

# Study on Human Ecological Factors Affecting Linguistic and Logical- Mathematical Intelligence of Young Adolescents.

Renu<sup>1</sup>, Sudha Chhikara<sup>2</sup>, C.K Singh<sup>3</sup>

*Department of Human Development And Family Studies, I.C.COLLEGE OF HOME SCIENCE CCS HAU, HISAR, Haryana – 125004,INDIA*

## ABSTRACT

**Linguistic Intelligence** The capability to use words efficiently, whether orally (e.g., as a storyteller, speaker, or politician) or in writing (e.g., as a poet, playwright, editor, or journalist). These learners have well developed auditory skills and are generally graceful speakers. Whereas **Logical-Mathematical Intelligence** The capability to use numbers effectively (e.g., as a mathematician, tax accountant, or statistician) and to reason well (e.g., as a scientist, computer programmer, or logician). These learners think practically in logical and numerical patterns making connections between pieces of information always curious about the world around them, the learner asks lot of questions and like to do experiments. **Ecological Systems Theory** given by Urie Bronfenbrenner in 1940s focuses that there are five layers arranged from the closest to the individual to the farthest: the microsystem, mesosystem, exosystem, macrosystem and chronosystem. These all systems directly or indirectly affect the individual growth and development. Hence, the effect of these variables was studied along with Multiple Intelligence of the young adolescents. For this, 200 respondents in the age group of 12-14 years from both urban and rural area of Mahendergarh district of Haryana state were selected. Both Linguistic and logical mathematical intelligences of the respondents' were observed to be significantly associated with family size, parental education and residence location. It is clear from the research that the other microsystem variables had no significant association with both Linguistic and logical mathematical intelligences of the respondents.

## Introduction

Every child has the unique properties, inner potentials and dissimilar abilities which help them to establish their self-concept by perceiving themselves and their life experiences. A child passes through different phases of development. A successful conversion from childhood to adolescence largely depends upon the family and school environment that assist him to acquire life survival skills as well academic success. But due to the technological advancements, severe changes have been observed in the school setting which has challenged the task of the teachers. Learning is an active process demanding attention, concentration and interest on the part of the learner. Therefore, provision for individual differences in learning is critical.

According to Howard Gardner (2006) intelligence is ability to create valuable product or offer a service that is valued in a culture. It is also a set of skills that make it possible for a person to solve problems in life. He treats intelligence as a possible to gather new knowledge for getting solutions over problems.

Gardner claims that all human beings have Multiple Intelligences (MI). They are independent of each other. How do they exist in human beings, especially children? To study this, profiles of persons require to be assessed. These multiple intelligences can be nurtured and strengthened, or ignored and weakened. He believes each individual has nine intelligences. His assumptions were based on brain-injured patients. He stated that these intelligences are situated in the different areas of human brain and can either work independently or together. He could not definitely state locations about some of these intelligences. As brain has uniform structure, all individuals are expected to acquire all the nine intelligences. He also believes that these intelligences exist in individuals in different amount. Thus, each individual has a exceptional composition of these intelligences. Students learn in ways that are identifiably unique. Barzegar *et al.* (2011) explored the possible relationship between learner's MIs and their performance on reading proficiency items. The findings of the study stated that, in addition to linguistic and logical intelligences, there was a weak relationship between interpersonal, intrapersonal, and visual intelligences and answering reading proficiency items.

Gupta (2016) carried out study entitled "Effect of Family Variables on Multiple Intelligences of Secondary School Students of Gujarat State" to find out the individual potential of young adolescents in terms of their intelligences and the effect of family related factors on their intelligences. It was recorded that some of the family and environment related variables such as working status of parents, parents' qualification, joint family and nuclear family staying with and without siblings affect the intelligences of learner positively and some do not have any effect as given.

### **Objectives**

To study the association of human ecological variables with Linguistic Intelligence of Young Adolescents.

To assess the association the human ecological variables with Logical-Mathematical Intelligence of Young Adolescents.

