

Cognitive Abilities of Pre-School Children of Bagar Zone of Haryana

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INTRODUCTION

Children in the age range of 3-6 years are highly active, curious and eager to learn. They like to explore, seek new experiences for the sheer pleasure of sensing and knowing. Pre-school years are packed with potential for all sorts of growth provisions made for development deficits, it is more humane as well as economical to give young children what they need for healthy growth of body and personality. Malkus Feldman and Gardner (1988) define cognitive development as the growing capacity to convey and appreciate meanings in the several symbol systems which happen to be featured in a given cultural setting. These symbol systems include words, pictures, gestures and numbers.

Cognition refers to the higher mental processes and the functions involved in understanding and dealing with world around us. Cognitive processes are many and tend to develop concurrently. Cognitive processes are adaptive and function in the process of the individuals aspect of biological adaptation of coping with the environment and organizing and recognizing thought and action. This adaptation involves the interaction between the process of assimilation and accommodation. It may be stated that cognitive development in its modern conceptualization and interpretation is very broad based including a different set of functions although interrelated, which develop differentially under the force of environmental factors. Cognition includes sensing, perceiving, invariant behaviour, spatial relations, conceptualizing, classifying, reasoning and solving. During the preoperational period children engage in syncretic and transductive reasoning. Piaget argued that they also have a tendency to be egocentric. The pre-operational period is marked by a failure of to engage in logical operations that require the abilities of reasoning, reversing, conserving and conceptually organizing material. Between the

ages of about one and half to six years children exhibit a mode of thinking that is in many respects different from that of infants or older children. Their thought is characterized by primitive, prelogical elements such as cognitive egocentrism, animism and artificialism.

Cognitive powers develop enormously during preschool period, thus this life form a significant period of growth in mental skills and capacities. Surveillance on cognitive growth during this period is very necessary to utilize the maximum capacities of children. Therefore, assessment of cognitive growth of all children is a crucial need of our society. If a child is lacking in cognitive growth providing enriched environment can boost it. Enriched environment nurtures the child's power of observation, its sense of curiosity, flights of creativity and imagination and proficiency in other skills also. Preschool period forms and fosters the basis for later development. Thus, it is important to assess the level of cognition of the children during this crucial period of development. Therefore, the presents study was conducted with the objective to study cognitive abilities of preschool children of Bagar zone of Haryana.

METHODOLOGY

Multistage sampling procedure was followed in sample selection. Haryana State was selected purposively due to easy accessibility. Hisar District of Haryana State was selected randomly. City of Hisar district was selected from urban area and cluster of villages, Tokas, Patan and Rawalwas from Hisar district were selected for rural areas. Selection of respondents was done purposively. Major criteria for selection were age, sex and cultural setting (urban and rural). Total number of 600 children (300 each from urban and rural area) of 3-6 years of age were selected. Further equal number of male and female children, 30 from each age group 3-3½, 3½-4, 4-4½, 4½-5, 5-6 years were selected purposively to have uniform representation of

each age group. Younger age groups were taken at the interval of 6 months while above five age group was taken at the interval of one year, as it is a known fact that in early years development takes place at very rapid rate and slows down gradually. Data were collected with the help of a standardized test by Sangwan and Chhikara (1996). The reliability coefficients of test were from 0.86 to 0.91 and content value ratios were from 0.75 to 0.95. The test items are in form of manipulated material so those children enjoy the testing time. Frequency, mean and standard deviations of scores on different cognitive abilities were calculated to draw the results. Categories were framed for cognitive abilities according to the age of the calculating cumulative frequencies.

RESULTS AND DISCUSSION

Age-wise means and standard deviations on different items of perception, classification and spatial relations are given in Table 1. To measure perceptual abilities of pre-schoolers, there were three aspects namely matching, assembling and discrimination. Similarly, spatial relation component had also three aspects, directionality, draw-a-face and mapping while classification does not have sub items.

