

CONCLUSION

It can not be said that the work has come to an end, on the other hand the investigation has raised many more problems than it aimed at to solve. In fact, it may be said to be endless. But, this may be considered to be the stage, where the limited scope of the present investigation, may be said, to have been covered and must be stopped and let future researches carry on the work ahead. The findings, it must be admitted, have been interesting and the concrete results brought a good satisfaction to the present investigator.

Within the limitations of the investigation, the following conclusions may be drawn :

1. The performance tests, at least those used here, may be admitted to be suitable measures of general intelligence with the same weights or credits for each item passed correctly in each of the tests as have been given by the respective authors, although each of the performance tests of the battery, taken singly, is not a 'good' or effective measure of general intelligence. The complete battery only gives a more comprehensive idea of the general intelligence. This fact strengthens the idea that intelligence is 'assortative' rather than 'hierarchical'. Terman and Merrill M form, used here, is assortative in nature and its agreement with other practical criteria, gives it the

credit of being a good test of intelligence; it has, therefore been chosen as the criterion for comparison. The individual tests of the battery of the performance tests, despite their low correlations amongst each other and with the criterion, contributes measures which taken together, becomes effective in appraising the intellectual ability of an individual. It may be presumed that different abilities measured by the criterion test have been covered by the battery of performance tests. This fact has also been borne out by the subsequent factor analysis. About 96% of the variance measured by the M-form test has ^{also} been covered by ^{the test of} the battery.

2. The Coefficients of Multiple Correlation, R, have been found to be significant at .01 level at all the age groups, under consideration, and show in table no. 5.21. This fact gives a very little idea about the efficiency of the forecast, as the number of cases is very large and R is very likely to be significant under such conditions. From an actual computation of a multiple regression equation in a particular age-group, 16 years, the prediction does seem to be sufficiently encouraging. The standard error of estimate in the multiple regression prediction in this age has been found to be = 15. The S.E. (est X_1) is a minimum when the multiple regression equation is used to forecast the criterion scores. The S.E._(est) are likely to be greater when the scores fall off further away from the regression lines. The obtained ^{S.E.} may be expected to hold good in 68 out of 100 cases i.e. where the actual values fall between $\pm 16^{(I.Q.)}$ and may be expected to reach a maximum of $1.96 \times S.E.$ i.e. about 29.4 points at the extreme (2.5 σ or beyond) at the .05 confidence levels. It has also been observed in various other investigations, such as carried out by Bradway, Neff and others that cultural,

economic and other factors influence the I.Q.' scores by 20 or more points. Moreover such cases are rare. Within the normal range of I.Q.'s (90 to 120) the predicted values closely approximate the actual values.

The predicted values from the multiple regression equations through the Beta Coefficients obtained for each of the 3 composite age-groups —pre-adolescence, adolescence, and post-adolescence also gave similar results, *in all the age groups.*

Moreover, individuals with high I.Q.'s seldom remain illiterate; they generally avail of the school education and are bilingual of which English is invariably one, and therefore the English version of Terman M or L may be used for confidently in such cases.

3. It becomes apparent from a reference to the distributions of the performance tests (tables^{52 to 55}.....) through that these tests differ from the verbal test, Terman M, in respect of the age of arrest of mental development or maximal performance. This age of arrest is advanced by about 3 years and seems to be located somewhere in the age-group of 19, instead of 15 or 16 in the Terman M.

4. The age progression in the performance tests is not statistically significant except in a few ages. The performance tests of intelligence, here used, neither fulfil Binet's criterion of age-progress nor Spearman's criterion of high correlation with other tests (among themselves or with the criterion test). It is to be admitted that the number of cases, especially in the lower age groups in the sample, is not very large, but

the number in each age has been very representative and random ^{and} approximate the normal distribution in each age or strata to the statistical requirements. Therefore, this deficiency in respect of age-progression may be ascribed, possibly, to the diverse cultural ^{di} conditions in the sub-samples, resulting in the different integration of the traits that bring about -- success in performance tests or these two criteria of Spearman and Binet are relaxable. It is known that the environmental factors like training, education, rural-urban residence and a few other factors exert considerable influence on the test scores. The experimental evidences have already been given.

6. Another important finding is about the classification of intelligence into verbal and performance or abstract and concrete. The devisers of the performance tests report high correlations with Binet tests. But the correlations obtained here are not high with Terman M (Binet test) although they are all positive. Recent studies by Prof. Vernon and others have obtained r 's of the orders obtained by me in this investigation. This fact justifies a compilation of them in a battery, and the performance scale thus set up gives a significant correlation with the Terman M.

6. On the basis of the findings of this investigation, a hypothesis may be set up that either through habit, training or endowment, some individuals are able to deal better with objects than with words. Therefore, the intelligence of such persons may be assessed through performance tests which may be in fair agreement with the assessments through verbal types of tests of intelligence. Wechsler - compromised the

two view points by defining a global intelligence and combined both types of tests in his scale for measuring intelligence. In my opinion W. B. scales gives a more comprehensive idea for ^{an} individual general intelligence. A ^{accordingly} hypothesis may be drawn/regarding the classification of intelligence into a more fundamental dichotomy as verbal and performance types, not distinctly separate from each other as both these types of intelligence show a considerable overlap and a fair idea of one kind from another may be made, though at present, this is demonstrable in a somewhat restricted sense.

A suitable or new weightage of the credits in the performance tests may be computed under our environmental conditions and the new value of the 'constants' in the regression equation, for a particular sample, may close up the difference between the results obtained from the two types of scales.

It may be argued that if success is primarily dependent upon ideational grasp of the problem, as has been claimed by each of the makers of the tests, verbal as well as performance, it is very interesting, then, to note the factors on which the difference between success in performance and verbal tests depend. If the factors involved were of the same types, there would be a much higher correlation in random groups, between the tests of the two types of intelligence.

It seems highly probable that the specific elements involved in these types of tests lie, not in any special mental processes employed, but in the nature of the materials upon which the processes are directed.

The processes, such as, analysis, synthesis, association, reasoning, ingenuity etc. are doubtless mental, which may be employed in

both the cases where all these processes are subservient to the main aim which is merely successful solution of the problems set, in one through thinking and in the other through action of some sort. In performance types of tests, it is the power to grasp directly, the spatial, temporal, and qualitative relations between concrete things, and to react successfully to these, that constitute the real difference between the person who is 'good' at concrete tasks and one who lacks this ability.

In the 'reasoning' test, and in most of the other tests used, in verbal intelligence scales, the mind deals with verbal symbols, often highly abstract in character, but in the performance tests, the mind deals more directly with concrete perceptual materials.

It has been observed, in this investigation, that the two types of abilities, one giving success in concrete tasks and the other in abstract tasks are predictable, one from the other, through a selection of a proper battery of tests, with some success.

Finally, a question may be raised, regarding the applicability of the present battery in the assessment of the general intelligence on the footing of the I.Q.'s, of the illiterate and such persons, already referred to in the Introduction, in our country. No serious objection can be raised against the use of the battery on such groups but an experimental verification by further studies or a rational approach is suggested, prior to such use.

Finally, it may be pointed out that the battery may be used with some advantage on the literate subjects between the ages of 5 and 22 years, with a practical bend in their nature as contrasted with subjects with a bend more towards verbal type of tasks.