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Address:-Ashok Yakkaldevi 258/34, Raviwar Peth, Solapur - 413 005 Maharashtra, India
Cell : 9595 359 435, Ph No: 02172372010 Email: ayisrj@yahoo.in Website: www.ror.isrj.org

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IMPACT OF INTERVENTION ON MENTAL ABILITIES OF PRESCHOOL CHILDREN

Santosh Sangwan[1] and Shakuntla Punia[2]

[1]Asstt. Scientist , Department of HDFS, College of Home Science, CCS Haryana Agricultural University Hisar, Haryana India.

[2]Professor,Department of HDFS, College of Home Science, CCS Haryana Agricultural University Hisar, Haryana India.

ABSTRACT

The first five years of life are crucial for physical, social, emotional, cognitive and language development of the child because during this period the foundation for all later development is laid. The child is highly receptive to the environment and learning potentials are at its peak.The current study examined the impact of intervention on mental abilities of preschool children. This study was conducted in purposively selected preschool laboratory run under the department of Human Development and Family Studies COHS, CCSHAU Hisar district of Haryana State, India. The sample for the study comprised all the children enrolled in the preschool lab was selected for the present study. McCarthy Scale was administered to all preschoolers to assess their mental abilities. Developed intervention was given to all children of Preschool Laboratory for improving their mental abilities for four months. McCarthy (1972) was administered on 21 last year selected children individually in home situation. Results revealed that children were superior in abilities on block building and tapping sequence at both the testing. In other aspects of perceptual abilities at pre and post testing like puzzle solving, right-left orientation, draw a design, draw a child and conceptual grouping aspect they lagged behind when compared with the standards. A comparative analysis showed that there were significant differences in pre and post performance of children after intervention program as calculated‘t’ values were statistically proved to be significant for all aspects of verbal, perceptual and quantitative.

KEYWORDS : *Preschoolers, Verbal, perceptual, quantitative.*

INTRODUCTION :

The preschool period is a time of rapid growth along a number of developmental measures, not the least of which is children’s thinking abilities, or cognition. Across this time period, children learn to use symbolic thought, the hallmarks of which are language and symbol use, along with more advanced pretend play. Children this age show centration of thought, meaning their focus is limited to one aspect of a situation or object. Memory abilities come online and children show their own ways of categorizing, reasoning, and problem solving. Childhood is a time of significant emotional, social, cognitive and physical development. Children in middle childhood learn new skills, make independent

decisions and increasingly control their own behaviour and emotions. Children's psychological development includes the capacity to perceive, analyze, learn and experience emotions. Cognitively, children begin to reason around the age of six, and as they move through the middle years, they develop key conceptual skills. They acquire fundamental skills, such as reading and arithmetic and also develop skills of self-awareness and the ability to see the perspective of others (Advisory Committee on Population Health and Health Security 2004). Evidence of researches indicated that the quality of home environment was associated with the intelligence of children aged between six and eight years (Baharudin and Luster 1998). Sunitha and Khadi (2007) reported that parents who provided more stimulating and richer environment and interacted more had children with better cognitive skills. No doubt, children's development is inextricably connected to the social and cultural influences that surround them, particularly the families and communities that are children's life-support systems but many of the children younger than eight years in developing countries are exposed to multiple risks including poverty, malnutrition, poor health and non-stimulating home environments, which detrimentally affect their cognitive, motor and social emotional development. In India alone, there are about 65 million disadvantaged children (UNICEF 2005). Though poverty alleviation programs are at forefront of the nation's socio-economic agenda, the children from poor homes continue to suffer from the disadvantage of being underprivileged. Intervention studies that have been tried with children with Down syndrome have also been reported. Irwin (1991) found that children with Down syndrome who could 'count-all' were able to master 'counting-on' (counting-on from the largest addend) for addition, using a structured teaching technique. The children were able to generalize the skill to materials not used for teaching. Considering the importance of childhood years, the present study was planned to assess the impact of intervention on mental abilities of preschool children with the following objectives:

To develop and implement intervention to improve mental abilities of children
To assess the impact of intervention programme on mental abilities.

METHODOLOGY

Locale and Sample

For the present investigation all children was purposively drawn from preschool laboratory run under the department of HDFS, college of Home Science, CCSHAU Hisar. Intervention material was developed for children. Developed intervention was given to all children of Preschool Laboratory for improving their mental abilities for four months, twice a week.