Data show that mean values for all aspects increase with age. The pattern of perceptual development of pre-schoolers, aged 3-6 years is sought to be delineated in three aspects. In

case of matching 3-3 ½ years age group had 2.55 mean value followed by 3.45 at 3 ½-4 years, 4.35 at 4-4 ½ years, 6.35 at 4 ½-5 years and 7.60 at 5-6 years age group. Mean values of object matching for different age groups show that maximum development of this aspect took place during 4-5 years of age followed by 5-6 years age group. Results suggest that parents and teachers should understand the importance of this crucial period. Nakagawa (1992) studied matching and non-matching learning in kindergarten children and found that children learned matching and non-matching more rapidly in an initial learning. Mean values of object assembling (body parts and puzzles) also show almost similar trend. Another aspect, discrimination (texture and object) also had steady increase in its development with age. Ellen (1992) reported that during early childhood years children's understanding grow out of their experiences with objects, food, play material and nature. Thus, it can be concluded that perceptual abilities increase steadily from 3-6 years. Saini (1995) examined the development of mental rotation matching skills with three to six years old children and found that no sex differences but there was an effect for age with the old children performing significantly higher.

When mean values were calculated for classification abilities, it was found that this ability also developed gradually and steadily as age increased but there is rapid change during period 3 ½ - 4 ½ years of age (mean values 2.25

Table 1: Mean and standard deviations of scores on different items by age for the Bagar zone (N=600)

Test items	Maximum possible score	Age in years				
		3- 3 ½ (120)	3 ½ -4 (120)	4- 4 ½ (120)	4 ½-5 (120)	5-6 (120)
Perception						
Object matching	10	22.55 + 0.89	3.45 + 1.20	4.35 + 0.48	6.35 + 0.58	7.60 + 0.69
Object assembly						
a) Body parts	5	1.65 + 0.73	2.15 + 1.07	3.00 + 0.66	3.30 + 0.82	4.00 + 0.58
b) Puzzles	5	1.00 + 0.83	1.10 + 0.92	1.65 + 0.80	2.40 + 0.92	3.31 + 0.74
Discrimination						
a) Texture	3	0.98 + 0.57	1.37 + 0.59	1.65 + 0.58	1.70 + 0.68	2.43 + 0.67
b) Object	5	1.95 + 0.89	2.75 + 0.90	2.89 + 0.57	3.15 + 0.86	3.90 + 0.68
Classification	5	1.05 + 0.55	2.25 + 0.89	3.85 + 0.81	4.00 + 0.59	4.45 + 0.81
Spatial Relations						
a) Directionality	4	1.30 + 0.73	1.85 + 0.94	2.80 + 0.57	3.45 + 1.25	3.81 + 1.15
b) Draw-a-face	5	1.55 + 0.98	2.61 + 0.57	2.89 + 1.02	4.10 + 1.35	4.45 + 0.98
c) Mapping	5	1.73 + 0.68	2.90 + 0.83	2.97 + 0.66	3.14 + 1.13	4.45 + 0.82

Table 2: Cognitive abilities of pre-schoolers by sex and cultural setting

Aspects	Sex	Cultural setting
Perception	0.8102	0.3544
Classification	0.8451	0.4904
Spatial relation	0.9249	0.7818

Table 3: Frequency distribution of respondents according to sex and cultural setting of Bagar zone

3- 3 ½ years		Below average	Average	Above average
Urban	Male (30)	8	16	6
	Female (30)	9	15	6
Rural	Male (30)	11	14	5
	Female (30)	13	13	4
Urban	Male (30)	7	14	9
	Female (30)	7	16	7
Rural	Male (30)	9	13	8
	Female (40)	10	13	7
Urban	Male	8	15	7
	Female	8	16	6
Rural	Male	9	16	5
	Female	8	17	5
Urban	Male	10	14	6
	Female	10	13	7
Rural	Male	8	18	4
	Female	10	17	3
Urban	Male	6	19	5
	Female	7	18	5
Rural	Male	7	20	3
	Female	8	18	4

and 3.85, respectively). Sugimura and Inque (1987) revealed that both kindergarten children and adults learned easily the similarity dimension task, which could be classified on the basis of overall similarity. Cowen and Zubaide (1988) also revealed that the children judged better on collection versions than class versions.

