

RESEARCH PAPER

Influence of child factors on cognitive abilities of children from Nali-Kali (Joyful-Learning) and conventional education program

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(Received: July, 2017 ; Accepted: September, 2018)

Abstract: The study was conducted in Dharwad taluk of Karnataka state during the year 2016-17 to know the influence of child factors on cognitive abilities of children from Nali-Kali (Joyful-Learning) and conventional education program in rural and urban areas. Total samples of 128 school children studying in 4th standard (64 children from Nali-Kali and 64 children from conventional schools) were selected from eight schools (4 Nali-Kali and 4 conventional) of rural and urban areas of Dharwad taluk. Wechsler's Scale of Intelligence for Children-III was administered to measure cognitive abilities of children in both rural and urban areas from Nali-Kali and conventional schools. The findings revealed that, girls showed higher scores in verbal tests, verbal intelligence and verbal comprehension whereas, boys showed higher scores in performance tests, performance intelligence and perceptual organization. Majority of first born children scored higher in verbal tests performance tests and cognitive processes in both conventional and Nali-Kali schools of rural and urban areas.

Key words: Cognitive abilities, Nali-Kali, Performance, Verbal

Introduction

Cognitive development is the construction of thought processes, including remembering, problem solving, and decision-making, from childhood through adolescence to adulthood. It refers to how a person perceives, thinks and gains understanding of his or her world through the interaction of genetic and learned factors. Among the areas of cognitive development are information processing, intelligence, reasoning, language development, and memory (Burger, 2003). Cognitive development has far reaching implications for curriculum development, planning, implementation, evaluation and instructional management in schools. Curriculum planning revolves around the subject matter, the society and the learner. In the subject matter, orientation in planning, then the structure of the content should be a sequence that is compatible with child development characteristics. Mental skills or cognitive abilities include attributes like perception, attention, memory (short-term or working and long-term), motor, language, visual and spatial processing and executive functions. These cognitive attributes are different in males and females. The close relationship between parents and their first child offers opportunities which might be considered advantageous for the child in some ways. First borns tend to develop better verbal skills on the whole than later born children.

Material and methods

The study was conducted in rural and urban areas of Dharwad taluk of Karnataka state during the year 2016-17. The differential design was used to see the difference between gender and ordinal position on cognitive abilities. The samples were selected from eight schools (4 Nali-Kali and 4-conventional) children studying in 4th grade who attended Nali-Kali up to 3rd level and who are in 4th grade of conventional school of rural and urban areas of Dharwad taluk. A sample

comprised of 128 children, 16 children (8 boys and 8 girls) from Nali-Kali and conventional school were randomly selected. For the study purpose, the influencing child factors such as gender and ordinal position were considered. According to the gender, children were classified as boys and girls and according to ordinal position, children were classified as first born and later born. To assess the cognitive abilities of the children, Wechsler Intelligence Scale for Children - Third edition (WISC-III) developed by David Wechsler (1974) was used. WISC-III consists of 13 subsets, each measuring different aspects of cognition. Subtests are organized into two groups *i.e.* performance tests and verbal subtests. After the response for each subtest, the correct responses have been scored with one and summed to obtain raw scores. The raw score of each subtest are converted to scaled score, then each subtest are added separately to get verbal and performance intelligence score.

A pilot study was conducted on sample of 48 children, to know the reliability of Wechsler's Intelligence Scale for Children-III by using split-half method and was found to be 0.72.

Results and discussion

Results related to cognitive abilities of children from rural and urban areas of Nali-Kali and conventional school children by gender with respect to verbal tests, performance tests and cognitive processes are presented in Table 1a and 1b.

The results in the Table 1 shows that, in rural areas, among Nali-Kali school children, in majority of the verbal tests girls showed higher mean scores than boys with respect to information, vocabulary, comprehension and verbal intelligence. In case of conventional school children girls showed higher mean scores than boys, with respect to information, similarities,

vocabulary, comprehension, digit span and verbal intelligence. There was a significant difference between boys and girls.

In urban locality, among Nali-Kali school children, in majority of verbal subtests, girls scored higher than boys in information, vocabulary, comprehension and verbal intelligence. In conventional school children, girls were better in information, similarities, vocabulary, comprehension, digit span and verbal intelligence. Significant difference was found. This may be because girls tend to produce words at earlier age, have larger vocabulary and show higher level of language complexity.

