

CHAPTER VII

SUMMARY AND SUGGESTIONS

7.0 INTRODUCTION

Generally, a school or a school teacher concentrates efforts on or keeps in view the requirements of and plans the teaching programme for pupils of average ability. Usually, curricula and teaching methods are for average children; often the needs of either the gifted or the backward are neglected. Particularly, it is a great loss in our educational process when those brighter pupils who are to be the pillars of the new society are neglected. A new trend in education provides also for the needs of the gifted. Not only their intellectual abilities should be matched with the challenging educational activities, but their programme of education should take into account their personality traits. An attempt has been made in the present investigation to study the creativity and some

personality traits of the intellectually gifted children.

With this purpose in view, a vast population of about 8216 pupils studying in schools were sampled. The records of their performance at the annual examination in different school subjects were examined, and from amongst them about 3503 school pupils were administered the Group Intelligence Test standardized in Gujarati by Dr.K.G. Desai and Dr.(Miss) C.L.Bhatt. On the basis of their scores on I.Q., finally a sample of 935 pupils, both boys and girls, with I.Q. of 120 and above, was selected for the main study. These subjects were later on administered Cattell's Sixteen Factor Personality Test, adapted in Gujarati, as well as Torrance's Test of Creative Thinking (Verbal Form A including three aspects of creativity, viz. fluency, flexibility and originality, and figural form B including four aspects of creativity, viz. fluency, flexibility, originality and elaboration). All these scores were subjected to statistical analysis with the help of varied statistical techniques, particularly the technique of analysis of variance and Least Significant Difference Test.

The main sample of 935 intellectually capable gifted children, boys and girls in three I.Q. levels, was studied in a factorial 3 x 2 design with respect to examine the

contribution of intelligence as well as sex variable to different aspects of creativity. The inclusion of pupils of different ages enabled the investigator to separate out a sample of 683 boys and girls of three age groups and two I.Q. levels and to study the contribution of intelligence, age and sex to different aspects of creativity from the data arranged in $2 \times 3 \times 2$ factorial design. Further, those children with school achievement of 60 per cent and above were picked out of 935 subjects with I.Q. of 120 and above, yielding a sample of 325, and these boys and girls in three I.Q. levels (functionally gifted children) were separately studied to examine the contribution of intelligence and sex to different aspects of creativity.

Finally, the highly gifted boys and girls with I.Q. of 140 and above were compared with the backward children with I.Q. of 90 and below and this yielded a sample of 143 pupils in a 2×2 factorial design, and they were studied to examine the contribution of intelligence and sex to different aspects of creativity. In short scores on seven aspects of creativity

obtained by four samples viz. of 935, 683, 325 and 143 pupils were separately analysed by technique of analysis of variance and L.S.D. test and three types of results viz. mean scores, analysis of variance results and L.S.D. test results were summarized in totally 84 tables (3 x 4 x 7) for each of 7 aspects of creativity scores obtained by four types of samples.

Similarly the scores on 16 types of personality traits were subjected to the same technique of statistical analysis to examine the contribution of intelligence, age and sex to personality traits, and again the three types of statistical results were also summarized in 192 tables (3 x 4 x 16) for each of sixteen traits of four samples.

To supplement and confirm further the controversial issue about correlation of creativity to intelligence after a critical point of 120 I.Q. was examined. The correlation between creativity and intelligence was computed on data of the main sample of 935 intellectually gifted children as well as 325 functionally gifted children. This yielded $7 \times 7 = 49$ coefficients of correlation of seven aspects of creativity with intelligence.

Further, when data on achievement were already available, alongwith creativity scores an attempt was made to compute also correlations of seven aspects of creativity with seven school subjects. This yielded $7 \times 7 = 49$ coefficients of correlations on data of main sample. The coefficients of correlation were

also computed between the total achievement in five school subjects of 325 functionally gifted children with seven aspects of creativity. This yielded 7 coefficients of correlation on data of functionally gifted children.

And finally scores on 16 personality factors were correlated with scores on seven aspects of creativity, and this yielded $16 \times 7 = 112$ coefficients of correlation.

All these results of analysis of variance and correlation have been discussed in different chapters of the main thesis. The main inferences warranted by the statistical analysis have been summarized below.

7.1 SUMMARY OF CONCLUSIONS

A : Creativity and Giftedness :

- (a) Based on sample of 935 intellectually (capably) gifted pupils (intelligence x sex).
- (i) Intelligence affected verbal fluency (creativity) on the whole and more specifically among boys; and sex was not significant factor on the whole, nor in the very superior and superior groups but only in the extraordinary group.
- (ii) Though apparently I.Q. and sex did not turn out to be significant on the whole, I.Q. level contributed significantly to verbal flexibility, particularly in case of boys, and sex was significant in case of the extraordinary and the very superior groups.

