) had relatively large mean value. It means that the group of low protectiveness children having high intelligence.
- The Ss brought up in high protectiveness home environment (HE) was significantly poor in academic achievement to those brought in low protectiveness HE.
- Academic achievement of H1 group was significantly better than that of L1 group.
- In three groups namely A1B1 and A2B2 the mean values are more or less similar. Only group A2B1 had shown relatively large mean value.
- Those Ss brought up in low punishment home environment (HE) had significantly better academic achievement than those brought up in high punishment HE.
- The Ss with H1 had significantly better academic than the Ss with L1.

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