

## Role of Home Environment in Cognitive Development of Children

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The association between home environment and children cognitive development is a complex conceptual issue. Home environment is the basic and essential nurturing support system for all the individuals. The most significant impact on an individual's behavior perception and development comes from their family, which is their social biological unit. Parents are the role models for their children and they play important role in their life. Children go through different stages in life, so each members of family has their unique way of parenting that effect on children cognitive development. Parents may be strongly involved in the growth of their children by helping them gain understanding through thoughts and spending time learning with them. This study looked at the relationship, gender differences, and prediction between family environment and cognitive development in 30 girls and 30 boys from Haryana, India, who was between the ages of 4 and 6. The results showed significant gender difference on visual perception ( $t=4.81$ ,  $p<.01$ ) and total score of cognitive development ( $t=2.142$ ,  $p<.05$ ), stepwise regression revealed home environment as the only potent predictor of cognitive development which contributed 30% of total cognitive development among children.

**Keywords:** Home Environment, Cognitive Development, Family, Development.

Child development includes the psychological, physiological, and emotional changes that take place between birth and the attainment of puberty in humans. The age ranges from infancy to the age of 6 years is very typical. During this phase, major milestones of life take place such as learning to walk, crawl, and first words. It is an on-going process with a conventional series, yet there has been an exceptional path for each child. Sometimes, children do not grow at a similar speed and every phase is influence by prior life experiences. Hereditary factors affect the prenatal period.

### Home Environment

The home environment provides an effective environment for a child's overall development and learning. The home learning environment includes parents reading with their children, teaching songs

and nursery rhymes, playing with numbers and letters, drawing, painting, and learning different types of alphabets.

A healthy home learning environment helps children to have a positive attitude towards learning, to be interested, and to have self-confidence. However, the most important aspect is their relationships with family members who provide protection, care, affection, motivation, conversation and serve as positive role model that facilitate child cognitive development. Children gain a different kind of knowledge at home through books, puzzles, games, computers, and problem-solving activities which help in thinking. Parents may be strongly involved in the growth of their children by helping them gain understanding through thoughts and spending time learning with them. Academic honesty is not maintained when children are forced by his/her parents to achieve good

grades (Taylor et al. 2002). So, a healthy home environment and good care from the parents will enable children to have good physical, intellectual, cognitive, and psychosocial development.

Anders et al. (2012) looked into how early numeracy skills develop in relation to the importance of preschool, the family environment, and preschool education. Early in preschool, there was a high correlation between numeracy skills and the home education environment; this relationship persisted later.

### **Cognitive Development**

Cognitive development is the act of obtaining, storing, recalling, and applying environmental information. It also includes increases in thinking, problem-solving, reasoning, and learning. The study of the world is also a part of it. Human development researches focus on behavioral change, development, and growth concerns over the lifespan. The term cognition is used to explain the psychological process involved in the gaining, organization, and use of knowledge emphasizing the rational rather than emotional characteristics. Cognition refers to the processing of information about the environment that is received through the senses. Cognition is the mental process that includes (attention, perception, memory, and information processing) and with the help of this process individual acquires new knowledge, ideas, solves problems, and plans for his/her future.

Cognitive abilities are the function of the brain and develop with age. As the brain matures more and more abilities develop, not only in number but also in quality. The infant initially can only take in the information but gradually he develops the ability to process this information and use it for his benefit. This growth and refinement of cognitive abilities are referred to as cognitive development and it is defined as the process of growth and

change in the intellectual/mental abilities of a person that includes thinking, reasoning and understanding. It is influenced by several factors like parents, family members, friends, teachers, and caregivers by providing an environment that unfolds the cognitive growth.

Robert H. Bradley and Bettye M. Caldwell (1979) Conduct a cross lagged study on children's. The result shows that the significant difference in higher levels of maternal involvement and low level of maternal involvement children's ( $p < 0.05$ ) groups in home. Higher levels of maternal involvement in home play significant role to enhance cognitive capability of children's.

Wolfgang and Stenenas (1985) conduct a study on pre-schoolers home environment as a predictor of cognitive development. The result shows that the positive relation between play with different toys at home and cognitive development.

### **Objectives**

- To assess and compare boys and girls on home environment.
- To assess and compare girls and boys on Cognitive development.
- To study the relationship between home environment and cognitive development.
- To find out the predictors of Cognitive development among children.