- (iii) Only I.Q. level i.e. giftedness contributed significantly to verbal originality; there were no significant sex differences nor the interaction.
- (iv) Only giftedness contributed obviously and significantly to figural fluency; neither sex nor interaction was significant.
- (v) Only giftedness (I.Q. level) contributed significantly to figural flexibility; neither sex nor interaction was significant.
- (vi) Only giftedness played a significant role in figural originality, particularly raising the extraordinary and very superior groups; sex made no differences, neither was there any interaction.
- (vii) Only giftedness contributed significantly to figural elaboration, particularly raising the scores of the extraordinary, sex did not play any significant role, except among very superiors, there was no interaction.
- (b) Based on sample of 683 intellectually gifted pupils (intelligence x sex)
 - (i) Giftedness (I.Q. level) and, age were significant factors contributing to verbal fluency on the whole, but more specifically at age 15. Sex did not play any effective part nor any interaction was effective in contributing to verbal fluency.
 - (ii) Giftedness and age were significant factors contributing to verbal flexibility; neither sex nor any interaction was effective in verbal flexibility.
 - (iii) Giftedness and age contributed significantly to verbal originality on the whole and particularly at 15 age. Neither sex nor interaction was significant in contributing to verbal originality.

- (iv) Both giftedness and age were significant factors contributing to figural fluency on the whole, and specifically at 15 age, neither sex nor interaction played any significant role in figural fluency.
- (v) Giftedness and age were significantly contributing to figural flexibility on the whole and particularly at age 15. Neither sex nor interaction played a significant role in figural flexibility.
- (vi) Giftedness and age contributed significant to figural originality on the whole and specifically at age of 15 as in other cases; neither sex nor any interaction was significant in figural originality.
- (vii) Giftedness and sex were significant factors contributing to figural elaboration on the whole, and more particularly at age of 15. Neither age nor any interaction was significant.
- (c) Based on sample of 325 functionally gifted pupils (intelligence x sex)
 - (i) In case of functionally gifted children, only giftedness was significantly contributing to verbal fluency on the whole and particularly among the extraordinary and very superior groups, thereby lowering the creativity score of the superior. Neither sex nor interaction was significant.
 - (ii) Only giftedness affected significantly to verbal flexibility on the whole, and particularly of the extraordinary group and very superior group; sex or interaction was insignificant therein.
 - (iii) Giftedness contributed significantly to verbal originality on the whole, and particularly in case of the extraordinary boys and the very superior boys and girls both,

accounting for significant interaction and lack of overall sex differences.

- (iv) Only giftedness was the significant factor contributing to figural fluency on the whole, and particularly of extraordinary boys; neither sex nor interaction was significant.
 - (v) Only giftedness contributed significantly to figural flexibility on the whole and particularly among the extraordinary boys. Neither sex nor interaction showed significance.
 - (vi) Giftedness and sex were on the whole found to be not significantly (apparently) contributing to figural originality ; the main effect of giftedness particularly affecting or favouring the extraordinary boys has been observed by significant interaction found between I.Q. and sex in this respect.
 - (vii) Only giftedness contributed significantly to figural elaboration on the whole, and particularly at the extraordinary I.Q. level. Neither sex nor interaction was significant.
- (d) Based on sample of 143 highly gifted vs backward pupils (intelligence x sex)
- (i) Giftedness was undoubtedly contributing significantly to verbal fluency on the whole, and also separately among boys and girls. Sex was not significant on the whole, though sufficiently significant among the extra-ordinary only, making interaction also significant.
 - (ii) Giftedness was a significantly contributing factor to verbal flexibility on the whole as well as separately in case of boys and girls. Sex was not significant on the whole, though contributed in case of the extra-ordinary. There was no significant interaction.

- (iii) Giftedness was a significant factor contributing to verbal originality on the whole as well as separately among boys and girls. But sex was not a significant factor on the whole, though sufficiently significant among the extraordinary groups, making interaction also significant.
- (iv) Giftedness was evidently a significant factor in figural fluency on the whole as well as separately among boys and girls; while separately at each I.Q. level sex was not significant but because of different trends at two I.Q. levels, sex as well as interaction appeared to be significant.
- (v) Giftedness was the only independently significant factor contributing to figural flexibility. Neither sex nor interaction showed significance.
- (vi) Giftedness was definitely a significant factor contributing to figural originality on the whole as well as at each sex. However, sex was significant not on the whole, but only at extraordinary level in favour of boys, making interaction significant.
- (vii) Giftedness alone was significantly contributing to figural elaboration on the whole as well as among boys as well as girls; sex or interaction was not significant.

