COGNITIVE DEVELOPMENTAL PHENOMENA OF PRE-SCHOOL CHILDREN IN RELATION TO SOCIO-ECONOMIC STATUS, ANTHROPOMETRIC STATUS, AND HOME ENVIRONMENTAL STATUS

By

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ABSTRACT

The present study was a causality study that investigate the effects of conditional factors; if x, y & z are the independent factors (e.g. socio-economic status, Anthropometric status, and home environmental status) on the dependent factors (e.g. memory, social skill, language acquisition, logical reasoning, and problem solving). The present study assessed the relationship between socio-economic status, anthropometric status, and home environmental status to describe the cognitive developmental phenomena of pre-school children. Here, cognitive developmental phenomena like; memory, language acquisition was dependent variable, and the socio-economic status, anthropometric status, and home environmental status of the child was the independent variables. The researcher has followed simple-random sampling technique to draw the sample from the population. The researcher has randomly selected two pre-schools of Alipurduar district and out of the two schools; the researcher has randomly selected 60 pre-school students consulted with their parents to collect the data from both the children and the parents. It was found that anthropometric and home environmental status of the pre-school children related with cognitive developmental phenomena, but not the socio-economic status.

Keywords: Anthropometric Status, Cognitive Developmental Phenomena, Home Environmental Status, Pre-School Children, Socio-Economic Status.

INTRODUCTION

1. Cognitive Development

Cognitive developmental process includes remembering, problem-solving, and decision-making from childhood through adolescence to adulthood. Researchers have identified a broad range of cognitive competencies and described the remarkable progress of cognitive development during the early childhood years. Cognitive development implies the progressive changes in the mental processes which go on from birth to death. Mental process deals with activities involved in the mind, it refers to how a person perceives, thinks and gains and understand his or her own world. However, cognitive development deals with information processing, intelligence, reasoning, language development, and memory. Historically, the concept of cognitive development starts from Piaget's sensory motor, Pre-operational stage, concrete operational stage, and formal operational stage. In these stages, Piaget viewed cognitive development as a biological perspective and based on two major principles, operates the intellectual growth and development through adaptation and organization (Solso, 1995). Here, adaptation means tendency to respond to the demands of the environment to meet one's goal, and organization is the tendency to integrate particular observations into coherent knowledge. It is a tendency of mind to organize information into related and structured. After Piaget, Vygotsky argued that children acquire new knowledge from his external worlds through language and social interaction. As a whole, Vygotsky believed that the role of language in cognitive development has two ways (i.e, communication, and regulation). Similarly, Bruner's

thought of cognitive development was a new challenge in that time, viewed that Piaget's belief regarding a child's thinking to organize the world, but increases complex way. Bruner disagreed with Piaget, but liked Vygotsky. Bruner argued in this time that cognitive development needs three different forms (i .e. inactive, iconic, and symbolic modes). After them, Erikson argued that individuals' development (from infancy to the adulthood) needs eight stages (e.g., Hope, Will, Purpose, Competencies, Fidelity, Love, Care & Wisdom). L. Kohlerberg's stages of moral development came to light with three basic phases, such as, pre- conventional, conventional, and post-conventional. In this time, Kohlerberg followed the principle of Piaget. Contrary to existing views, Kohlerberg assumed that cogitative development is a path of physiological states as it is based on cognitive structures describes the features of prototypical or even actual.

1.1 Cognitive Development in Relations to Socioeconomic Status

Family income is a part of socio-economic status which was associated with greater brain surface area, and the relationship was even more substantial for lower-income children. Parental education was "significantly associated" with brain surface area independent of age, scanner, sex, and genetic ancestry. Similarly, parental education was associated with a similar increase in surface area over the course of childhood and adolescence (Noble, Houston, Brito, Bartsch, Kan, Kuperman, Akshoomoff, Amaral, Bloss, Libiger, Schork, Murray, Casey, Chang, Ernst, Frazier, Gruen, Kennedy, Zijl, Mostofsky, Kaufmann, Kenet, Dale, Jernigan, & Sowell, 2015).

1.2 Cognitive Development in Relations to Anthropometric Status

Anthropometry means height, weight, and wrist, skull circumference, and BMI of the individual. Literature found that the relationship between the cognitive development scores and anthropometric measures of the child has no significant correlation. Multiple regression analysis revealed that the manner in which the mother responded and the child's weight-for-height were important in predicting the child's cognitive development. The child's weight-for-height and certain aspects of the home environment played an important role in the cognitive development of this refugee population (Laude, 1999).

1.3 Cognitive Development in Relations to Home Environmental Status

Child's home environment, such as parental response and availability of stimulating play materials, were more strongly related to child developmental status than global measures of environmental quality such as SES (Socio Economic Status). Social status did not show a consistent relationship to either quality of home environment or children's developmental status across various groups. Literature found there was a fairly consistent relationship between home scores and children's developmental status. When the child's early developmental status and early home environment were both very low, the likelihood of poor developmental outcomes was markedly increased compared with cases when only one was low (Bradley, Caldwell, Rock, Ramey, Barnard, Gray, Hammond, Mitchell, Gottfried, Siegel & Johnson, 1989).

