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Testing Verbal Intelligence of Visually Challenged Children in Relation to some Demographic Variables

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ABSTRACT

The present paper attempts to explore the impact of gender, school setting and age of visually challenged children on their verbal intelligence. The investigator examined the verbal intelligence of the children under study by administering a self developed tactile test of verbal intelligence. The sample was categorized according to gender (male & female), school setting (inclusive & exclusive) and age groups i.e. age group I (11 to 13 years), age group II (14 to 16 years) and age group III (17 to 19 years). Comparison on verbal intelligence was made by employing 't' test and 'F' test. The findings of the study reveal no significant impact of gender and school setting on verbal intelligence while the age is found to have determining effect on verbal intelligence of visually challenged children.

Keywords: Verbal intelligence, visually challenged

1. INTRODUCTION

Intelligence is the most unique character of mankind. Human being is believed as the most intelligent creature having unique pattern of characteristics, abilities, potentials etc. Intelligence is a kind of mental energy in the form of mental abilities available within an individual, which enables him to cope with his environment and to deal with new situations as effectively as possible. The individual's behavior, performance, activities, thinking, adjustment, personality traits etc. reflects his/her intellectual ability. However the distribution of intelligence is not equal among all human beings, wide individual differences exist among individuals with regard to intellectual abilities. The assessment of intelligence by various tests has given reasons enough to believe that not only does intelligence vary from individual to individual but it also tends to vary in the same individual from age to age and situation to situation (Mangal, 2002).

Intelligence testing for special needs children in terms of vision sense has been one of the most debated issues. Since, visually challenged are deprived of vision sense, so the skills being assessed for a blind or low vision person may differ from the skills being assessed for a sighted person. Tillman (1967) revealed that the intelligence of visually challenged children as measured by IQ tests does not

show significant differences from the sighted population. Simpkins (1979) made an intensive investigation of cognitive skills and found a substantial lags in cognitive skills by the visually impaired children. Vander Kolk (1982) concluded that female visually impaired children had greater difficulty on the arithmetic subtest of Wechsler's Adult Intelligence Scale (verbal) but they were found to be better on vocabulary and similarities in certain age groups. On contrary male showed three times better performance

on information and arithmetic subtest. Singh (1985) reported that age wise trends of scores on various subtests of WAIS-R (Verbal Hindi) scale showed an increase in the mean scores as the age progresses. Rani (2016) found no significant impact of gender on mental alertness of visually challenged individuals.

A perusal of the research work reveals that most of the studies have been conducted by using tests developed for sighted population however tests developed for visually challenged people keeping in mind their specific needs may be useful to assess their academic progress or to understand learning needs in real sense. Psychological characteristic like intelligence play the most vital role in one's educational life. So far as the visually challenged people are concerned, the prognosis of academic performance and behavior in educational surroundings or outside is possible only when we know about their intellectual level. Therefore in the present study, the investigator made an attempt to explore the verbal intelligence of visually challenged children with respect to their gender, school setting and age by using the test developed for visually challenged children in tactile mode.

2. METHOD

2.1 Objectives of the Study:

1. To investigate the impact of gender on verbal intelligence of visually challenged children.
2. To compare visually challenged children studying in inclusive and exclusive school setting on verbal intelligence.
3. To study verbal intelligence of visually challenged children with respect to their age.

2.2 Population and Sample:

Visually challenged children belonging to the age of 11 to 19 years were regarded as the population of the present study. A sample of 54 visually challenged children (male & female) with the eligibility to read and write the Braille script was selected from the inclusive and exclusive schools of Delhi region by employing purposive sampling technique.

2.3Operational Definitions of the terms used:

2.3.1 Verbal Intelligence:

Verbal intelligence is referred to an individual's ability to use language, to deal with meanings of words, to comprehend, to analyze and to reason with verbal material which may include variety of items. In the present study, verbal intelligence is taken as the ability of visually challenged children to perform on verbal tactile test of intelligence.

2.3.2 Visually Challenged:

Visually challenged are individuals whose normal learning and development is impaired by visual conditions and who therefore, need specific conditions and related services in order to develop their abilities (Whitmore,1981). In the present study the visually challenged children means the children who are so impaired in vision sense that they need Braille for reading and writing purpose.

2.4 Tool used in the study:

2.4.1 Verbal Tactile Test of Intelligence (VTTI):

To assess the verbal intelligence of visually challenged children a Verbal Tactile Test of Intelligence (VTTI) was developed by the investigator as no such test was available suitable for the specific needs of this population. The test consisted of five sub tests i.e. Classification (14 items), Verbal Analogy (13 items), Number Series (12 items), Vocabulary (12 items) and Reasoning (12 items) with total 63 multiple choice type items written in Braille Script. Each item had four choices; the correct answer was awarded one mark while the wrong answer was given zero. The time given for the test was 1 hour 30 minutes. The test was found valid and reliable. The reliability of the test was

computed by split half method (.89) and KR20 method (.82).