### **Materials and Methods**

The present study was conducted in Haryana state. Multi stage sampling procedure was follow to have the representative sample. Out of total backward district of Haryana state, one was taken randomly. For rural sample, one block was selected at random from the selected district. From selected block one village having government high/senior secondary school and private high/senior secondary school was taken purposively. Similarly, for urban sample, one government high/senior secondary school and private high/senior secondary was taken randomly from the selected city.

### **Selection of Respondents**

A list of boys students in the age group of 12-14 years was procured from both the selected schools of each area. A sample of 200 young adolescent boys was taken randomly from the list of selected schools of rural and urban areas. Out of 200 adolescent boys, 100 from urban and 100 from rural areas were selected randomly. This sample of 100 adolescent boys constituted of 50 boys each from Government and Private Schools.

**Instrument of the Study**

The primary data was collected by using questionnaire-cum-interview schedule developed by Kaur, 2006. The tool consisted of nine subscales namely, linguistic, logical mathematical, bodily kinesthetic, visual spatial, interpersonal, intrapersonal, naturalistic and existential intelligences. This tool was selected as it is reliable, its retest reliability coefficients for nine components were in the range of 0.63 to 0.86 and for inter observer reliability coefficients it was ranging from 0.61 to 0.90. Tool is also valid as its content validity ratio was ranging from 0.2 to 0.8 and its cross validity was ranging from 0.02 to 3.49. Scoring pattern used for Logical-Mathematical Intelligence and Linguistic Intelligence table number

**Table 1: Association of Microsystems variables with linguistic intelligence n=200**

Sr. No.	Variables	Level of linguistic intelligence			Chi value	sq.
		Low	Moderate	High		
		F (%)	F (%)	F (%)		
<b>1.</b>	<b>Age</b>					
	12-13 years	22(11.0)	30(15)	12(6.0)	3.33	
	13+ years	38(19.0)	71(35.5)	27(13.5)		
<b>2.</b>	<b>Family type</b>					
	Nuclear	10(5.0)	13(6.5)	5(2.5)	10.8	
	Joint	31(15.5)	56(26.0)	26(13)		
	Extended	19(9.5)	32(16.0)	8(4.0)		
<b>3.</b>	<b>Family size</b>					
	Small(up to 4 members)	15(7.5)	26(13.0)	7(3.5)	5.19	
	Medium(5-6 members)	32(16.0)	56(28.0)	23(11.5)		
	Large(more than 6 members)	13(6.5)	19(9.5)	9(4.5)		
<b>4.</b>	<b>Number of siblings</b>					
	1-2	7(3.5)	18(9.0)	6(3.0)	1.30	
	>2	53(26.5)	83(41.5)	33(16.5)		
<b>5.</b>	<b>Father's education</b>					
	Illiterate	4(2.0)	11(5.5)	4(2.0)	13.9	
	Primary to middle	35(17.5)	66(33.0)	25(12.5)		
	Graduate/PG	21(10.5)	24(12.0)	10(5.0)		
<b>6.</b>	<b>Mother's education</b>					
	Illiterate	5(2.5)	4(2.0)	4(2.0)	6.93	

	Primary to middle	35(17.5 )	63(31.5 )	22(11.0 )	
	Graduate/PG	20(10.0 )	34(17.0 )	13(6.5 )	
<b>7.</b>	<b>Family income</b>				
	Rs.<10900	5(2.5 )	10(5.0 )	3(1.5 )	11.0
	Rs.10901-20000	42(21.0 )	70(35.0 )	28(14.0 )	
	R.s>20000	13(6.5 )	21(10.5 )	8(4.0 )	