2. Significance of the study

Cognitive development is a psycho-socio-biological process of human mental growth and development. Cognitive development and its different stages were earlier investigated and described by Piaget (1871), but other researchers found its drawbacks in the concrete operational stage. A study conducted by Mitchell, Croy, Spicer, Frankel & Emde, (2011) found that, children, who begin learning with Kindergarten has stronger skills, learn faster than who enter with lower skills. However, little is known about the cognitive development among American-Indian young children. Similarly, the early childhood computer experience and cognitive development among urban low-income pre-schoolers found positive influence in cognitive development (Fish, Li, McCarrick, Butler, Stanton, Brumitt, Bhavnagri, Holtrop & Partridge, 2008). In a study, how perception and practices stimulating children's cognitive development was investigated among Moroccan immigrant mothers found that middle and highly educated mother's children were success to develop their cognition and memories with their own efforts (Moussaoui & Braster, 2011). Similarly, Pre-school children's cognitive development needs the

domain – general and domain – specific elements of teacher-child interaction (Hamre, Hatfield, Pianta & Jamil, 2014). It was found that, using computer in the home and school increases the cognitive development of children (Li, Atkins, & Stanton, 2006). But, cognitive functions of Pre-school children improved after eliciting positive emotions, occurred predominantly on tasks related to the subject areas they were familiar with (Blau, and Pnina, 2010). Similarly, emotion, attachment, and self-regulation are the predictors of pre-schooler's cognitive ability, classroom behaviour of social competency (Garner & Waajid, 2012), and there is a relationship between inter-generational effects of parental schooling on the cognitive and non-cognitive development of children (Silles, 2011). It was also found that over population or crowding has significant relationship with cognitive development of 36 month-old children (Evans, Ricciuti, Hope, Schoon, Bradley, Corwyn, & Hazan, 2010). Similarly, gene and environmental transactions are the important factors of early childhood cognitive development and parental cognitive stimulation (Tucker-Drob & Harden, 2012). Researchers found that the early childhood care and social behaviours promote the cognitive development of child (Cabrera, Fagan, Wight & Schadler, 2011). Literature found that cognitive development among the children of low-income families is low due to the reciprocal influences between maternal language and children's language. It was difficult to predict the relationship with socio-economic status, anthropometric status, and home environmental status with cognitive developmental phenomena.

3. Objectives of the Study

The followings are the objectives of this study.

- To study the relationship between socio-economic status, anthropometric status, and home environmental status to describe the cognitive developmental phenomena of pre-school children.
- To study the relationship between the socio-economic status, anthropometric status, and home environmental status with the memory aspect of cognitive developmental phenomena of pre-school children.
- To study the relationship between socio-economic status, anthropometric status, and home environmental status with the social skill aspect of cognitive developmental phenomena of pre-school children.
- To study the relationship between the socio-economic status, anthropometric status, and home environmental status with the language acquisition aspect of cognitive developmental phenomena of pre-school children.

4. Hypotheses

H_1: There is a significant hierarchical relationship between socio-economic status, anthropometric status, and home environmental status to describe the cognitive developmental phenomena of pre-school children.

H_2: There is a significant hierarchical relationship between the socio-economic status, anthropometric status, and home environmental status with the memory aspect of cognitive developmental phenomena of pre-school children.

H_3: There is a significant hierarchical relationship between socio-economic status, anthropometric status, and home environmental status with the social skill aspect of cognitive developmental phenomena of pre-school children.

H_4: There is a significant hierarchical relationship between the socio-economic status, anthropometric status, and home environmental status with the language acquisition aspect of cognitive developmental phenomena of pre-school children.

5. Population and Sample

The present study was conducted on the pre-school children's cognitive developmental phenomena in relation to their socio-economic status, anthropometric status, and home-environmental status. Here, cognitive developmental phenomena like; memory, language acquisition was dependent variable, and the socio-economic status, anthropometric status, and home environmental status of the child was the independent variables. The researcher has followed simple-random

sampling technique to draw the sample from the population. Out of more than 10,000 (ten thousands) pre-schools of West Bengal, the researcher has randomly selected two pre-schools of Alipurduar district. In these two schools, the targeted population were more than one thousand, but the researcher has randomly selected 60 (sixty) pre-school students consulted with their parents to collect the data from both the children and the parents.

6. Design of the Study

The present study was a causality study to describe the phenomenon or the effects of conditional factors; if x, y & z were the independent factors (e.g. socio-economic status, Anthropometric status, and home environmental status) on P_1, P_2, P_3, P_4 & P_5 or the dependent factors (e.g. memory, social skill, language acquisition, logical reasoning, and problem solving) then it is to see how this variable are responsible for the development of P, i.e., cognitive development. The researcher has investigated the causal effect among the variables through testing the hypotheses. Causal effect are nomothetic occurs when variation in one phenomenon, more independent variables leads to a particular result in variation with another phenomenon, the dependent variable. This design provided the valid conclusion between the independent variable, and the dependent variables. In this present study, cognitive developmental phenomena predicted by the socio-economic status of the child's family (i.e. category, profession, family, qualification income, and employment of the parents), anthropometry of the child (i.e., child's age, weight, height, and B.M.I.), and home environment of the child (i.e. child's family environment, parent child interaction, love, affections, feeling, siblings relation, and parental attitude towards gender). For that purpose, the researchers have selected 60 pre-school children and their representative parents to conduct the research.

