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Introduction

Psychological appraisal of the handicapped has always presented challenges. A good number of studies have been reported from the West, about how they understand and appreciate the world around them, their intellectual levels of functioning, their capacities to learn and profit from experience and the many personality variables as related to certain types of handicap. (Pintner and Reamer 1920, Peterson and Williams 1930, Zeckel and Van der Kolk 1939, Pintner *et al.*, 1946, Birch and Birch 1951, Hiskey 1956, Farrant 1960, Levine 1956, Bindon 1957, Frisina 1955, Bender 1942, Meltzer 1944, Sheehan and Zelen 1955).

It may also be expected that these variables depend to a considerable extent on the socio-cultural conditions and as such may show variations from one country to another. Parallel researches in this direction have rarely been carried out in our country and consequently we are not aware of the types of problems presented by them and still less about the psycho social variables associated with the types of handicap.

In this context it may be mentioned that the All India Institute of Speech and Hearing, Mysore, has undertaken a research project sponsored by the VRA of U.S.A. The scope of this Project is to develop a pattern of rehabilitation services for effective management of patients with hearing and speech disorders, and includes as one of its objectives: To determine the most effective ways of developing and co-ordinating comprehensive, medical, audiological, rehabilitation and counselling services for the speech and hearing handicapped in India. This implies a good deal of co-ordination from various disciplines and work has already been in progress.

A number of specific research problems were chosen as a part of this programme and carried out. Still a few others are underway. One is about the 'Norms on some aspects of child development' which is presented in this Journal. Another is a study about the 'Personality characteristics of the stutterers as revealed on the Eysenck personality Inventory' and on this data is being collected from normals and stutterers.

Method

The study reported here is about the norms obtained on one of the non-verbal tests of intelligence. One of the earliest performance tests, developed by Seguin, it was subsequently incorporated into a number of performance scales (Anastasi, 1961) such as the Pintner-Paterson Performance Scale, Aurthur Point Scale of Performance Tests, etc. It's facility for arousing spontaneous interest

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in children, its amenability for brief and fairly satisfactory appraisal, and the claim that it is a fairly valid 'g' test, at lower ages (Cattell, 1953) have made us use the *Seguin Form Board* as a routine test in our clinical set-up.

The usual procedures of administration were followed, recording the time scores under the first three consecutive trials. As the judgment of errors may be subjective to some extent, no record of them was made. Total time score of each subject in the three trials, their average and the shortest time score were noted. This was done for all the age groups.

The test was tried out on a total of 1068 normal children ranging in age from 4 years to 16 years. But as these two extreme age groups i.e., 4 years and 16 years comprised of N, less than 30, they have been left out of discussion, including only the age groups from 5 years to 15 years. This leaves the total N to be 1052.

Testing was carried out individually, in a more or less secluded portion of a hall where the Speech and Hearing Institute Exhibition had been arranged as a part of Medical College Exhibition, during Mysore Dasara Festivals of October-November 1967, at Mysore. It was a special opportunity as people from various parts of the country (and from nearby parts) do visit Mysore at the time and the group thus tested included an approximate random sample.

At the outset it should be pointed out, that testing was not carried out in an ideal situation, as per scientific requirements but efforts were made to make the test situation as desirable as possible and this was the most that could be expected in those circumstances. The standards under which data was collected were not such as to reject them from scientific treatment.

For each of the subjects, particulars such as age, sex, educational status and father's occupation were also recorded.

Results and Discussion

Table 1, presented below shows the males and females included in each age group, total time (average), shortest time (average), average time in

TABLE 1. Showing Mean and SD time scores for various age groups.

Age groups	N	M	F	Total Time (Average)	Shortest Time (Average)	Average Time			S.D.
						Trial 1	Trial 2	Trial 3	
5 years	32	17	15	128.9	36.1	47.8	41.9	39.4	9.36
6 years	54	31	23	96.5	26.8	37.0	31.0	28.5	8.90
7 years	71	41	30	86.7	25.1	32.0	27.8	26.8	9.08
8 years	99	62	37	72.7	20.7	27.5	23.5	21.7	5.02
9 years	110	74	36	66.0	18.8	24.2	21.7	20.0	3.54
10 years	143	92	51	60.2	17.3	21.9	19.7	18.4	2.77
11 years	116	76	40	55.8	16.1	20.6	17.9	17.2	3.44
12 years	171	120	51	52.7	15.5	19.0	17.2	16.4	2.97
13 years	123	95	28	48.6	14.5	17.4	15.9	15.4	2.48
14 years	91	69	22	47.4	14.3	16.6	15.6	15.2	2.17
15 years	42	28	14	46.5	13.7	16.8	15.2	14.3	2.51
	1052	705	347						

the three consecutive trials and the standard deviation obtained, age group-wise.

It can be seen from the Table that the time scores under Total Time (Average) and Shortest Time (Average), consistently decrease under the successive age groups, as should be expected. Also the difference in time scores of successive age groups minimise in the upper age levels. This result is in line with the contention that the test is not so valid a test of 'g' above the mental age of 10 years.