\*Significant at 0.05

Note: Figures in the parentheses indicate percentage

**Table 2: Association of macro system variables with logical mathematical intelligence**

n=200

Sr. No.	Variables	Level of logical mathematical intelligence			
		Low	Moderate	High	Chi sq. value
<b>1.</b>	<b>Caste</b>				
	Schedule caste	7(3.5)	1(0.5)	1(0.5)	8.54
	Backward caste	133(66.5)	2(1.0)	9(4.5)	
	General	42(21.0)	4(2.0)	1(0.5)	
<b>2.</b>	<b>Watch T.V Programme daily</b>				
	Yes	67(33.5)	5(2.5)	3(1.5)	3.96
	No	115(57.5)	2(1.0)	8(4.0)	
<b>3.</b>	<b>Type of T.V programme prefer to watch</b>				
	Educational	38(19.0)	2(1.0)	1(0.5)	3.16
	Entertainment /movie	11(5.5)	4(2.0)	6(3.0)	
	Children programme	33(16.5)	1(0.5)	4(2.0)	
<b>4.</b>	<b>Discipline by parents</b>				
	Authoritative	22(11.0)	4(2.0)	1(0.5)	18.6**
	Permissive	131(65.5)	3(1.5)	5(2.5)	
	Authoritarian	29(14.5)	0(0)	5(2.5)	
<b>5.</b>	<b>Cultural settings</b>				
	Rural area	88(44.0)	3(1.5)	8(4.0)	2.59
	Urban area	94(47.0)	4(2.0)	3(1.5)	
<b>6.</b>	<b>Values, laws, policies and programmes of govt.</b>				
	Low	26(13.0)	2(1.0)	0(0)	4.54
	Medium	103(51.5)	2(1.0)	8(4.0)	
	High	53(26.5)	3(1.5)	3(1.5)	

\*Significant at 0.05

Note: Figures in the parentheses indicate percentage

Table.3 Instrument of the study

Linguistic intelligence	Logical-mathematical intelligence	Code/scoring pattern		Business	16(8.0)	50(25.0)
Above average (20 and above)	Above average (15 and above)	1		Farming	7(3.5)	12(6.0)
Average (18-19)	Average (12-14)	2		<b>Visit to relatives/friends</b>		
Below average (17 and below)	Below average(11 and below)	3		Frequently	4(2.0)	27(13.5)
				Occasionally	18(9.0)	28(14.0)

**Analysis of the data**

Chi square test of independence was used to measure the degree of association between dependent and independent variables.

**Results and Discussion**

Table 1 shows the association of microsystem variables on linguistics intelligence of the respondents. Results revealed that several aspects of linguistic intelligence were significantly associated with various microsystem variables, whereas others were not. Family size was observed to be significantly associated with (5.19) linguistic intelligence of the respondents’.

Significant associations were observed between parental education and linguistic intelligence of the respondents’ i.e., with mothers’ education (6.93) and fathers’ education (13.9). Results elucidates that the other microsystem variables (family size and monthly family income) had no significant association with linguistic intelligence of the respondents’ (Table 2). It is apparent from the results that the other microsystem variables (family size and monthly family size) had no significant association with logical mathematical intelligence of the respondents. Both linguistic and logical mathematical intelligences of the respondents’ were found to be significantly associated with family size and parental education. Other microsystem variables i.e. family type and monthly family income had no significant association with both linguistic and logical mathematical intelligences of the respondents’. Research findings were also supported by the previous research results entitled “Effect of Family Variables on Multiple Intelligences of Secondary School Students of Gujarat State”, which focused on the individual potential of young adolescents in terms of their intelligences and the effect of family related factors on their intelligences by Gupta (2016). It was concluded that some of the family and environment related variables such as working status of parents, parents’ qualification, joint family and nuclear family staying with and without siblings affect the intelligences of learner positively and some do not have any effect as given. Activities such as working in small groups on a project, mentoring or teaching concepts to another student, conducting interviews, role playing historical or literary situations and team building exercises may be suggested to enhance linguistic intelligence of the adolescents. Logical mathematical intelligence of the adolescents may be improved by various activities such as writing an autobiography,

working independently, meditation and writing about which historical or literary figures they would want to be etc.

## Reference

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