7. Tools Used

7.1 Socio-Economic Status Scale (SESS)

The socio-economic status scale (Jena, and Paul, 2014a) has three sub-areas (i.e. educational status, occupational status, and family income status) and each area has 6-10 items. In sub-area one (i.e. educational status), six options were prescribed, and these options were weighted from the range 1 to 6. In sub-area two (i.e. educational status), six options were prescribed, these options were weighted from the range 1 to 6. In sub-area two (i.e. occupational status), ten options were provided having a weightage of 1 to 10. Monthly family income was the third sub area of the scale provided seven categories of family income and each category of family incomes and each category has weightage ranged from 1 to 7. The researchers have followed all the steps of standardization of tool. Preliminary, they constructed 50 items and after preliminary try-out, the experts rejected more than 50 percent of the items and accepted only 23 items in a three sub area. The Content Validity Ratio (C.V.R.) was 0.61. For that purpose, the researcher has followed Lawshe, 1862 methods (N_e-N/2÷N/2) to find out the C.V.R. (Content Validity Ratio). Similarly, item difficulty and item discriminating power was established. The reliability of the tool was established through Cronbach, co-efficient = 0.86. This was a sample tool and each sample took seven to ten minutes to respond all the items.

7.2 Anthropometric Checklist

The anthropometric checklist (Jena, and Paul, 2014b) checklist has two parts; one is Part I which was related to personal profile of the child and another was Part II which was related to child's bodily status (i.e. Gender, High, weight, BMI wrist circumference, and daily activity pattern of the child). In Part I, the response is collected about child's name, age and class. In Part II, the child responded about Gender, Height, Weight, BMI Wrist circumference, and daily activity pattern. The formula to calculate the BMI was the height of the child converted in meters and then squared it. The weight of the child was divided by the square value. There were six ranges of BMI [i.e. under weight (BMI less than 18.5), Healthy weight (BMI of 18.5 – 24.9), over weight (25.0 – 29.9), obese (30-34.9), super obese (35-39.9), and morbidly obese (40+). Wrist circumference has two options, i.e., normal and obese. The researchers have followed Lawshe, 1862 method (N_e-N/2÷N/2) to find out the C.V.R. (Content Validity Ratio=.60). Similarly, item difficulty, and item

discriminating power was established. The reliability of the tool was established through Test –Retest® = 0.67 and Split-half (r) was .65. This was a simple tool and each sample took seven to ten minutes to respond all items.

7.3 Home Environment Schedule

The home environment schedule (Jene, and Paul, 2014c) was used to know the child's home-environment, parent-child relationship, family, sibling relationship, and daily habit of the child. The schedule has two parts as Part I and Part II. The part one needs to fill with the name of the child, father's name, mother's name of the child, age of the child, gender, class, name of the school, and contact number of the parent. The Part-II has twelve items and every item was optional type. The sample and their parents respond each and every item. The items were related to family status, habitation status, parent child relationship, parental attitude towards gender, noise in the home environment, game activities in the home, and transport facilities in the home. The researcher has followed Lawshe, 1862 method (N_e-N/2÷N/2) to find out the C.V.R. It was found as 0.61. Similarly, item difficulty and item discriminating power was established. The reliability of the tool was established through KR_{20} found as 0.69 and Split-half (r) was 0.67. This was a sample tool and each sample took seven to ten minutes to respond all items. Each sample took maximum 8-10 minutes to respond the whole item of all the two parts of the home-environment schedule.

7.4 Cognitive Development Scale

This cognitive development scale (Jena, and Paul, 2014d) has five sub-areas, e.g. memory, social skill, language acquisition, logical reasoning, and problem solving. The sub area memory has five categories items, i.e., listen comprehension, oral expression, reading comprehension, phonological processing, and object naming faculty items. Each category has very short-type questions, dichotomous type of items and chronological arrangement of items. In social-skill sub-scale, there are five short type of items regarding morning assembly, respect to teachers, way of living, obedience and peer group relation. For each right answer, one mark weightage has provided. Maximum five marks and minimum zero mark, the samples were secured. The language acquisition sub-area has grammatical error, associational fluency, identifying language error and adopting language. Items contained five words like CAT, DOCTOR, DOG, GREEN & PARENT. A single sentence (i.e., we live in India, New Delhi is the capital of India. India got freedom on 15th August in 1947). The sample read out and the researcher has to note whatever he or she read properly. Non-sense word decoding contains five words PSEUDO, KNEE, KNOW, KNIFE, PSYCHOLOGY). Phonological processing contains four words and one sentence (APPLE, CHALK, EAGLE, BELL, TWINKLE, TWINKLE LITTLE STAR). The language acquisition has five subject areas (i.e., children learning to speak never to make grammatical errors such as getting their subjects, verbs and objects in the wrong order, select grammatically appreciated words, children often say things that are ungrammatical such as "mama ball" which they cannot have learnt passively. Mistakes such as "I drew" instead of "I draw" show they are not learning through imitation alone and select grammatically appropriate sentence from the internal options). The sub-area logical reasoning contains letter naming faculty, word recognition fluency, numerical analysis and calculation. The maximum 1 mark for each correct response and minimum zero mark for wrong response. For each correct feeling, the sample got one mark. In fact maximum five mark for correct response and zero mark for no or wrong response. The word-recognition fluency having nine words, the researcher pronounces the words at one time and the sample had recognized as more as words. (MATH, FATHER, TEACHER, DOCTOR, PEN, SISTER, UNCLE, MOTHER, RYMES). Problem solving area limited with three areas like; adopting problem, thinking hypothetical, and mathematical computation. Each item has three options related to grammatical accuracy, the sample has to select one from three options. For each right answer, one mark weightage has been provided. Maximum three marks of minimum zero mark, the samples were secured. Each sample took a maximum 10-12 minutes to respond the whole item of all the sub-areas of the memory scale. The content validity ratio was established by Lawshe, 1862, found as 0.65. The reliability