From the generalized comparison of all these findings, it can be summarized that all the results mostly confirm one another thus :

- (a) Giftedness was the most effectively contributing factor to all types of creativity scores on the whole as well as at all I.Q. levels, particularly at the extraordinary I.Q. level.

- (b) Sex was hardly a significant factor on the whole though affecting at extraordinary boys level.
- (c) Age was mostly a significant factor, particularly at 15 age level.

B : Personality and Giftedness :

(Based on all four types of sample)

- (i) Neither giftedness (I.Q.) nor sex, nor age nor their interaction generally played any significant role in contributing to the personality factor A (Cyclothymia), except among highly superior boys of 15 (scoring low 3.15) and superior girls of 15 (with the lowest score of 3.13), accounting for significant I.Q. x Sex interaction in I.Q. x Sex x Age design.
- (ii) Giftedness was a significantly contributing factor to personality factor B in all cases. Sex was significant in some cases, particularly in case of both superior as well as highly superior of 14 and also 15 ages. Age was significant on the whole and particularly making 13 age group lowly different from 14 age group in case of superior boys, and from 15 age group in case of highly superior girls, all these accounting for significant I.Q. x Sex and I.Q. x Age interactions.
- (iii) Giftedness was contributing to emotional maturity in case of boys compared with non-gifted boys. Sex appeared to be significant on the whole, though truly not in any sub-group, in an I.Q. x Sex X Age study due to unequal trends of unequal numbers in sub-group comparisons. Age was significant only at 15 age making it different from 13 and 14 age groups.

- (iv) Only sex contributed significantly to dominance, boys being more dominant than girls on the whole and particularly among the superior group of 15 age. The highly superior were higher at 13 and lower at 14 and 15 on dominance, thus accounting for significant I.Q. x Age interaction.
- (v) Neither giftedness nor sex nor age contributed significantly to surgency; girls tended to be somewhat more surgent than boys and I.Q. groups did not keep the same position on surgency in case of boys and girls, and this accounted for significant interaction between I.Q. and sex in analysis of data of 325 functionally gifted subjects.
- (vi) Giftedness was significantly contributing to character^{or super ego} strength, particularly among 14 year and 15 year girls in favour of the superior. Sex was significant, particularly among the superior of 13 year and 15 year in favour of girls. Age was not significant on the whole, but the pair 13 vs 14 was different in case of superior boys; and the pair 14 vs 15 differed in case of superior boys as well as highly superior girls, making I.Q. x Sex and also Sex x Age interactions significant.
- (vii) Neither I.Q. nor sex nor age seemed to play any effective role by themselves in this factor H on the whole but the giftedness was effective at 13 and 14 particularly among girls, such that these highly superior girls of 13 and 14 were significantly higher than those of 15 on this factor H.
- (viii) Sex was significantly contributing to factor I, particularly in case of the highly superior group of 13 age or in case of very superior girls always scoring higher than boys. Giftedness was significant, particularly in case of extraordinary and very superior girls, making them different from (higher than) the superior or backward.

- (ix) Giftedness was significant only at age of 13, highly superior scoring higher than the superior. Age was significantly contributing, was significant among superior boys, both 14 and 15 scoring significantly higher than 13 age and among superior girls, 15 scoring higher than 13. Sex was significant, particularly among the very superior, girls scoring higher on this factor.
- (x) Only sex contributed significantly to this factor M_1 and particularly among the very superior or highly superior of 13 and 14 years.
- (xi) Neither giftedness nor sex nor age nor any interaction contributed substantially to the factor N. Only comparison of the gifted with the non-gifted showed that giftedness was significant on the whole as well as among the boys and the girls, i.e. the gifted were higher than the non-gifted on this factor N of shrewdness, and this was as expected.
- (xii) Neither giftedness nor sex nor age was significantly contributed to the factor O of guilt proneness generally. However, when the functionally gifted subjects were studied separately, girls were found more prone to guilt than boys in the very superior group only; and when the gifted were compared with the non-gifted, the non-gifted girls were found more prone to guilt than the gifted girls. In other words, sex was significant in some cases on this factor O.
- (xiii) Giftedness was found significantly contributing to the factor Q_1 of radicalism, and particularly among boys, making extraordinary and very superior more radical

than superior and definitely than the non-gifted. Sex was usually not significant, except among the superior of 13 age; where girls were more radical. Age was significant; the higher the age, the more radical a person, particularly 13 age differed from 14 and 15 age in case of superior boys and 14 age differed from 15 age in case of highly superior girls, making on the whole 15 age, differed from 13 and 14 age.