These results are in line with study by Ardila *et al.* (2011) and Torres *et al.* (2011) who revealed that 73.25 per cent of girls performed better in verbal abilities, vocabulary, verbal fluency, language, verbal comprehension and language expression. The difference between boys and girls was found

to be significant. Another study conducted by Halphern (2010) revealed that females scored higher in verbal tasks *i.e.* comprehension, semantic information use of phonological whereas boys scored higher in performance tasks *i.e.* mathematic, spatial response.

The results in the Table 1 a reveals that, in case of Nali-Kali school children, in performance subtests, boys showed higher mean scores than girls in coding and symbol search. In case of conventional school children, mean score of boys were higher than girls in picture completion, coding, picture arrangement, object assembly, symbol search and performance intelligence. The difference between boys and girls was found to be significant.

In urban areas, among Nali-Kali school children, mean scores of boys were better than girls in picture arrangement and block

Table 1. Mean scaled scores of verbal tests of Nali-Kali and conventional school children in rural and urban areas by gender

Locality	Verbal tests (Max.scores)		Nali-Kali (n=32)			Conventional (n=32)		
			Boys (16) Mean $\pm$ SD	Girls (16) Mean $\pm$ SD	t-value	Boys (16) Mean $\pm$ SD	Girls (16) Mean $\pm$ SD	t-value
Rural	Information	(30)	4.50 $\pm$ 2.00	7.81 $\pm$ 1.52	3.28**	8.06 $\pm$ 2.11	10.44 $\pm$ 2.45	2.24*
	Similarities	(33)	3.38 $\pm$ 3.07	3.63 $\pm$ 3.01	1.16	5.06 $\pm$ 2.32	7.81 $\pm$ 2.93	2.58**
	Arithmetic	(30)	10.81 $\pm$ 2.56	10.25 $\pm$ 2.44	1.13	10.81 $\pm$ 1.76	10.75 $\pm$ 2.59	0.08
	Vocabulary	(60)	2.88 $\pm$ 1.50	4.63 $\pm$ 1.09	2.02*	6.18 $\pm$ 0.91	8.75 $\pm$ 1.73	2.69**
	Comprehension	(36)	5.00 $\pm$ 2.28	6.69 $\pm$ 2.41	2.01*	4.25 $\pm$ 1.98	6.56 $\pm$ 2.34	2.71**
	Digit span	(30)	6.69 $\pm$ 2.75	7.06 $\pm$ 2.89	1.38	7.94 $\pm$ 2.02	9.44 $\pm$ 2.58	2.50*
Urban	Verbal intelligence		80.94 $\pm$ 8.94	85.19 $\pm$ 9.09	2.15*	90.81 $\pm$ 7.00	98.94 $\pm$ 8.48	3.14**
	Verbal tests		Boys (16)	Girls (16)	t-value	Boys (16)	Girls (16)	t-value
	Information	(30)	6.00 $\pm$ 2.39	8.94 $\pm$ 3.13	2.52*	7.69 $\pm$ 2.21	9.88 $\pm$ 3.22	2.23*
	Similarities	(33)	3.81 $\pm$ 2.04	3.93 $\pm$ 2.98	1.29	6.88 $\pm$ 3.24	8.25 $\pm$ 2.41	2.14*
	Arithmetic	(30)	9.75 $\pm$ 2.82	9.63 $\pm$ 3.24	0.81	10.75 $\pm$ 2.18	10.25 $\pm$ 1.44	0.77
	Vocabulary	(60)	4.44 $\pm$ 1.41	6.56 $\pm$ 1.99	2.36*	5.31 $\pm$ 1.96	6.50 $\pm$ 1.89	2.19*
	Comprehension	(36)	4.88 $\pm$ 2.28	6.19 $\pm$ 2.93	2.34*	6.31 $\pm$ 2.49	8.50 $\pm$ 1.83	2.46*
	Digit span	(30)	6.13 $\pm$ 1.71	6.42 $\pm$ 2.39	1.34	7.31 $\pm$ 2.33	9.25 $\pm$ 2.24	2.48*
	Verbal intelligence		82.19 $\pm$ 9.97	84.06 $\pm$ 10.28	2.19*	88.81 $\pm$ 9.62	94.75 $\pm$ 8.91	2.25*