Tools

A McCarthy scale of Children's Abilities (MSCA) designed by McCarthy (1972) was used to assess the general abilities of preschool children. The MSCA contains 18 separate tests which assess child's ability in a variety of crucial areas. The test has been grouped into six scales: verbal, perceptual performance, quantitative, general cognitive, memory and motor. For each of the six scales the child's raw score is converted into scaled score, called an index according to his or her chronological age.

a)Verbal scale (V) - constituting this scale assess the child's ability to express himself verbally and also assess the maturity of his verbal concepts. The test in verbal scale are pictorial memory, word knowledge, verbal memory, verbal fluency and opposite analogies.
b)Perceptual performance scale (P) – This consist of game like tasks which don't require the child to

speak, assesses his reasoning ability through the manipulation of materials. Tests are block building, puzzle solving, tapping sequence, right left orientation, draw a design, draw a child, conceptual grouping.

c)Quantitative scale (Q) - This scale measures the child's facility with numbers and his understanding of quantitative words. Item content is closely related to children's interests and each item requires only a single step rather than a sequential process for solution. Item of test are- number questions, numerical memory, counting and sorting.

d)General cognitive scale (GC) - is composed of all the tests in the V, P and Q scales. Each task is cognitive in nature and the scale as a whole provides a measure of the child's overall cognitive functioning. Only three of the eighteen tests in the McCarthy scales- Leg coordination, Arm coordination and Imitative Action- are not included on this GC scale because they involve gross motor rather than cognitive ability.

e)Memory scale (Mem) - It assesses the child's short term memory. The Pictorial Memory and Tapping Sequence test present auditory and visual stimuli simultaneously; the Verbal and Numerical Memory tasks provide auditory stimuli only.

f)Motor scale (Mot)- It assesses the child's coordination as he performs a variety of gross and fine motor tasks. The Leg Coordination, Arm Coordination and Imitative Action tests provide measures of gross motor ability. Draw- A- Design and Draw-A-Child assess fine motor coordination.

Scoring:

To assess the impact of intervention McCarthy Scale of children's Abilities (MSCA) designed by McCarthy (1972) was administered on 21 last year selected children individually in home situation. Scoring of MSCA was done using the standard procedure given in the scale. The raw scores were converted into scale index score.

To find out the impact, performance of children at pre and post testing was compared using paired't' test.

viii) Results achieved during 2014-15:

Mental abilities of preschool children

To find out the impact of intervention on mental abilities of children, performance on each scale and sub scale of each child was calculated at post testing level and compared with the pre testing.Mental age of each child was calculated using Grand Scale Index and improvement was seen.

Mental age against chronological age

The mental age of the child was calculated against their scale index score and was compared with their chronological age. The data at pre testing in table 1 affirmed that out of the total sample, 47.61 percent children were having their mental age above their chronological age which indicated that these children had superior mental abilities followed by equal to chronological age (28.57) and below the chronological age (23.81). Data at post testing level portrays that nearly 75% sample reached to above their chronological age and 28.57 at equal to chronological age category. None of the child was found at below chronological age demonstrating impact of intervention.

Table 1. Mental age of children against chronological age at pre and post testing stage (n=21)

Setting / Mental age	Pre testing F (%)	Post testing f (%)
Below chronological age	5 (23.81)	00
Equal to chronological age	6 (28.57)	6(28.57)
Above chronological age	10 (47.61)	15(71.43)
Total	21	21

Perceptual abilities of children

Data in Table 2 displays the mean comparison of perceptual abilities performed by the children on various items against the standards at pre and post testing. Data pinpointed that children were superior in abilities on block building and tapping sequence at both the testing. In other aspects of perceptual abilities at pre and post testing like puzzle solving, right-left orientation, draw a design, draw a child and conceptual grouping aspect they lagged behind when compared with the standards. There were significant differences in pre and post performance of children after intervention programme program as calculated't' values were statistically proved to be significant for block building (8.07), puzzle solving (22.59), tapping sequence (7.62), right-left orientation (7.12), draw a design (10.29), draw a child (13.19) and conceptual grouping (14.11). These findings were supported by Mohanty and Hejmadi (1992) who studied that preschool children receiving cognitive intervention showed significant gain in cognitive abilities.

