

# Determinants of Cognitive Development in Secondary School Students

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**Abstract:** The study explored certain factors influencing the cognitive development in secondary school students. A sample of 1400 teachers from 500 randomly selected secondary schools (run by government of Pakistan) participated in the study. The researcher developed a questionnaire to measure the determinants and cognitive development. The data was entered into SPSS and was analyzed using regressions. Step-wise regression analysis was made to find the unique contribution of each independent variable to the dependent variable. Multiple regressions were also performed to see the accumulative effect of all the variables on the cognitive development. The findings revealed that all of the five variables taken as determinants contribute to cognitive development with significant predictive powers. Parenting proved to be the strongest determinant of cognitive development in the students followed by socio-economic status, physical health, genetic properties and school climate.

**Key Words:** Cognitive Development, Genes, Parenting, Socio-Economic Status,

## 1. Introduction

There are certain needs and predicting variables of physical, sexual and cognitive development in adolescence. The teenagers are like a liquid steel to be shaped easily by the society and parents (Abbas 2014; Tanveer 2012). The teenagers inherit the tendency to adapt to their environment. The basic processes involved in adaptation are assimilation and accommodation (K.B. 2013). Assimilation is trying to understand something new into what we already know. Accommodation occurs when a person must change existing schemes to respond to a new situation. It is obvious no one is born as zero but there is some genetic properties making them superior in their practical life (Adebisi, 2009; David 2014). Naturally every child is fully fortified with all the required traits and skills excluding some special children (Ericsson, 2003). Soon after his birth, he is thoroughly dependent upon his parents. It is a pure natural phenomenon that the parents tend to look after him with due interest and pleasure. Society and school climate are core elements to shape his future besides good parenting ( Learning and cognitive development run parallel to each other particularly in a teenager (Azhar 2011; Rubab 2014; Restak 2001; Feuerstein 2000). His interests, attitudes, appreciations, skills and achievements are primarily the product of learning (Bruce 2009; Paus, 2005). Learning is a central theme of educational psychology. It is more pervasive phenomenon that goes in and out of school. It is not only the acquisition of knowledge through various means but much more. A high school student flowing in his formal operations is more sensitive to his social environment enriched with needs, stimuli, parenting and pleasure (Samar 2011; Schellenberg 2005). Thus, it is imperative to investigate the certain variables influencing the cognitive development of the teens with due interest.

## 2. Statement of the Problem

The problem to be investigated was how well certain factors taken as determinants contribute to the cognitive development of the students as perceived by their teachers.

### 3. Research Questions

In addressing our research problem, the following research questions were raised to be answered

1. What is the influence of each of independent variables on dependent variable?
2. What is the significant contribution of independent variables (school climate, parenting, socio-economic status, physical health and genetic properties) combined *together* on dependent variable (student performance)?

### 4. Research Methodology

A sample of 1400 teachers from 500 randomly selected secondary schools (run by government of Pakistan) participated in the study. The researcher developed a questionnaire to measure the determinants and cognitive development. The data was entered into SPSS and was analyzed using regressions. Step-wise regression analysis was made to find the unique contribution of each independent variable to the dependent variable. Multiple regressions were also performed to see the accumulative effect of all the variables on the cognitive development.

### 5. Results

Research Question 1

What is the significant contribution of each of independent variables on dependent variable?

- Individual contribution of parenting to the variance of cognitive development

Table1. Linear Regression Analysis of parenting with the cognitive development

R	R Square	Adjusted R Square	Std. Error of the Estimate
.512	.262	.281	5.211

Table 1 shows that parenting a significant ( $R^2=.262$ ,  $p<.05$ ) predictor of the cognitive development. This means that 26% of the variance in the cognitive development is influenced by parenting.

- Individual contribution of students' genetic properties to the variance of their cognitive development

Table 2: Linear regression analysis of 'genetic properties' with the cognitive development

R	R Square	Adjusted R Square	Std. Error of the Estimate
.347	.120	.125	6.117

Table 2 shows that 12 percent ( $R^2 = .120$ ) of the cognitive development is explained by their genetic properties

Table 3: Individual Contribution of 'Socio-Economic Status' to the cognitive development

R	R Square	Adjusted R Square	Std. Error of the Estimate
.501	.251	.255	6.308

Table 4: Individual Contribution of 'physical health' to the cognitive development

R	R Square	Adjusted R Square	Std. Error of the Estimate
.407	.166	.165	6.714

Table 5: Individual Contribution of 'school climate' to the cognitive development

R	R Square	Adjusted R Square	Std. Error of the Estimate
.321	.103	.105	6.155

The Tables 1 to 5 clearly show the all the selected factors well determine the cognitive development with significant predictive powers. Parenting, genetic properties, socio-economic status, physical health and school climate contributed 26 %, 12 %, 25%, 16% and 10% respectively to the variance in cognitive development. The 'parenting' proved to be best predictor followed by socio-economic status, physical health, genetic properties and school climate.

### Research Question 2

What is the significant contribution of independent variables (school climate, parenting, socio-economic status, physical health and genetic properties) combined together on dependent variable (student performance)?

The following table shows Multiple Regression Analysis of the FIVE predictors with the cognitive development of secondary school students

Table 6: Combined Influence of all the predictors on the cognitive development

R	R Square	Adjusted R Square	Std. Error of the Estimate
.807	.651	.655	5.512

Table 6 shows the joint influence of the all the FIVE factors was 65 percent to the variance in the cognitive development of the students. It also implies that there are more predictors of academic performance need to be investigated in next studies on the same lines.

## **6. Conclusion**

The findings revealed that parenting is the best determinant of cognitive development of the students followed by socio-economic status, physical health, genetic properties and school climate. The supervision of parents is the best predictor of our cognitive development. Naturally the birth of man from the living body fertilized with the same species leads to undefined love of parents with their offspring. Those are so blessed who are brought up under the love and supervision of their parents. Good parenting is the dominant predictor to nourish the cognitive development of the teens. These are parents who provide each desired item to their children to satisfy their needs positively. The genes transmitted from parents their children play a vital role in the cognitive development. These genes are reflected by the character, beauty, physique, personality, gallantry and achievements of their children. Physical health/beauty and their Socio-economic status significantly contribute to the cognitive development. Possessing a well socio-economic status, the student may enjoy their life easily. Each of their needs and luxuries is made available to them so they are physically & mentally satisfied to bloom up their cognitive development. Learning environment filled with peace and pleasure positively accelerates the cognitive development of the students. The school climate conducive to teaching-learning process positively upholds the cognitive development in the students.

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