Bodrova and Leong (1996) described a three

year old child who is learning to classify objects but cannot keep the categories straight. When the teacher helps her by providing two boxes one labeled 'big' and one labeled 'little', the child is able to keep the categories straight. Learning to classify in terms of big and little will aid the child's development of categorical thinking.

Mean and standard deviations of sub items of spatial relations ability show the similar trend as already observed for perceptual and classification abilities of pre-schoolers. The maximum increase in mean values for mapping occurred in 5-6 years (3.14 and 4.45) age group while for directionality, maximum increase was in the age group of 4-5 years (2.89 to 4.10). Axia and Caravaggi (1987) studied the spatial arrangements of 4-6 years and found that young children were more sensitive than older ones to spatial locations. Thus, it can be concluded that all the three aspects of cognition (perception, classification and spatial relations), increase steadily from 3-6 years of age.

Analysis of variance (ANOVA) was used to study the differences in the cognitive abilities of pre-schoolers according to sex and their cultural setting. Data in Table 2 show that the scores were not significant for both sexes and cultural setting. There was no difference in the cognitive abilities of male and female and rural urban pre-school children.

Table 3 shows frequency of children according to age, sex and cultural setting. It is observed from the Table that about 50 per cent of children fall in the average category and about 25 per cent each in the below average and above average categories in all the age groups. There were not so much differences in the female and males and rural and urban backgrounds in the age groups of all the aspects of cognition. Ogilvy (1990) revealed that the process aspects of cognition were independent of sex and socio-cultural variable. The children at a particular age group scoring below average range were slow in acquiring perception, classification and spatial relations and above average children were fast in these skills.

KEY WORDS: Cognition. Abilities. Perception. Classification. Spatial Relations.

ABSTRACT The present study was conducted in Bagar zone of Haryana State on 600 children in the age group of 3-6 years, out of which 300 were from rural and 300 from urban areas. A standardized test was used to study

cognitive abilities of children. Results indicate that all the three aspects of cognition i.e. perception, classification and spatial relations increase steadily from 3-6 years of age. Further, no differences were observed in the male, female as well as rural, urban cultures for all the aspects of cognition in all the age groups.

References

- Axia, G. and Caravaggi, D.: Effects of spatial arrangements on 4 and 6 years old children's memory. *Perceptual and Motor Skills*, **65**: 283-293 (1987).
- Boodrove, Elena and Deborah, J. Heong: Tools of mind: *The Vygotskian Approach to Early Childhood Education*. Prentice Hall, Englewood Cliffs, NJ (1996).
- Cowan, R. and Al Zubaide, A.S.: Do children find collection versions of part-whole comparisons easier than class version. *Educational Psychology*, **8**: 169-176 (1988)
- Dworetzky, J.P.: *Introduction to Child Development*. West Publishing Company, New York (1990).
- Ellen, E.: Symbolic representation of letters and numbers. *Cognitive Development*, **7**: 301-306 (1992).
- Kumari, L.: *Impact of Intervention Program on Cognitive Abilities of Pre-schoolers: An Experimental Study*. M.Sc. Thesis, CCS HAU, Hisar (1993).
- Mulkus, Ulla-C.: David Feldman and Howard-Gardner: Dimensions of mind in early childhood. In: *Psychological Bases for Early Education*. (Ed.) A.D. Pellegrini John Wiley and Sons New York: (1988).
- Nakagawa, E.: Transfer of matching & non matching learning. In: KG children. *Japanese Journal of Educational Psychology*, **450**: 266-275 (1992).
- Ogilvy, M.: Family type and children's cognition in two ethnic groups. *Journal of Cross-cultural Psychology* **21**: 319-334 (1990).
- Saini, N.: *Development of Early Screening Inventory for Preschoolers*. Ph.D. Thesis, CCS HAU, Hisar (1995).
- Sangwan, S. and Chhikara, S.: Cognitive test for 3-6 years old children. Department of Child Development, CCS HAU, Hisar (1996).
- Sugimura, T. and Inque, T.: Categorization modes in young children and adults. *Japanese J. Edu. Psychology*, **35**: 357-362 (1987).

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