of the memory scale was established by using Kuder-Richardson, $KR_{20} = 0.67$, and Test-Retest method = 0.69.

8. Procedure of Data Collection

In the second week of October 2015, the researchers completely developed the tool and administered among the sample with due permission earlier from the principals and parents of the sample. The researcher directly administered the tools among the samples to assess the existing parental socio-economic status, children's home environment status, and anthropometry, in fact to study the relationship with children's cognitive developmental phenomena. Here, socio-economic status, anthropometric checklist, and home-environment schedule predicted the cognitive developmental phenomena. They visited the house of the children to administer the socio-economic status scale among the parents and motivated their parents to take the child's anthropometry to fill up the anthropometric checklist. By that time, they have also collected the information about the children from their respective parents regarding the home environment status of the child. Because how frequent and how often the child nearer and dearer to their parents and other family members and how long the child expended his/her time with other co-curricular activities in the home. To collect the data regarding socio-economic status, anthropometry and home-environment, it has taken 3 (three) months. The researchers took the co-operation of the parents and teachers to collect the data those were the information helped to predict the cognitive developmental phenomena. To predict the relationship among the variables, the researcher visited the school to assess the cognitive developmental phenomena among the samples. Initially, the researcher faced difficulty with the pre-school children to collect the data, but the teachers of these schools helped and motivated the children to respond the items of the cognitive development scale. This scale was a complex tool having five sub-areas regarding memory, social skill, language acquisition, logical reasoning, and problem solving. The researcher had tried to assess children's cognitive developmental phenomena through the questionnaire which assessed listening comprehension, oral expression, reading comprehension, silent-reading fluency, non-sense word decoding, associational fluency, object naming faculty, letter naming faculty, word recognition fluency, word decoding fluency, math computation and in language acquisition device identification of error in spoken English, identification of error in sentence, identification of ungrammatical uses, passive voice, and appropriate sentence structure.

9. Analysis and Results

H_1: There is a significant hierarchical relationship between

Variables	n	Mean±Std. Deviation
Cognitive developmental phenomena	60	76.00±16.141
Socio economic status	60	18.38±3.552
Anthropometric status	60	13.58±.996
Home environmental status	60	10.77±2.102

Table 1. Mean and S.D. of Cognitive Developmental Phenomena, Socio Economic Status, Anthropometric Status and Home Environmental Status of Pre-school Children

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Sig. F Change
1	.165[a]	.027	.010	16.058	.209
2	.366[b]	.134	.104	15.280	.010
3	.440[c]	.194	.151	14.877	.047

a. Predictors: (Constant), Socio_economic_status
b. Predictors: (Constant), Socio_economic_status, Anthropometric_status
c. Predictors: (Constant), Socio_economic_status, Anthropometric_status,

Table 2. R, R Square, Adjusted R Square and Standard Error Estimation through the Regression Model Cognitive Developmental Phenomena, Socio Economic Status, Anthropometric Status and Home Environmental Status of Preschool Children

	Model	Sum of Squares	df	Mean Square	F	Sig.
1.	Regression	416.899	1	416.899	1.617	.209[a]
	Residual	14955.101	58	257.847		
	Total	15372.000	59			
2.	Regression	2063.145	2	1031.572	4.418	.016[b]
	Residual	13308.855	57	233.489		
	Total	15372.000	59			
3.	Regression	2977.606	3	992.535	4.484	.007[c]
	Residual	12394.394	56	221.328		
	Total	15372.000	59			

a. Predictors: (Constant), Socio_economic_status
b. Predictors: (Constant), Socio_economic_status, Anthropometric_status
c. Predictors: (Constant), Socio_economic_status, Anthropometric_status,

Table 3. ANOVA of the Regression Model of Cognitive Developmental Phenomena, Socio Economic Status, Anthropometric Status and Home Environmental Status of Preschool Children

		Unstandardized Coefficients		Standardized Coefficients		
		ß	Std. Error	Beta	t	Sig.
1	(Constant)	62.241	11.018		5.649	.000
	Socio economic status	.748	.589	.165	1.272	.209
2	(Constant)	-10.927	29.482		-.371	.712
	Socio economic status	.808	.561	.178	1.442	.155
	Anthropometric status	5.305	1.998	.328	2.655	.010
3	(Constant)	-35.554	31.157		-1.141	.259
	Socio economic status	.769	.546	.169	1.408	.165
	Anthropometric_status	5.680	1.954	.351	2.907	.005
	Home environmental status	1.883	.926	.245	2.033	.047

Table 4. Unstandardized Coefficients (β) and Standardized Coefficients(Beta) of Cognitive Developmental Phenomena, Socio Economic Status, Anthropometric Status and Home Environmental Status of Preschool Children

socio-economic status, anthropometric status, and home environmental status to describe the cognitive developmental phenomena of pre-school children.