*Significant at 5 per cent level **Significant at 1 per cent level

Table 1 a. Mean scaled scores of performance tests of Nali-Kali and conventional school children in rural and urban areas by gender

Locality	Performance tests (Max.scores)		Nali-kali (n=32)			Conventional (n=32)		
			Boys (16) Mean $\pm$ SD	Girls (16) Mean $\pm$ SD	t-value	Boys (16) Mean $\pm$ SD	Girls (16) Mean $\pm$ SD	t-value
Rural	Picture completion	(30)	3.25 $\pm$ 2.44	3.06 $\pm$ 2.02	1.51	6.38 $\pm$ 3.30	4.88 $\pm$ 2.83	2.46*
	Coding	(119)	12.63 $\pm$ 2.09	7.63 $\pm$ 3.03	3.43**	11.56 $\pm$ 3.96	8.88 $\pm$ 4.22	2.86**
	Picture arrangement	(64)	2.19 $\pm$ 0.54	2.38 $\pm$ 1.02	0.65	4.31 $\pm$ 1.45	2.75 $\pm$ 0.86	2.34*
	Block design	(69)	2.44 $\pm$ 0.73	2.56 $\pm$ 0.73	0.49	3.00 $\pm$ 1.21	3.62 $\pm$ 2.02	1.06
	Object assembly	(44)	2.88 $\pm$ 1.36	2.00 $\pm$ 0.00	1.57	3.69 $\pm$ 2.60	2.06 $\pm$ 0.25	2.49**
	Symbol search	(45)	10.69 $\pm$ 1.96	8.00 $\pm$ 1.71	3.13**	13.69 $\pm$ 2.12	10.56 $\pm$ 2.06	3.16**
	Mazes	(28)	5.13 $\pm$ 1.50	5.13 $\pm$ 2.58	0.00	7.00 $\pm$ 1.59	6.25 $\pm$ 1.23	1.49
	Performance intelligence		81.00 $\pm$ 7.92	79.06 $\pm$ 6.08	1.48	89.00 $\pm$ 7.92	78.06 $\pm$ 6.08	3.68**
Urban	Performance tests		Boys (16)	Girls (16)	t-value	Boys (16)	Girls (16)	t-value
	Picture completion	(30)	4.75 $\pm$ 2.38	3.92 $\pm$ 1.97	1.24	4.75 $\pm$ 2.11	3.63 $\pm$ 1.96	1.56
	Coding	(119)	7.81 $\pm$ 3.95	7.81 $\pm$ 3.92	0.00	10.81 $\pm$ 2.48	8.00 $\pm$ 3.93	2.56*
	Picture arrangement	(64)	4.25 $\pm$ 0.57	2.69 $\pm$ 1.08	2.43*	4.88 $\pm$ 1.50	2.06 $\pm$ 1.06	2.07*
	Block design	(69)	4.19 $\pm$ 2.17	2.25 $\pm$ 1.88	2.09*	4.81 $\pm$ 1.56	2.00 $\pm$ 2.25	2.27*
	Object assembly	(44)	2.31 $\pm$.873	2.50 $\pm$ 1.75	0.38	4.38 $\pm$ 1.63	2.31 $\pm$ 1.66	2.83*
	Symbol search	(45)	8.38 $\pm$ 2.80	8.69 $\pm$ 2.09	0.36	9.44 $\pm$ 1.75	9.25 $\pm$ 2.27	0.26
	Mazes	(28)	5.25 $\pm$ 1.61	5.88 $\pm$ 1.54	1.12	7.69 $\pm$ 2.06	5.38 $\pm$ 1.75	2.05*
	Performance intelligence		81.75 $\pm$ 7.63	79.81 $\pm$ 6.79	1.08	91.13 $\pm$ 8.28	88.19 $\pm$ 9.77	2.02*

*Significant at 5 per cent level **Significant at 1 per cent level

design. In conventional school children, boys performance was better in coding, picture arrangement, block design, object assembly, mazes and performance intelligence. The difference between boys and girls was found to be significant. This may be because boys tend to engage in play during their leisure time as they go out of the house at any time and play with other children where as in case of girls they tend to engage more in indoor activities, they are interested to play with the materials than group games, so boys performed well in performance test.