### **Hypotheses**

- Boys would differ significantly from girls on the variable of home environment.
- Boys would differ significantly from girls on the variable of cognitive development.
- There would be positive relationship between home environment and cognitive development.

- The variables of home environment would emerge as significant predictor of cognitive development.

### Method

#### Sample

The proposed study was conducted on a sample of 60 children of 4 to 6 years. Out of 60, 30 were boys and 30 were girls.

#### Tools

To measure the home environment of respondents Home Inventory for children was used. The Indian Adaptation of Home Inventory for Children in Hindi version was used. It was developed and standardized by Adarsh Kohli, Manju Mohanty & Rajinder P. Kaur, 2005. It consists of 6 sub-tests these are Home Environment, Language Stimulation, Physical Environment, Modeling, Academic Environment, and Variety. The test consists of a total of 35 items in this test. The test applies to the age group of 3 to 6 years old children.

To measure the cognitive development of respondents Pandey's Cognitive Development Test was used. It was developed and standardized by Dr. Hema Pandey. The scale consists of six subtests these are Conceptual skills, Information, Comprehension, Visual perception, Memory, and Object vocabulary. The test applies to the age group of 3+ years old children.

#### Procedure

The data was collected from schools of the children with their parental consent. After seeking their consent, the time and place for assessment was fixed depending on their availability. The testing sessions were conducted in the room setting with adequate facilities for ventilation, light and proper sitting arrangements. All the tests were administered on the child under their parental supervision. After the collection of

data, scoring was completed according to the respective manuals.

### Results

The aim of the present study was to examine the relationship and gender differences between home environment and cognitive development and to find out the predictors of cognitive development among children.

Table 1 show that the significance of gender difference between girls and boys children. As concerns, no significant gender difference was found between girls and boys ( $t=.848$ ) in home environment the sub-dimension of home inventory. The mean score indicated that boys (mean=7.77, SD=2.128) scored a little better than girls (mean=7.3, SD=2.136, however, the mean difference was not statically significant. Language stimulation the sub- dimension of home inventory there is no significant difference between girls and boys ( $t=0$ ). The mean score indicated that boys (mean=2.7, SD=.596) scored equal than girls (mean=2.7, SD=.535), however, the mean difference was not statically significant. Physical Environment the sub- dimension of home inventory there is no significant difference between girls and boys ( $t=.585$ ). The mean score indicated that boys (mean=2.97, SD=.765) scored a little better than girls (mean=2.83, SD=.986, however, the mean difference was not statically significant. Modeling the sub- dimension of home inventory there is no significant difference between girls and boys ( $t=.1489$ ). The mean score indicated that boys (mean=3.73, SD=.583) scored a little better than girls (mean=3.5, SD=.63, however, the mean difference was not statically significant.

Academic environment the sub- dimension of home inventory there is no significant gender difference were found between girls and boys ( $t=.1.054$ ). The mean score

indicated that girls (mean=3.47, SD=.73) scored a little better than girls (mean=3.27, SD=.74), but mean difference was not statically significant.

Table 1. Mean, SD and t value on the variable of Home environment of both groups

Variables	Gender	N	Mean	Std. Deviation	t- value
HE	Girls	30	7.3	2.136	0.848
	Boys	30	7.77	2.128	
LS	Girls	30	2.7	0.535	0
	Boys	30	2.7	0.596	
PE	Girls	30	2.83	0.986	0.585
	Boys	30	2.97	0.765	
MO	Girls	30	3.5	0.63	1.489
	Boys	30	3.73	0.583	
AE	Girls	30	3.47	0.73	1.054
	Boys	30	3.27	0.74	
VR	Girls	30	5.6	1.773	1.465
	Boys	30	6.2	1.375	
HI	Girls	30	25.40	3.95	1.34
	Boys	30	26.63	3.13	

Variety the sub- dimension of home inventory there is no significant gender difference were found between girls and boys (t= 1.465). The mean score indicated that boys (mean=6.2, SD=1.375) scored a little better than girls (mean= 5.6, SD= 1.773).

On the Variable of home inventory there is no significant gender difference were found between girls and boys (t=1.34). The results indicated that boys (mean=26.63, SD=3.13) scored a little better than girls (mean=25.40 SD=3.95), and the mean difference was not statically significant. The cause for the finding may be that parent equally treat their children and provide same facilities whether it is girl's child or boy's child. No gender differences were found in study conducted by Skwarchuk, S.L. et. al., (2022).