Table 1 depicts the descriptive analysis resulted that the mean ± standard deviation of cognitive developmental phenomena (n=60) of the pre-school children (76.00 + 16.41) was surprisingly better than socio-economic status (m=18.38 + 3.552), anthropometric status (m=13.58 + 0.996), and home environmental status (m=10.77 + 2.102). Cognitive developmental phenomena on the basic model (R= 1.65, R^2 = 0.027 & adjusted R^2 = 0.010) resulted no significant relationship with socio-economic status (= 0.748 P > 0.05). But, the regression of anthropometry (R = 0.366, R^2 = 0.136, and adjusted R^2 = 0.104), and home environmental status (R = 0.440, R^2 = 0.194 & adjusted R^2= 0.151) while the anthropometric status (= 5.305 P < 0.05) and home environmental status (= 1.883 P < 0.05) resulted hierarchical significant relationship with cognitive developmental phenomena of pre-school children (Tables 1, 2, 3 and 4). In addition to these, the effects of anthropometry (F= df 2/57 4.418 P < 0.05) and home environmental status (F= df 3/57 4.484 P < 0.05) on cognitive developmental phenomena also found significant. Hence, anthropometry and home environmental status variables were hierarchically related with the cognitive developmental phenomena of the pre-school children. This result was supported by Dangiuli, Roon, Winberg, Oberlander, Ruth, Hertzman & Maggi, (2012).

H_2: There is a significant hierarchical relationship between

Variables	n	Mean±Std. Deviation
Memory	60	18.82±4.123
Socio economic status	60	18.38±3.552
Anthropometric status	60	13.58±.996
Home environmental status	60	10.77±2.102

Table 5. Mean and S.D. of Cognitive Developmental Phenomena, Socio Economic Status, Anthropometric Status and Home Environmental Status of Preschool Children

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Sig. F Change
1	.204[a]	.042	.025	4.071	.042	.118
2	.365[b]	.133	.103	3.905	.092	.017
3	.451[c]	.204	.161	3.776	.070	.030

a. Predictors: (Constant), Socio_economic_status
b. Predictors: (Constant), Socio_economic_status, Anthropometric_status
c. Predictors: (Constant), Socio_economic_status, Anthropometric_status, Home_ environmental_status

Table 6. R, R Square, Adjusted R Square and Standard Error Estimation through the Hierarchical Regression Model of Memory Aspect of Cognitive Developmental Phenomena, Socio Economic Status, Anthropometric Status and Home Environmental Status of Preschool Children

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	41.727	1	41.727	2.518	.118[a]
	Residual	961.257	58	16.573		
	Total	1002.983	59			
2	Regression	133.865	2	66.932	4.390	.017[b]
	Residual	869.119	57	15.248		
	Total	1002.983	59			
3	Regression	204.424	3	68.141	4.779	.005[c]
	Residual	798.559	56	14.260		
	Total	1002.983	59			

a. Predictors: (Constant), Socio_economic_status
b. Predictors: (Constant), Socio_economic_status, Anthropometric_status
c. Predictors: (Constant), Socio economic status, Anthropometric status, Home environmental status

Table 7. ANOVA of the Regression Model of Memory Aspect of Cognitive Developmental Phenomena, Socio Economic Status, Anthropometric Status and Home Environmental Status of Preschool Children

the socio-economic status, anthropometric status, and home environmental status with the memory aspect of cognitive developmental phenomena of pre-school children.

Table 5 reveals the mean and Standard Deviation (SD) of memory of preschool children, socio-economic status of their parents, anthropometry, and home environmental status of the pre-school children. The mean memory (m=18.82 + 4.123) was better than the socio-economic (m=18.38 + 3.552), anthropometry (m=13.58 + 0.966)

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	14.464	2.793		5.178	.000
	Socio economic status	.237	.149	.204	1.587	.118
2	(Constant)	-2.846	7.534		-.378	.707
	Socio economic status	.251	.143	.216	1.752	.085
	Anthropometric status	1.255	.511	.303	2.458	.017
3	(Constant)	-9.687	7.908		-1.225	.226
	Socio economic status	.240	.139	.207	1.731	.089
	Anthropometric status	1.359	.496	.328	2.740	.008
	Home environmental status	.523	.235	.267	2.224	.030

Table 8. Unstandardized Coefficients (β) and Standardized Coefficients (Beta) of Memory Aspect of Cognitive Developmental Phenomena, Socio Economic Status, Anthropometric Status and Home Environmental Status of Preschool Children

and home environmental status (m=10.77 + 2.102) of the pres-school children. In connection to this descriptive analysis and results, Tables 6, 7, and 8 depict the hierarchical relationships between independent variables (i.e. anthropometry and home-environment status) and dependent variable memory. In the basic memory model, the predictor anthropometric status (R = 0.365, R^2 = 0.133, and adjusted R^2 = 0.103) found significant (= 1.255 P < 0.05) where the F – value (df 2/57 4.390 P < 0.05) was significant. Similarly, home environment status (R = 0.45, R^2 = 0.204, and adjusted R^2 = 0.161) was significant (= 0.523 P < 0.05), where the F – value (df 3/56 4.779 P < 0.05) also found significant relationship with cognitive developmental phenomena of preschool children. But socio-economic status of the children (R= 0.204, R^2 = 0.42, and adjusted R^2 = 0.025) was surprisingly not a significant (= 0.230 P < 0.05) relationship with memory development of the children. It resulted that, anthropometry and home environmental status hierarchically related with the memory aspect of cognitive developmental phenomena of the pre-school children, but not socio-economic status. This result was similar to the earlier literature (Richards, Hardy, Kuh & Wadsworth, 2000).