Table 2 Performance of children on aspects of perceptual abilities at pre and post testing stage against standards

Setting Aspects	Pre testing Mean		Post testing Mean		t-values
	Calculated	Standard	Cal.	Stan	
Block Building	8.04±1.11	7.1	9.47±1.16	9.3	**8.07***
Puzzle Solving	2.14±1.01	3.8	6.85±0.91	8.5	22.59*
Tapping Sequence	2.33±0.85	2.1	3.95±1.35	3.5	7.62*
Right-left Orientation	1.47±1.07	-	3.33±1.59	-	7.12*
Draw-A-Design	3.14±1.98	4.02	7.19±2.92	6.7	10.29*
Draw-A-Child	2.19±1.20	3.05	6.47±2.22	8.0	13.19*
Conceptual Grouping	3.42±2.24	5.4	8.66±2.70	7.6	14.11*
Total perceptual abilities	22.76±4.41		45.95±6.69		26.85*

Verbal abilities of children

Table 3 elucidates the performance of children on aspects of verbal abilities. Children at pre

and post testing had higher performance on pictorial memory when calculated mean (3.95 and 5.42 respectively) was compared with the standard mean. Children at both the testing had poor performance on verbal memory aspect (4.66 and 10.23 respectively), against the standards. Further results pinpointed that the performance of children at pretesting and at post testing were slightly higher against the standard mean on word knowledge.

The mean comparison indicated that at post-testing stage children performed significantly better on all the aspects of verbal abilities as compared to pre-testing.

Table 3 Performance of children on aspects of verbal abilities at pre and post testing stage against standards

Aspects	Pre testing		Post testing		t-values
	Mean		Mean		
	Calculated	Standard	Cal.	Standard	
Pictorial Memory	3.95±0.97	2.2	5.42±0.87	3.6	11.24*
Verbal Memory	4.66±3.42	12.2	10.23±4.66	22.0	12.57*
Word Knowledge	11.57±4.71	11	13.47±4.83	13.2	16.96*
Total verbal abilities	20.19±7.25		29.14±8.33		18.63*

Quantitative abilities of children

Table 4 unveils the performance of children on quantitative abilities against the standards at pre and post testing. It is apparent in table that calculated mean of children's performance on counting and sorting aspect was poor at pre testing (3.38)when compared with the standards (4.1), whereas, at post testing it was found higher at post testing (6.57) than the standards norms, indicating the impact of intervention. Further probing of data revealed that number questions and numerical memory was found higher at both the testing against the standards. A comparative analysis showed that there were significant differences in pre and post performance of children after intervention program as calculated 't' values were statistically proved to be significant for all aspects. Mohanty and Mishra (1994) reported that intervention programme had significant effect on the cognitive abilities of preschool children of age 3-6 years

Table 4 Performance of children on aspects of quantitative abilities at pre and post testing stage against standards

	Pre testing		Post testing		t-values
	Mean		Mean		
Aspects	**Calculated**	**Standard**	**Calculated**	**Standard**	
Number Question	5.80±3.05	3.1	11.28±5.13	4.4	9.87*
Counting & Sorting	3.38±1.90	4.1	6.57±2.65	6.3	10.71*
Numerical Memory(forwarded & backward series)	6.14±2.26	4.6	7.52±2.50	5.9	12.71*
Total quantitative abilities	15.33±5.00		25.38±6.97		15.06*

The main finding emanated from this study are summarized that more than half of the total sample had mental age equal and below the chronological age revealing the inferior mental abilities of children at pre testing. As to improve the level of children intervention was given and significant improvement was seen on all the aspects of verbal abilities, perceptual abilities and quantitative abilities. These results were in line with the results of Sangwan and Duhan (2009) who studied the aspects of cognitive development and found the better performance of experimental group than the control group after giving the intervention in all the aspects of mental abilities.

CONCLUSION

Early childhood is not taken seriously and is often considered a part of growing up. In conclusion, based on our findings indicating the significant impact of intervention on mental ability of preschoolers. The results of this study indicated that childhood is critical period in a young person's life, and their experiences in these formative phases can have a lasting impact on their life prospects. Regarding performance on different mental abilities it was observed that the performance was better than standard on all the aspects of quantitative and perceptual abilities. It was surprising that the aspect of verbal abilities i.e verbal memory and word knowledge was again poor than standard after giving the intervention. So there is a need of providing more stimulating environment in home and school also.

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Santosh Sangwan
Asstt. Scientist , Department of HDFS, College of Home Science, CCS Haryana Agricultural University Hisar, Haryana India.