The results of Ardila *et al.* (2011) revealed that, in case of performance task boys performed higher (76.23 %) than girls in coding, spatial abilities and constructional abilities. The difference between boys and girls was found to be significant.

The results in the Table 1b show that, with respect to cognitive processes, in rural areas, among Nali-Kali school children, girls scored higher in verbal comprehension than boys. In case of conventional school children, girls scored higher than boys in verbal comprehension and freedom from distractibility, boys scored higher than girls in perceptual organization and processing speed. The significant difference was found between girls and boys.

In urban locality, among Nali-Kali school children, girls scored higher than boys in verbal comprehension. Whereas in conventional school children, girls scored higher than the boys in verbal comprehension and freedom from distractibility and boys scored higher than girls in perceptual organization and processing speed. The difference was found to be significant.

Results related to influence of ordinal position on cognitive abilities of children from rural and urban areas of Nali-Kali and conventional school children with respect to verbal tests, performance tests and cognitive processes are presented in Table 2, 2a and 2 b.

The results presented in Table 2 reveals that, with respect to verbal subtest, in rural area among Nali-Kali school, first born children scored higher in similarities, arithmetic, vocabulary and comprehension. However, difference was not significant. In case of conventional school, first born children scored higher mean score in information, similarities, vocabulary, comprehension, digit span and verbal intelligence. However, the significant difference was observed.

Table 1b. Mean scaled scores of cognitive processes of Nali-Kali and conventional school children in rural and urban areas by gender

Locality	Cognitive processes	Nali-kali		t-value	Conventional		t-value
		Boys (16) Mean $\pm$ S.D	Girls (16) Mean $\pm$ S.D		Boys (16) Mean $\pm$ S.D	Girls (16) Mean $\pm$ S.D	
Rural	Verbal comprehension	70.13 $\pm$ 5.32	78.19 $\pm$ 6.25	2.85**	70.13 $\pm$ 8.25	74.19 $\pm$ 7.74	2.85**
	Perceptual organization	56.75 $\pm$ 4.65	57.63 $\pm$ 4.30	0.55	57.75 $\pm$ 4.65	54.63 $\pm$ 4.30	2.25**
	Freedom of distractibility	88.25 $\pm$ 6.76	90.19 $\pm$ 5.63	1.76	88.25 $\pm$ 10.76	92.19 $\pm$ 11.63	2.76**
	Processing speed	100.62 $\pm$ 8.08	101.81 $\pm$ 6.23	1.40	110.87 $\pm$ 6.37	96.62 $\pm$ 6.93	2.16*
Urban	Cognitive processes	Boys (16)	Girls (16)	t-value	Boys (16)	Girls (16)	t-value
	Verbal comprehension	69.06 $\pm$ 6.90	76.69 $\pm$ 13.62	2.21*	78.75 $\pm$ 7.37	84.00 $\pm$ 8.64	2.15*
	Perceptual organization	58.00 $\pm$ 4.58	59.25 $\pm$ 9.33	0.48	66.50 $\pm$ 6.69	58.00 $\pm$ 7.64	2.17*
	Freedom of distractibility	91.94 $\pm$ 11.43	92.13 $\pm$ 12.67	0.04	101.25 $\pm$ 9.16	99.69 $\pm$ 9.29	0.47
	Processing speed	91.13 $\pm$ 14.44	92.00 $\pm$ 10.98	0.19	109.94 $\pm$ 9.19	100.00 $\pm$ 8.51	2.03*

*Significant at 5 per cent level **Significant at 1 per cent level

Table 2. Mean scaled scores of verbal tests of Nali-Kali and conventional school children in rural and urban areas by ordinal position