H_3: There is a significant hierarchical relationship between socio-economic status, anthropometric status, and home environmental status with the social skill aspect of cognitive developmental phenomena of pre-school children.

	N	Mean±Std. Deviation
Social skill	60	18.30±3.946
Socio economic status	60	18.38±3.552
Anthropometric status	60	13.58±.996
Home environmental status	60	10.77±2.102

Table 9. Mean and S.D. of Social Skill Aspect of Cognitive Developmental Phenomena, Socio Economic Status, Anthropometric Status and Home Environmental Status of Preschool Children

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Sig. F Change
1	.137[a]	.019	.002	3.942	.019	.297
2	.378[b]	.143	.113	3.716	.124	.006
3	.459[c]	.211	.169	3.597	.068	.032

a. Predictors: (Constant), Socio_economic_status
b. Predictors: (Constant), Socio_economic_status, Anthropometric_status
c. Predictors: (Constant), Socio_economic_status, Anthropometric_status,

Table 10. R, R Square, Adjusted R Square and Standard Error Estimation through the Regression Model of Social Skill of Cognitive Developmental Phenomena, Socio Economic Status, Anthropometric Status and Home Environmental Status of Preschool Children

	Model	Sum of Squares	df	Mean Square	F	Sig.
1.	Regression	17.189	1	17.189	1.106	.297[a]
	Residual	901.411	58	15.542		
	Total	918.600	59			
2.	Regression	131.534	2	65.767	4.763	.012[b]
	Residual	787.066	57	13.808		
	Total	918.600	59			
3.	Regression	193.881	3	64.627	4.994	.004[c]
	Residual	724.719	56	12.941		
	Total	918.600	59			

a. Predictors: (Constant), Socio_economic_status
b. Predictors: (Constant), Socio_economic_status, Anthropometric_status
c. Predictors: (Constant), Socio_economic_status, Anthropometric_status, Home_environmental_status

Table 11. ANOVA of the Regression Model of Social Skill Aspect of Cognitive Developmental Phenomena, Socio Economic Status, Anthropometric Status and Home Environmental Status of Preschool Children

Table 9 reveals the Mean and S.D. of the social skill aspect of cognitive developmental phenomena, socio economic status, anthropometric status, and home environmental status of pre-school children. Socio-economic status mean and standard deviation (m=18.38 ± 3.552) was better than the anthropometric status (m=13.58 + 0.996), and home environmental status (m=10.77 + 2.102) but, all those means were

		Unstandardized Coefficients		Standardized Coefficients		
		ß	Std. Error	Beta	t	Sig.
1	(Constant)	15.506	2.705		5.733	.000
	Socio economic status	.152	.145	.137	1.052	.297
2	(Constant)	-3.777	7.170		-.527	.600
	Socio economic status	.168	.136	.151	1.231	.223
	Anthropometric status	1.398	.486	.353	2.878	.006
3	(Constant)	-10.208	7.534		-1.355	.181
	Socio economic status	.157	.132	.142	1.192	.238
	Anthropometric status	1.496	.472	.378	3.166	.002
	Home environmental status	.492	.224	.262	2.195	.032

Table 12. Unstandardized Coefficients(β) and Standardized Coefficients(Beta) of Social Skill Aspect of Cognitive Developmental Phenomena, Socio Economic Status, Anthropometric Status a nd Home Environmental Status of Preschool Children

smaller than social skills (m=18.30 + 3.946). The hierarchical regression analysis between the dependent and independent variables were depicted in Tables 9, 10, 11, and 12. In the social skill basic model, socio-economic status (R=0.137 R^2=0.019, and adjusted R^2 = 0.002) found no significance (= 0.152 P > 0.05), while the F-value (df 1/58 1.106 P > 0.05) also resulted that socioeconomic status of the parents have no significant effect on the social skill aspect of the cognitive developmental phenomena of pre-school children. However, anthropometric status (R=0.378, R^2 = 0.143, and adjusted R^2 = 0.113) was significant (= 1.496 P < 0.05) and it also resulted that the anthropometry has a significant effect (F = df 2/57 4.763 p < 0.05) on the social skill aspect of the cognitive developmental phenomena. Similarly, home environmental status on the basic model of social skill aspect of cognitive development (R = 0.459, R^2 = 0.211, and adjusted R^2 = 0.169) was significant (= 0.492 P < 0.05), while the effect of home environmental factors on the social skill aspect of the cognitive developmental phenomena of the pre-school children found significant, i.e., (F= df 3/56 4.994 P < 0.05). The study predicted that, anthropometry and home environmental status hierarchically related with social skill aspect of cognitive developmental phenomena of the preschool children, but not socio-economic status. Literature reviewed (Dangiuli, Roon, Weinberg, Oberblander, Ruth, Hertzman, & Maggi, 2012) in connection to the result.