3. DATA PROCESSING:

After collecting the data, the results were drawn with the help of SPSS. The analysis was conducted at two levels. At the first level, descriptive statistics like mean, standard deviation were computed, at the second level inferential statistics as 't' test, 'F' test etc. were employed by the investigator. To find out the significance of difference between mean values obtained on VTTI by visually challenged children with respect to their gender and school settings 't' test was employed. The significance of difference among visually challenged students based on their age was analyzed by employing 'F' test.

4. RESULTS AND DISCUSSION:

Table 1: Impact of Gender on Verbal Intelligence of Visually Challenged Children (N = 54)

Sub tests of Verbal Intelligence	Male (N= 34)		Female (N= 20)		't' value
	Mean	S.D.	Mean	S.D.	
i) Classification	8.47	1.82	8.10	1.37	0.78
ii) Verbal Analogy	8.11	1.32	8.35	1.46	0.60
iii) Number Series	7.47	1.61	7.20	1.73	0.57
iv)Vocabulary	7.38	1.45	7.75	1.01	0.99
v) Reasoning	7.58	2.01	7.30	1.68	0.53
Total Verbal Intelligence	**39.02**	**6.08**	**38.70**	**5.72**	**0.19**

The above table depicts the impact of gender on verbal intelligence of visually challenged children. The table indicates that in classification subtest the mean score (8.47) of male students is higher than the mean score (8.10) their female counterparts, but this difference is not significant. On number series subtest the results are also in the same direction indicating that the male students performed better than the female students. However on verbal analogy and vocabulary subtests the mean scores of female students are higher than the mean scores of their male counterparts but this result is insignificant too. The mean score on reasoning subtest indicates that male students perform slightly better than the female students. It is also clear from the above table that on overall verbal intelligence there exists no significant difference between mean scores of male and female students. The figure given below also indicates the same. It leads the investigator to conclude that gender has no significant impact on the verbal intelligence of visually challenged students. However the findings of this study show some co-ordination with the results of the study conducted by Vander Kolk (1982) who reported that female had greater difficulty on the arithmetic subtest but they were found to be better on vocabulary and similarities in certain age groups. The results also corroborated with the study by Rani (2016) who found no significant impact of gender on mental alertness of visually challenged students.

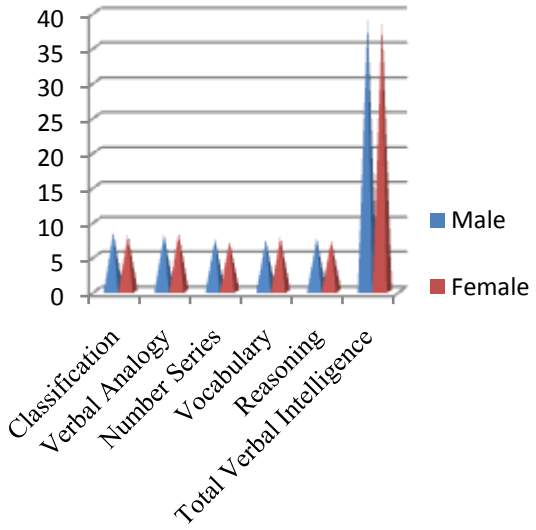

Figure 1: Mean Scores on verbal intelligence with respect to Gender

Table 2 and its corresponding figure2 present the result on verbal intelligence with respect to school setting. The mean score (8.48) of inclusive school students on classification subtest is higher than the mean score (8.16) of students in exclusive schools indicating that on this subtest the inclusive school students perform better than their counterparts.

Table 2: Impact of School Setting on Verbal Intelligence of Visually Challenged Children (N =54)

Subtests of Verbal Intelligence	Inclusive (N = 29)		Exclusive (N = 25)		't' value
	Mean	S.D.	Mean	S.D.	
i)Classification	8.48	1.45	8.16	1.90	0.74
ii) Verbal Analogy	8.00	1.28	8.44	1.44	1.18
iii)Number Series	7.17	1.62	7.60	1.68	0.94
iv) Vocabulary	7.20	1.39	7.88	1.12	1.92
v)Reasoning	7.17	1.98	7.84	1.74	1.30
Total verbal Intelligence	**38.03**	**5.74**	**39.92**	**6.03**	**1.17**

Moreover on all other subtests i.e. verbal analogy, number series, vocabulary and reasoning subtests the mean scores of exclusive school students is higher than the mean scores of inclusive school students depicting that students in exclusive school were better on all these subtests than inclusive school students. For overall verbal intelligence the mean score (39.92) of exclusive school students was higher than their counterparts (38.03) in inclusive schools; however this difference was not significant. The review of related studies reveals that the investigator found not even a single study of such nature.