Table 2 indicates that the significance of difference between girls and boys children on the variables of cognitive development. There was significant difference were observed between girls and boys (t=2.142\*). The mean score indicated that boys (mean=56.017, SD= 4.854) scored better than girls (mean=53.133, SD=5.547) and the mean difference was statically significant.

Table 2. Mean, SD and t value on the variable of Cognitive development of both groups

Variables	Gender	N	Mean	Std. Deviation	t- value
Cognitive Development	Girls	30	53.133	5.5475	2.142*
	Boys	30	56.017	4.8539	

Michael, J. et. al., 2001 concluded that for verbal cognitive abilities boys showed greater heritability than girls. Ardl, A., et. al., 2011 also found that gender differences were observed in oral language, visual, spatial abilities and tactile perceptual task with boys outperforming than girls.

### Correlational analysis

Table shows that correlation between home inventory and cognitive development. Home environment the sub dimension of home inventory is positively and significantly correlated with, these sub dimensions of cognitive development that is Conceptual skills (r=.463, p<0.01), Information (r=.472, p<0.01), Memory (r=.461, p<0.01) as well as the total score of cognitive development (r=.549, p<0.01).The rest of the dimensions of cognitive development are not significantly correlated the sub dimension of home inventory.

Academic environment the sub dimension of home inventory is positively and significantly correlated with memory (r=.305, p<0.05) that are the sub dimension of cognitive development.

Table 3. Inter-Correlation matrix between variables of home environment and cognitive development

Variables	HF	LD	PE	LF	ED	DI	HI	CS	IF	CO	VP	ME	OV	CD
HE	1	.378**	-.171	.120	.133	.255*	.771**	.463**	.472**	.058	.199	.461**	.052	.549**
LD		1	-.028	.202	.189	-.015	.440**	.199	.165	.177	.045	.171	-.029	.230
PE			1	.085	.137	.222	.280*	-.006	-.159	.206	.042	-.114	.124	-.006
LF				1	.167	.012	.334**	.137	-.038	-.036	.134	.056	.061	.122
ED					1	-.098	.331**	.037	.189	.151	.131	.305*	.079	.225
DI						1	.631**	.216	.068	.091	-.048	.104	.093	.182
HI							1	.431**	.329*	.178	.163	.390**	.125	.508**
CS								1	.415**	.277*	.289*	.199	-.013	.803**
IF									1	.420**	.245	.446**	.018	.704**
CO										1	.190	.090	-.010	.483**
VP											1	.327*	-.040	.566**
ME												1	.087	.611**
OV													1	.121
CD														1

The total score of home inventory are positively and significantly correlated with, these sub dimensions of cognitive development that is Conceptual skills ( $r=.431$ ,  $p<0.01$ ), Information ( $r=.329$ ,  $p<0.05$ ), Memory ( $r=.390$ ,  $p<0.01$ ) as well as the total score of cognitive development ( $r=.508$ ,  $p<0.01$ ).

The study of Turan U., and Nidhi (2010), found that home environment have a significant relationship with child performance on all cognitive aspects. The greater the family interaction with children, higher was their cognitive score.

### Regression analysis

The last objective of the research was to determine the predictors of cognitive development. For fulfill that purpose, stepwise regression analysis is used to interpretation of the results. The regression

analysis showed that Home environment the sub dimension of home inventory emerged as predictor of the cognitive development ( $F=24.971$ ,  $p<0.01$ ) among children. The multiple R value is (.549) and  $R^2$  value is (.301) these revealed that Home facility describes the 30.1% variance in the cognitive development of children. According to the findings, value of regression coefficient is ( $\hat{\alpha}=.549$ ,  $p<0.01$ ). It revealed that home environment contributes positively to the cognitive development of children.

Table 4. Regression analysis (stepwise) dependent variable: Cognitive development

Variables	R	R square	R square (Change)	$\beta$	F	Sig.
Home Environment	.549	.301	.301	.549	20.132	.000

Similar evidence came from the study of Tong, S., et. al., (2007). They found that

home environment is independently and positively predictive of children cognitive development.

### Conclusion

The current study shows that home environment plays an important role in overall development of child. The findings of the study revealed that a healthy home environment helps the child to develop positive attitude towards learning. The results of this study further shows that there exists significant gender difference on cognitive development. The findings of this study also demonstrated that there is positive correlation between home environment and cognitive development. It indicates that children who have better home environment are high on cognitive development. Lastly home environment emerged as significant positive predictor of cognitive development.

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