H_4: There is significant hierarchical relationship between the socio-economic status, anthropometric status, and home environmental status with the language acquisition aspect of cognitive developmental phenomena of pre-school children.

Table 13 reveals the mean and S.D. of social of language acquisition aspect of cognitive developmental phenomena, socio economic status, anthropometric status, and home environmental status of the preschool children. The mean and standard deviation of language

	n	Mean±Std. Deviation
Language acquisition	60	14.92±2.776
Socio economic status	60	18.38±3.552
Anthropometric status	60	13.58±.996
Home environmental status	60	10.77±2.102

Table 13. Mean and S.D. of Social of Language Acquisition Cognitive Developmental Phenomena, Socio Economic Status, Anthropometric Status and Home Environmental Status of Preschool Children

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Sig. F Change
1	.093[a]	.009	-.009	2.788	.009	.481
2	.265[b]	.070	.038	2.723	.062	.057
3	.300[c]	.090	.041	2.718	.019	.040

a. Predictors: (Constant), Socio economic status
b. Predictors: (Constant), Socio economic status, Anthropometric status
c. Predictors: (Constant), Socio economic status, Anthropometric status, Home environmental status

Table 14. R, R Square, Adjusted R Square and Standard Error Estimation through the Regression Model of Language Acquisition of Cognitive Developmental Phenomena, Socio Economic Status, Anthropometric Status and Home Environmental Status of Preschool Children

	Model	Sum of Squares	df	Mean Square	F	Sig.
1.	Regression	3.906	1	3.906	.503	.481[a]
	Residual	450.677	58	7.770		
	Total	454.583	59			
2.	Regression	31.987	2	15.994	2.157	.025[b]
	Residual	422.596	57	7.414		
	Total	454.583	59			
3.	Regression	40.783	3	13.594	1.840	.050[c]
	Residual	413.800	56	7.389		
	Total	454.583	59			

a. Predictors: (Constant), Socio economic status
b. Predictors: (Constant), Socio economic status, Anthropometric status
c. Predictors: (Constant), Socio economic status, Anthropometric status, Home environmental status
d. Dependent Variable: Language acquisition

Table 15. ANOVA of the Regression Model of Language Acquisition Aspect of Cognitive Developmental Phenomena, Socio Economic Status, Anthropometric Status and Home Environmental Status of Preschool Children

		Unstandardized Coefficients		Standardized Coefficients		
		ß	Std. Error	Beta	t	Sig.
1	(Constant)	13.585	1.913		7.103	.000
	Socio economic status	.072	.102	.093	.709	.481
2	(Constant)	4.029	5.254		.767	.446
	Socio economic status	.080	.100	.103	.804	.425
	Anthropometric status	.693	.356	.249	1.946	.057
3	(Constant)	1.613	5.693		.283	.778
	Socio economic status	.076	.100	.098	.766	.447
	Anthropometric status	.730	.357	.262	2.044	.046
	Home environmental status	.185	.169	.140	1.091	.040

Table 16. Unstandardized Coefficients (β) and Standardized Coefficients(Beta) of Language Acquisition Aspect of Cognitive Developmental Phenomena, Socio Economic Status, Anthropometric Status and Home Environmental Status of Preschool Children

acquisition (M = 14.92 + 2.776) was better over anthropometric status (M = 13.58 + 0.996) and home environment status (M = 0.77 + 2.102) but, socio-economic status (M= 18.38 + 3.552) was surprisingly better over other variables. The hierarchical regression analysis was used to predict the relationship between the independent variables (e.g. socio-economic status, anthropometric status, and home-environmental status) with the dependent variable (i.e. language acquisition aspect of cognitive developmental phenomena) of pre-school children (Tables 14, 15, and 16). The regression model of language acquisition aspect of cognitive developmental phenomena has a significant relationship with the anthropometric status ($R = 0.265$, $R^2 = 0.070$, and adjusted $R^2 = 0.038$), while = 0.693 $P<0.05$. Anthropometry has the significant effects on the language acquisition aspect of cognitive developmental phenomena (i.e., F= df 2/57 2.157 $P > 0.05$). Similarly, the regression model of home-environmental status ($R=0.300$, $R^2=0.090$, and adjusted $R^2 =0.041$) was significant (= 0.185 $P < 0.05$) while the F value (df 4/56 1.840 $P > 0.05$) was significant. It means home-environmental status has the significant effects on the language acquisition aspect of cognitive developmental phenomena of the pre-school children. Contrast to these, socio-economic status ($R=0.93$, $R^2 = 0.009$, and adjusted $R^2 = -0.009$ has no significant (= 13.585 $P > 0.05$) relationship with the language acquisition aspect of cognitive developmental phenomena of the pre-school children. The F-values (df 1/58 0.503 $P > 0.05$) found no significant effects of socio-economic status on the language acquisition aspect of cognitive developmental phenomena. It was resulted that, anthropometric status and home-environmental status has the hierarchical relationship with language acquisition aspect of cognitive developmental phenomena, but not the socio-economic status of the parents of the pre-school children. The recent result was equivalent to the study conducted by Sachdev, Fall, Osmond, Lakshmy, Biswas, Leary, Readdy, Barker & Bhargava, (2005).