Further, the reduction patterns in the time scores under Trials 1, 2 and 3 would serve in comparing the ability to learn among normal and clinical groups.

In Table 2 are provided the tentative norms derived from the present study. Also is provided Table 3 of norms as given by R. B. Cattell and this would facilitate a comparison of Western norms with the Indian norms from this study. Cattell's norms is derived from two sources, those obtained by Gaw and given in the Industrial Fatigue Research Board Report, No. 31, and those obtained by Arthur in America on still bigger samples, and further modified with the results obtained by P. E. Vernon and Cattell (1953).

TABLE 2. Seguin Form Board Norms of The All India Institute of Speech and Hearing

N tested	32	54	71	99	110	
Mental Age	5 years	6 years	7 years	8 years	9 years	
Shortest Time for three trials	36.1"	26.8"	25.1"	20.7"	18.8"	
Total Time for three trials	128.9"	96.5"	86.7"	72.7"	66.0"	
S.D.	9.36	8.90	9.08	5.02	3.54	
N tested	143	116	171	123	91	42
Mental Age	10 years	11 years	12 years	13 years	14 years	15 years
Shortest Time for three trials	17.3"	16.1"	15.5"	14.5"	14.3"	13.7"
Total Time for three trials	60.2"	55.8"	52.7"	48.6"	47.4"	46.5"
S.D.	2.77	3.44	2.97	2.48	2.17	2.51

TABLE 3. Seguin Form Board—Western Norms

NORMS						
Mental Age	5 years	6 years	7 years	8 years	9 years	
Shortest Time in three trials	35"	27"	23"	20"	18.5"	
Total Time in three trials	123"	105"	90"	77"	68"	
Mental Age	10 years	11 years	12 years	13 years	14 years	15 years
Shortest Time in three trials	16.5"	15"	14"	13"	12.5"	12"
Total Time in three trials	61"	55"	49"	43"	39"	36"

A close comparison of the Tables 2 and 3 highlights the similarities in performances of the Indian and Western children, rather than their differences. Apparently the Western children seem to be favoured slightly on the speed factor, probably owing to the better training facilities in their cultural set-up. Or, it might also be due to the not too satisfactory situation in which our children were tested. This is noticeable in almost all the age groups. However, the difference is not so pronounced and surprisingly, nowhere do we observe a difference beyond 2 seconds in any age group. This would in fact substantiate the argument that Seguin Form Board Test can be used with equal facility to gauge the mental development of Indian children also. If these norms are further substantiated, by similar studies in other parts of the country, they would serve well in gauging the mental development of normals and clinical groups.

Table 4 below shows sex differences on Seguin Form Board Performance in terms of Total Time for three trials and Shortest Time in three trials.

TABLE 4. Showing Sex differences in Mean time scores

		Mental Age							
		5 years		6 years		7 years			
	N	Total Time	Shortest Time	N	Total Time	Shortest Time	N	Total Time	Shortest Time
Boys	17	132.8	32.3	31	92.1	24.8	41	89.4	25.9
Girls	15	124.4	33.8	23	102.6	29.4	30	83.1	24.1
		Mental Age							
		8 years		9 years		10 years			
Boys	62	73.6	21.1	74	67.2	19.0	92	60.0	17.2
Girls	37	71.3	20.1	36	63.8	18.3	51	60.5	17.4
		Mental Age							
		11 years		12 years		13 years			
Boys	76	55.4	16.0	120	53.4	15.6	95	49.3	14.7
Girls	40	56.5	16.6	51	51.0	15.2	28	46.4	13.9
		Mental Age							
		14 years		15 years					
Boys	69	47.3	14.4	28	46.6	13.3			
Girls	22	48.0	14.1	14	43.1	13.7			

In general, no appreciable difference could be observed in performance between boys and girls on the Shortest Time score. Particularly beyond the age of 10 years, almost no differences could be observed. The only age group where considerable difference was seen was in the age group of 6 years by about 4½ seconds in favour of boys and in no other age group the difference exceeded 2 seconds. In the 5th and 6th year age groups, the small differences in time score favoured boys and in the 7th, 8th and 9th year age groups, the small difference

favoured girls. In the 10th year age group and beyond, no appreciable differences in performance could be seen. Taking the total time score of three trials into consideration, in general girls performed on the test quicker than boys.

With the data on hand, it looks as though sex has little or no influence on the performance of the test. However, any generalisation has to wait till comparable size of N are obtained under both groups at the different age levels.

Concluding Remarks

Further, it would be interesting to see how variables as parental education and educational attainment of children would be related to mental development. The available data are being analysed on those lines.

It is realised that a single test as the Seguin Form Board may not give us a complete picture of mental development. Similar work has been planned to be carried out using a few other non-verbal tests so that a scale of performance tests can be evolved. The norms derived would be of value in gauging the mental development of normal as well as clinical groups.

In conclusion, the present study has shown the usefulness of Seguin Form Board Test to gauge mental development of Indian children and its relative culture-freeness. Sex as a variable does not seem to bring about appreciable differences in performance. The present norms would enable a comparison of mental development of the speech and hearing handicapped children with those of normals. They would serve the purpose of identifying the mentally subnormal children as well.

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