Locality	Verbal tests (Max.scores)	Nali-Kali (n=32)			Conventional (n=32)		
		First born (10) Mean $\pm$ S.D	Later born (22) Mean $\pm$ S.D	t-value	First born (09) Mean $\pm$ S.D	Later born (23) Mean $\pm$ S.D	t-value
Rural	Information (30)	5.46 $\pm$ 1.34	5.44 $\pm$ 2.96	1.05	8.85 $\pm$ 0.69	6.20 $\pm$ 1.64	2.08*
	Similarities (33)	4.80 $\pm$ 2.17	4.02 $\pm$ 3.60	1.13	8.01 $\pm$ 1.57	6.40 $\pm$ 2.88	2.16*
	Arithmetic (30)	10.80 $\pm$ 9.06	9.78 $\pm$ 3.11	1.96	11.86 $\pm$ 2.47	10.00 $\pm$ 2.35	1.26
	Vocabulary (60)	4.00 $\pm$ 1.22	3.77 $\pm$ 1.09	1.12	7.14 $\pm$ 0.69	5.20 $\pm$ 1.92	3.33**
	Comprehension (36)	4.56 $\pm$ 1.34	4.44 $\pm$ 3.39	1.02	6.71 $\pm$ 1.79	5.40 $\pm$ 2.41	2.02*
	Digit span (30)	8.80 $\pm$ 3.05	8.67 $\pm$ 3.57	1.14	11.00 $\pm$ 2.94	9.00 $\pm$ 1.22	2.17**
	Verbal intelligence	83.40 $\pm$ 2.88	83.22 $\pm$ 13.72	1.51	104.14 $\pm$ 6.69	90.20 $\pm$ 10.66	3.29**
Urban	Verbal tests	First born (14)	Later born (18)	t-value	First born (15)	Later born (17)	t-value
	Information (30)	6.76 $\pm$ 2.86	5.61 $\pm$ 2.22	1.65	8.87 $\pm$ 2.58	6.22 $\pm$ 3.19	2.53**
	Similarities (33)	3.07 $\pm$ 3.77	3.76 $\pm$ 2.45	1.51	6.88 $\pm$ 2.29	4.77 $\pm$ 2.86	2.39*
	Arithmetic (30)	9.38 $\pm$ 2.72	8.07 $\pm$ 3.04	1.03	10.37 $\pm$ 1.68	10.56 $\pm$ 1.88	0.02
	Vocabulary (60)	3.61 $\pm$ 2.10	3.46 $\pm$ 1.61	1.40	6.13 $\pm$ 1.46	4.00 $\pm$ 2.18	2.43*
	Comprehension (36)	5.00 $\pm$ 2.34	5.07 $\pm$ 2.72	1.00	8.75 $\pm$ 1.28	6.11 $\pm$ 1.36	2.10*
	Digit span (30)	7.76 $\pm$ 2.27	7.23 $\pm$ 1.73	0.44	10.50 $\pm$ 2.26	9.11 $\pm$ 1.16	1.72
	Verbal intelligence	90.61 $\pm$ 13.36	90.30 $\pm$ 9.37	0.60	99.88 $\pm$ 6.33	95.55 $\pm$ 10.69	2.18*

*Significant at 5 per cent level **Significant at 1 per cent level

Table 2 a. Mean scaled scores of performance tests of Nali-Kali and conventional school children in rural and urban areas by ordinal position