10. Findings and Discussion

In the present study, the researchers found that anthropometric and home environmental status of the pre-school children related with cognitive developmental phenomena but not the socio-economic status. This result was equivalent to the earlier studies (Bradley, 1988; Dangiuli, Roon, Winberg, Oberlander, Ruth, Hertzman & Maggi, 2012). These researchers argued socio-economic status was not significantly related with cognitive developmental phenomena. Contrast to this result, few researchers (Kuczaj, Stan, Lederberg & Amy,1997; Karp, Martin, Sewell, Mammi & Heller, 1992) viewed socio-economic status of the parents of pre-school children were highly related with their cognitive development. Bradley & Cardwell, 1976; Bradley, Caldwell, & Richard, 1979 found that, home environmental status has the significant relationship with the cognitive developmental phenomena. Both anthropometric status and home environmental status have the hierarchical significant relationship with memory aspect of cognitive developmental phenomena of pre-school children, but socio-economic status has no significant relationship with memory. The result was supported by Tong, Baghurst & McMichael, 1998, but the literature surprisingly found that, anthropometry has no certain relationship with memory aspect of cognitive developmental phenomena (Rosenblum & Lewis, 2003). Bradley & Caldwell,1980; Gottfriend,1984, and Slaughter

& Epps,1987 argued that, home environmental status of children was highly related with memory aspect of cognitive developmental phenomena. Most of the researchers supported the present findings that anthropometry and home environment status have hierarchical relationship with the memory aspect of the cognitive developmental phenomena.

In the present study, it was found that factors like anthropometric status and home environmental status of pre-school children were highly related with the social skill aspect of cognitive developmental phenomena, but not socio-economic status. This result was supported by Dangiui, Roon, Weinberg, Oberblander, Ruth, Hertzman & Maggi (2012). They argued that socio-economic status has no significant role in cognitive developmental phenomena. Literature found that, anthropometry was highly related with social skill aspect of pre-school children (Ness Daniel, and Farenga, 2007). Similarly, home-environmental status like role of parents was highly related with child's social skill development (Carr, M. Kurtz, Bethe, Schnier, Wolfgang, Turner, Lisa, Borkowski & John, 1989).

Anthropometric status and home environmental status factors were the predictors of language – acquisition aspect of cognitive developmental phenomena, but not the socio-economic status of parents of the pre-school children. Sachdev, Fall, Osmond, Lakshmy, Biswas, Leary, Readdy, Barker & Bhargava, (2005) were found the same result earlier. Similarly, literature found that, socio-economic status has significant effect on the language acquisition (Hackman, Farah & Meancy, 2010).

In the present study, it was found that anthropometric status and home environmental status has the significant relationship with logical reasoning aspect of cognitive developmental phenomena of pre-school children, but the socio- economic status of pre- school children was not significantly related with logical-reasoning aspect of cognitive developmental phenomena of pre- school children. This result was supported by Sturman, Leon, Bianias, Morris, Wilson & Evans, 2007, and Windson, Glaze & Koga, 2007.

Conclusion, Educational implications and Recommendations

The researchers have analyzed all the four hypotheses and found expected result. It was concluded that, socio-economic status has no certain role in the cognitive developmental phenomena of pre-school children, but in other hand anthropometric status has the significant role in the cognitive development of pre-school children. Home environmental status was an important factor which was related with cognitive developmental phenomena of preschool children. Out of these, two factors anthropometry was inborn and natural quality depends on gene. Parents and teachers should take care of the pre-school children for their memory, social–skill, language-acquisition, logical reasoning, and problem solving aspects during the cognitive development stages of the preschool children. Though anthropometry and home environmental status were highly related with the cognitive developmental phenomena, the socio-economic status also has a certain role in the cognitive developmental stages. Well nutritional support should be provided by the parents for the cognitive developmental stages of the pre-school children. The recent study recommended other researchers and the world of the Educationalists, Colleagues, Researchers, Policy Makers, Curriculum Framers to undertake further research in this area. The researcher has undertaken socio-economic status, anthropometry and home environmental status to predict the cognitive developmental phenomena, but other factors like ethnicity, co-operative learning, group activities at what extent influence the cognitive development of pre-school children needs to be investigated. Hypothesis-2 (1+2) of the study emphasized on the memory aspect of the cognitive developmental phenomena of pre-school children. It was concluded that, anthropometry and home environmental status has certain role in the development of memory among the pre-school children. Children's memory development does not need any socio-economic status. Similarly, hypothesis-3 (1+3) analyzed the social skill aspect of cognitive developmental phenomena in relation to socio economic status, anthropometric status, and home-

environmental status. It was concluded that, anthropometry and home environment were the predictors of children's social-skill aspect of cognitive developmental phenomena. That is why, parental care in the home environment, love, affection of the parents to the children help in the development of social skill among the children. In relation to anthropometry, it was independent and depends on child's gene and these cannot be changed in any extent. Hypothesis-4 analyzed and interpreted that language- acquisition only influence through anthropometry and home environmental status were the important factors for the language acquisition of the student. Similarly, logical reasoning aspect of the cognitive developmental phenomena was related with anthropometry.

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