- (xiv) Giftedness was not usually contributing to this factor Q_2 of self sufficiency, except that highly superior boys of 13 scored significantly higher than superior boys of 13 or very superior scored higher than superior on the whole and particularly among boys. Sex was significantly contributing to self sufficiency only among the superior of 13 age, girls being more self sufficient. Age was also not significant on the whole, the 13 age differed significantly from the 14 age and the 15 age groups in case of superior boys (higher age being more self sufficient), and the 13 age differed significantly from the 15 age group in case of highly superior girls, (lower age being more self sufficient).
- (xv) Neither giftedness, nor sex, nor age, nor any interaction, except sex x age, contributed significantly to the factor Q_3 of self-sentiment formation in general. However, girls scored significantly higher than boys in case of superior 13 year age group; and 13 year age group scored significantly higher than 14 and 15 year age groups in case of highly superior girls, thus accounting for significant sex x age interaction. When the highly gifted were compared with the non-gifted, the highly gifted scored significantly higher than the non-gifted on the whole as well as among boys and girls separately. In other words giftedness, sex and age contributed to factor Q_3 only at under certain conditions.

(xvi) Neither giftedness nor sex nor age nor any interaction except I.Q. x Age showed significant contribution to factor Q_4 of high ergic tension. Only the highly superior scored significantly higher than the superior in case of 15 years old girls, and 15 year old scored significantly higher than 14 year old in case of highly superior girls, thus accounting for significant I.Q. x Age interaction.

C : Correlation between Creativity and Intelligence :

There was positive and significant (though of low value) correlation between intelligence and all creativity scores, in case of 935 capably gifted children as well as in case of a separate sample of 325 functionally gifted children.

D : Correlation between Creativity and Achievement :

Almost all creativity scores correlated positively and significantly (though of low value) with achievement in all school subjects except English language and total achievement of all main subjects.

E : Correlation between Creativity and Personality :

There was not significant correlation between different creativity scores and different personality traits except in few cases such as factor B (General intelligence vs Mental defect), E (Character or super ego strength vs Lack of rigid internal standards), I (Premsia vs Harria), L (Protension (paranoid tendency) vs Relaxed security) Q_1 (Radicalism vs conservatism of temperament), Q_3 (High self sentiment formation vs Poor self sentiment formation) and Q_4 (High ergic tension vs. Low ergic tension) where it is usually expected.

7.2 SUGGESTIONS

A very huge and systematic effort has been made undoubtedly in the present case to study the creativity and some personality traits of the intellectually gifted children. However, the hugeness of work as well as the controversial issues on exact concept of giftedness have landed the investigator into accepting some assumptions as well as limitations of work. And this was led the author to offer a few suggestions at the same time, following both from his experience and difficulties faced while conducting the study as well as while analyzing and interpreting the data. A few of the important suggestions are given below :

1. The first and most important issue is the concept of giftedness. The author has analysed the data, keeping in view two operational definitions of giftedness viz.
(a) those of I.Q. of 120 and above, or (b) those functionally or manifest gifted i.e. having I.Q. of 120 or above and expressing giftedness in achievement (60% and more). Results of the two have been compared. However, similar results should be investigated not only with these groups but also with other groups viz. (average (I.Q. 90 - 120) and backward (below 90 I.Q.)). This means that if time and money permit all children (not only selected) should be tested on creativity and factor contributing to creativity should be studied.
2. When creativity score of all groups would be available, the attempt also to study correlation between creativity and intelligence would perhaps throw more light and yield

interesting and instructive results. The assumption about relation between creativity and intelligence after a specific cut-off point should be checked. The inclusion of I.Q. scores of all levels of subjects would be desirable to study relation of creativity to intelligence at different levels.

3. Age factor should be studied more systematically keeping as many levels of age groups as possible so that relation of creativity to age at different levels can also be studied.
4. Contribution of intelligence, age and sex has been studied here. But there are some other equally important training or environmental factors likely to contribute to creativity e.g. training, type of education or field of work, socio-economic level etc. In view of this similar investigation should be made to study samples varied background and education.
5. Results should be supplemented confirmed or modified also by using other similar tools assessing creativity, intelligence and personality.
6. The present study may be followed up and a number of issues arising from it may be taken up for further study.

Finally a number of implications for educational use by teachers, educationists and parents follow from the study, especially with reference to improving teaching methods, curricula etc. and the need of giving special attention to the brighter or the gifted at the early age. The author does not intend to enter into long discussion on these issues which can be had in any literary book on the gifted or the education of the exceptional. The findings of the present investigation contribute to the scientific information available, give clarity to some of the relevant issues and at the same time supply more intellectual food for further research.