Locality	Performance Tests (Max.scores)	Nali-Kali (n=32)			Conventional (n=32)		
		First born (10)	Later born (22)	t-value	First born (09)	Later born (23)	t-value
		Mean $\pm$ S.D	Mean $\pm$ S.D		Mean $\pm$ S.D	Mean $\pm$ S.D	
Rural	Picture completion (30)	3.00 $\pm$ 2.12	2.77 $\pm$ 2.11	1.11	6.71 $\pm$ 3.35	4.80 $\pm$ 1.78	2.69**
	Coding (119)	8.00 $\pm$ 1.58	8.78 $\pm$ 3.46	1.19	11.14 $\pm$ 5.08	9.20 $\pm$ 4.15	3.29**
	Picture arrangement (64)	2.00 $\pm$ 0.00	2.44 $\pm$ 0.73	0.46	5.71 $\pm$ 0.76	3.00 $\pm$ 1.00	2.58**
	Block design (69)	2.40 $\pm$ 0.55	2.56 $\pm$ 0.88	0.07	3.43 $\pm$ 2.15	3.60 $\pm$ 1.14	0.32
	Object assembly (44)	3.00 $\pm$ 0.00	3.11 $\pm$ 1.69	1.04	2.57 $\pm$ 1.13	2.00 $\pm$ 0.00	0.81
	Symbol search (45)	8.20 $\pm$ 1.92	8.78 $\pm$ 2.22	1.16	11.57 $\pm$ 2.15	9.40 $\pm$ 1.52	2.06*
	Mazes (28)	5.80 $\pm$ 1.48	5.22 $\pm$ 0.97	1.26	7.14 $\pm$ 0.89	7.20 $\pm$ 0.84	0.76
	Performance intelligence	84.60 $\pm$ 3.57	83.22 $\pm$ 13.71	1.03	82.28 $\pm$ 9.62	80.80 $\pm$ 7.42	1.44
Urban	Performance tests	First born (14)	Later born (18)	t-value	First born (15)	Later born (17)	t-value
	Picture completion (30)	3.84 $\pm$ 2.23	3.53 $\pm$ 2.14	1.08	5.00 $\pm$ 1.31	4.89 $\pm$ 2.47	2.00*
	Coding (119)	6.69 $\pm$ 3.96	5.76 $\pm$ 4.08	1.03	11.62 $\pm$ 3.54	9.11 $\pm$ 3.25	2.51*
	Picture arrangement (64)	2.30 $\pm$ 0.63	2.69 $\pm$ 1.18	0.69	5.25 $\pm$ 0.88	3.11 $\pm$ 1.05	2.08*
	Block design (69)	3.15 $\pm$ 1.95	2.85 $\pm$ 1.67	1.90	4.75 $\pm$ 3.01	3.44 $\pm$ 1.23	1.11
	Object assembly (44)	3.23 $\pm$ 0.83	2.69 $\pm$ 1.97	1.46	4.13 $\pm$ 1.55	3.89 $\pm$ 1.90	1.18
	Symbol search (45)	7.07 $\pm$ 2.62	7.92 $\pm$ 2.66	1.12	10.75 $\pm$ 2.18	8.11 $\pm$ 1.90	2.23*
	Mazes (28)	6.07 $\pm$ 0.95	5.38 $\pm$ 1.98	1.44	7.75 $\pm$ 1.28	6.89 $\pm$ 1.45	0.69
	Performance intelligence	80.61 $\pm$ 6.71	80.76 $\pm$ 10.08	0.14	91.75 $\pm$ 7.08	90.44 $\pm$ 7.90	1.27

*Significant at 5 per cent level **Significant at 1 per cent level

Table 2 b. Mean scaled scores of cognitive processes of Nali-Kali and conventional school children in rural and urban areas by ordinal position

Locality	Cognitive processes	Nali-kali			Conventional		
		First born (10)	Later born (22)	t-value	First born (09)	Later born (23)	t-value
		Mean $\pm$ S.D	Mean $\pm$ S.D		Mean $\pm$ S.D	Mean $\pm$ S.D	
Rural	Verbal comprehension	80.40 $\pm$ 4.92	79.44 $\pm$ 11.97	1.07	88.00 $\pm$ 9.07	76.80 $\pm$ 7.56	3.23**
	Perceptual organization	76.20 $\pm$ 4.45	74.78 $\pm$ 5.12	1.82	78.28 $\pm$ 3.90	80.20 $\pm$ 4.76	1.98
	Freedom of distractibility	96.70 $\pm$ 5.09	96.56 $\pm$ 15.73	0.36	97.28 $\pm$ 16.96	96.60 $\pm$ 5.366	0.66
	Processing speed	95.20 $\pm$ 4.38	94.78 $\pm$ 11.97	1.48	109.57 $\pm$ 15.97	102.60 $\pm$ 13.24	2.53**
Urban	Cognitive processes	First born (14)	Later born (18)	t-value	First born (15)	Later born (17)	t-value
	Verbal comprehension	77.92 $\pm$ 12.13	71.84 $\pm$ 8.22	1.18	87.50 $\pm$ 5.80	83.44 $\pm$ 9.54	2.12*
	Perceptual organization	68.30 $\pm$ 5.87	68.69 $\pm$ 8.89	0.02	73.75 $\pm$ 8.08	71.11 $\pm$ 8.28	1.83
	Freedom of distractibility	95.92 $\pm$ 10.82	87.84 $\pm$ 12.01	1.57	103.62 $\pm$ 10.24	101.22 $\pm$ 7.75	1.68
	Processing speed	89.76 $\pm$ 11.52	88.76 $\pm$ 14.61	1.21	102.12 $\pm$ 10.59	99.11 $\pm$ 12.21	2.07*

*Significant at 5 per cent level **Significant at 1 per cent level NS- Non Significant

In urban area, among Nali-Kali school, the first born children scored higher than the later born children in similarities, arithmetic, vocabulary, comprehension and digit span but the significant difference was not found. In case of conventional school, first born children scored higher than later born children in information, similarities, vocabulary, digit span and verbal intelligence.