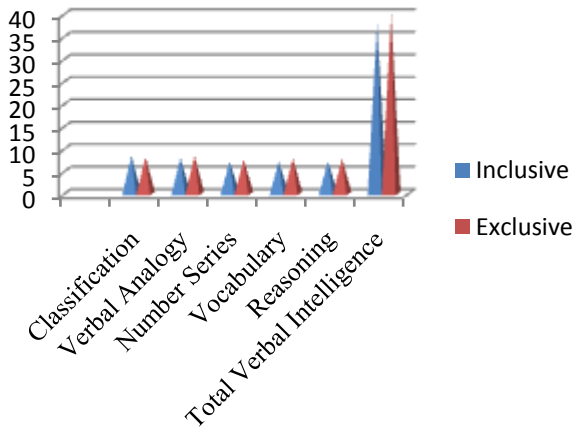

Figure 2: Mean Scores on verbal intelligence with respect to School Setting

In order to compare the sample under study with respect to the age on the variable of verbal intelligence, the students were divided into three age groups, the first group consists the students belonging to the age of 11 to 13 years, in the second age group students from 14 to 16 years were included and the age group third was formed with students of 17 to 19 years of age. The analysis of variance (ANOVA) test was employed to compare the students of these three age groups.

Table 3: Descriptive Statistics on Verbal Intelligence of Visually Challenged Children on the basis of Age (N = 54)

Sub tests of Verbal Intelligence	Age Group I (11 to 13 years) (N= 14)		Age Group II (14 to 16 years) (N= 18)		Age Group III (17 to 19 years) (N= 22)	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
i) Classification	7.42	1.39	8.27	1.17	8.95	1.93
ii) Verbal Analogy	7.35	1.59	8.50	0.92	8.51	1.33
iii) Number Series	6.21	1.67	7.16	1.20	8.27	1.48
iv)Vocabulary	7.00	1.03	7.11	1.02	8.18	1.43
v) Reasoning	6.85	1.91	6.83	1.54	8.40	1.81
Total Verbal Intelligence	**34.85**	**5.23**	**37.88**	**3.77**	**42.31**	**5.94**

The table 3 and its corresponding figure depict the mean scores of visually challenged students obtained on verbal intelligence with respect to the age groups. The table shows that the mean scores of age group I on all the subtests are lower than the mean scores of age group II & III except on reasoning sub test in which the score of age group I is slightly higher than II. The mean scores of age group III on all the subtests of verbal intelligence are higher than age group I & II. On

overall verbal intelligence the mean scores of age group I, II and III are 34.85, 37.88 and 42.31 respectively indicating that with increase of age the performance of students on the tactile test of verbal intelligence has also improved.

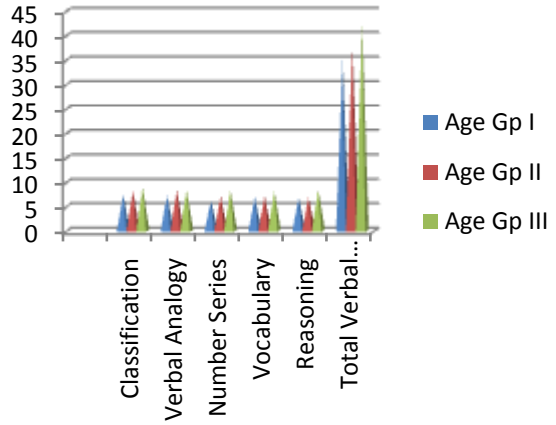

Figure 3: Mean Scores on verbal intelligence with respect to age

In order to analyze the significance of the difference among the mean scores of the three age groups i. e. age group I, age group II and age group III; the analysis of variance was employed. The results of this analysis are presented in the table 4.

The result given in table 4 revealed that the difference among visually challenged children on verbal intelligence is significant at .01 level, so far as their age is concerned. As shown in the table3 that age group I (11 to 13 years), age group II (14to 16 years), age group III (17 to 19 years) on different subtests as well as on overall verbal intelligence indicating variation in the respective mean scores. The table 4 depicts that the 'F' ratio found for this variance is 3.98 in classification subtest and 4.05 in verbal analogy subtest which are significant at .05 level. The 'F' ratio is 8.88 in number series, 5.58 in vocabulary and 5.17 in reasoning subtest which is significant at .01 level. On overall verbal intelligence the variance is also significant as the 'F' ratio is 9.59 which is significant at .01evel. This finding leads the investigator to conclude that there exists a significant difference among visually challenged children on verbal intelligence and its subtests with respect to their age. Further, 't' test was employed to know which group is significantly better than the other group. The results are given in table 5.