The results in the Table 2a reveals that, among rural areas, among Nali-Kali school children, in majority of performance tests, first borns were better in performance tests than later borns. However, the significant difference was not found. In conventional school, the first born children scored higher than the later born children in picture completion, coding, picture arrangement and symbol search. However, the significant difference was found between first born and later born children.

In urban locality, among Nali-Kali school, in majority of performance tests, first born children scored higher than later born children. However, the significant difference was not found. In case of conventional school, first born score children scored

higher mean score than later born in picture completion, coding, picture arrangement, symbol search. The significant difference was found between first born and later born children. This may be because first born are more exposed to the environment, parents give more importance for their learning, as they give lot of time in teaching and stimulating the children. So, the first born children tend to have better cognitive skills than later born children.

The results in the Table 2b reveals that, with respect to cognitive processes, in rural area, among Nali-Kali school, there was no significant difference between first born and later born children in cognitive processes. Where as in case of conventional school, first born children scored higher in verbal comprehension and processing speed than later born children. The significant difference was found between first born and later born children.

In urban locality, among Nali-Kali school, though first born children scored higher than the later born they did not differ statistically. Where as in case of conventional school first born

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children scored higher in verbal comprehension, processing speed than later born children. The significant difference was found between first born and later born children.

Study conducted by, Heiland (2014) and Gilmore (2016), showed that, children who are later in the birth order have lower cognitive ability. Because as the first-born grow up with their parent's attention as they have greater access to more resources and they do not have to share them with any siblings, so they grow smarter in their abilities. Another study conducted by Tushai and Chai (2011) and Zyrianova *et al.* (2013) also revealed that, first born children scored higher than later born children in information, similarities, comprehension, picture arrangement, block design. The difference was found to be statistically significant.

Conclusion

În both rural and urban areas, children from Nali-Kali and conventional schools, it was observed that, girls showed higher scores in verbal tests whereas, boys showed higher scores than girls in performance tests. Majority of first born children scored higher in both verbal and performance tests in conventional school and Nali-Kali school children of both rural and urban areas. This may be the result of more verbal communication parents and their one child than between parents and each of their later children. First borns have an advantage over their siblings when it comes to superior verbal skills because of the greater interaction between parents and their first children, because of the superior verbal skills, first borns are more creative and use more complex thinking.

References

- Ardila, A., Rosseli, M., Matute, E. and Inozemtseva, O., 2011, Gender difference in cognitive development. *Dev. Psychol.*, 47(4): 984-990.
- Burger, K., 2003, How does early childhood care and education affect cognitive development. *Early Childhood Res.*, 25(9): 140-165.
- David Wechsler, 1974, Manual for wechsler's intelligence scale for children. *Psychol. Corporation*, 5(2): 12-19.
- Gilmore, G., 2016, Understanding birth order: A within-family analysis of birth order effects. *J. Humanistic Studies*, 3(2): 1-8.
- Halphern, D. F., 2010, Sex difference in intelligence: Implication for education. *American Psychol. Assoc.*, 52 (1):1091-1102.
- Heiland, A., 2014, Does the birth order affect the cognitive development of a child. *Dev. Psychol.*, 21(2): 409-448.
- Torres, A., Gomez, E., Vidal, A. and Salmero, M., 2011, Gender difference in cognitive functioning. *Actas Esp. Psiquiatr*, 34 (6): 408-415.
- Tushai, S.H. and Chai, L.T., 2011, A study of birth order, cognitive development and personality. *Int. J. Soc. Sci. Humanity.*, 6 (11):242-254.
- Zyrianova, N. M., Chertkova, Y. D. and Pankratova, A. A., 2013, Influence of birth order and family size on relationship between cognitive abilities and personality traits. *Soc. Behavioral Sci.*, 8(13): 262-266.