Table 4: Results of Analysis of Variance on Verbal Intelligence of Visually Challenged Children on the basis of Age

Sub tests of Verbal Intelligence	Source of Variation	Sum of Squares	DF	Sum of Mean Square Variance	'F' Value
i) Classification	Between Groups	20.00	2	10.003	3.98*
	Within Groups	127.994	51	2.510	
	Total	148.000	53		
ii) Verbal Analogy	Between Groups	13.545	2	6.772	4.05*
	Within Groups	85.214	51	1.671	
	Total	98.759	53		
iii) Number Series	Between Groups	37.372	2	18.686	8.88**
	Within Groups	107.221	51	2.102	
	Total	144.593	53		
iv)Vocabulary	Between Groups	16.431	2	8.215	5.58**
	Within Groups	75.051	51	1.472	
	Total	91.481	53		
v) Reasoning	Between Groups	31.949	2	15.975	5.17**
	Within Groups	157.532	51	3.089	
	Total	189.481	53		
Total Verbal Intelligence	Between Groups	504.272	2	252.136	9.59**
	Within Groups	1340.265	51	26.280	
	Total	1844.537	53		

* Significant at .05 level, ** Significant at .01 level

The table 5 and its corresponding figure 4 depicts that the visually challenged children of age group I and II do not differ significantly as the obtained 't' value is 1.90 which is not significant, though the mean score of age group II is higher than age group I. However age group III and II have significant differences on overall verbal intelligence as the 't' value is 2.73 which is significant at .01 level indicating that children of age group III perform significantly better than age group II. Moreover significant difference was found among visually challenged children of the age group III and I

as shown by the table that the't' value (3.83) is significant at .01 level.

Table 5: Age group-wise comparison of visually challenged children on Verbal Intelligence

(N = 54)

Group	N	DF	Mean	SD	't' Value
Age Group I	14	30	34.85	5.23	1.90
Age Group II	18		37.88	3.77	
Age Group III	22	38	42.31	5.94	**2.73***
Age Group II	18		37.88	3.77	
Age Group III	22	34	42.31	5.94	**3.83****
Age Group I	14		34.85	5.23	

* Significant at .05 level , ** Significant at .01 level

The investigator concluded on the basis of this result that the verbal intelligence of visually challenged children increased with the increase of their age. This result is supported by the findings of study conducted by Singh (1985) who reported age wise increase in mean scores on intelligence scale.

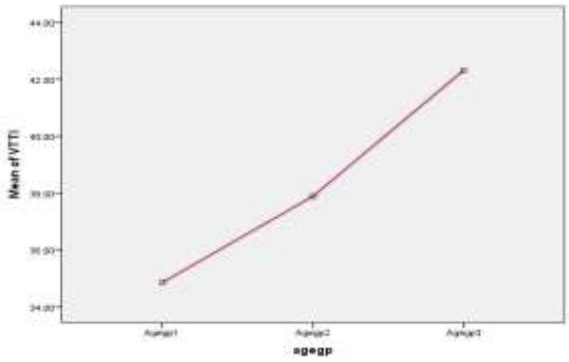

Figure 4: Mean scores on verbal intelligence with respect to age groups

5. CONCLUSION

Microanalysis of the findings of the present study reveals that out of the three demographic variables i.e. gender, school setting and age only age has been found to have a significant impact on the verbal intelligence of the visually challenged children while other two variables i.e. gender and school setting do not exert significant effect on the variable under study. It may, therefore, be stated that difference in gender and school setting does not contribute significantly towards variance in verbal intelligence. Further, age wise trends of scores on various subtests showed an increase in the mean scores as the age of students progressed i.e. the mean score of age group II was higher than mean score of age group I similarly the mean score of age group III was higher than mean scores of age group II & I . Moreover, the students of 17 to 19 years of age were found to be significantly better than the students of other two lower age groups on the tactile test of verbal intelligence.

Thus it can be said with firmness that age of visually challenged children plays a very crucial role in determining their verbal intelligence as they grow so as their intellectual ability to deal with verbal material, meanings of words, text, language etc. also improves.

6. SUGGESTIONS:

It is suggested to the teachers, educational planners and resource persons to make educational provisions keeping in mind the diverse needs of the visually challenged children. The age specific teaching learning materials should be prepared to provide challenging tasks and activities which they can deal with suitably to boost up their cognitive abilities. The conducive teaching learning environment may enhance their capabilities in desirable directions.

It is further suggested to adapt or to develop suitable testing materials in tactile format to avoid biased assessments. The use of tactile testing tools to make predictions and to build widespread prognosis about different personality aspects of visually challenged children may become helpful to understand this population in comprehensive manner and accordingly to harness their potentials in the school as well as outside the school.

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