RELATIVE CONTRIBUTION OF SOME SOCIOCULTURAL AND FAMILIAL VARIABLES TO OVER- AND UNDERACHIEVEMENT IN SCIENCE AT CLASS VIII LEVEL.

(A SUMMARY)

Numerous research studies conducted in India and abroad have demonstrated that achievement in a particular field of study or performance domain is a function of a large number of variables. Some of these variables are internal and some external to the learner. Basically, it is an established fact that achievement or learning of any kind is determined by intellectual abilities, level of motivation and sociocultural experiences acquired by the learner. Some of the variables associated with these broad categories are internal to the individual learner which can hardly be changed or modified. The variables external to the individual are mostly sociocultural, and familial in nature which have tremendous influence on his learning capacity. The knowledge of these variables can help in organising suitable educational programmes to help individual learners acquire mastery of the desired abilities and skills. The experiences or factors related to the opportunity to learn play a very significant role in the learning."
RATIONALE:

The three broad categories of ability, motivation and opportunity have independent and significant contribution to the individual differences in the proficiency in a particular performance domain. A crucial deficiency in mental abilities sometimes, to some extent, can be compensated for by suitably designed educational programmes. A large number of research studies have shown that some of the relevant variables such as sociocultural background, rural and urban location, caste, type of schooling, medium of instruction and some familial variables are related to performance on standardized achievement tests in different school subjects.

It is interesting to find out whether the use of appropriate compensatory measures in education would make it possible to improve the performance of those students whose potentially good performance was being adversely affected by variables other than those related to ability. Such students are called underachievers. Underachievement score is defined as the non-chance discrepancy between actual and predicted score of an individual, the prediction being made with the help of standardized test of mental ability. The subjects scoring significantly above the predicted score are often called overachievers, and those
scoring significantly below the predicted score are called underachievers. Once these students are identified, it would be possible to take some steps to determine the nature of these variables and to correct them. A few research studies have been conducted to identify such variables as are relevant to performance on achievement tests. Srivastava (1967), Dhaliwal (1971), Menon (1972, 1973), Abraham (1974), Chaudhari, Jain (1975), Agrawal (1975), Beedawat (1976), Singh (1983), Gupta (1983), Haq (1987), Puri (1987) studied different factors influencing academic under-overachievement, in general, and Mathew (1976) and Siddiqui (1983) conducted investigations to identify factors which affect under-overachievement in science.

The review of these research studies indicated that the attention of investigators in this area had been concentrated mostly on personality factors as measured by standardized personality inventories. No doubt, some investigators have succeeded in identifying some of the relevant correlates of under- overachievement, but most of the studies suffered from methodological drawbacks as given below:

1. Most of the researchers have studied the relationship of over- and underachievement to personality variables only. The studies related to sociocultural
and familial variables are very rare.

2. The studies have attempted to compare the effect of variables on under- and overachievement in absolute term not in comparative terms.

3. The investigators have not taken care of intercorrelations among different correlates of over- and underachievement thus giving a very blurred picture of phenomenon.

4. Most of the investigators have studied the correlates of over- and underachievement in general, rather than in specific subjects.

The present investigator felt that the previous researchers had not made thoroughly analytic and exhaustive studies of the contribution of non-intellective variables to the phenomenon of over- and underachievement. It was therefore considered necessary to carry out the present study.

OBJECTIVES:

The present study was aimed at achieving the following objectives:

1. To determine the relative contribution of sociocultural and familial variables to over- and
underachievement in science in terms of accountable variance.

2. To study the multiple correlations between over- and underachievement in science and combinations of selected sociocultural and familial variables.

3. To study the intercorrelations among selected sociocultural and familial variables which are supposed to have significant bearing on academic over- and underachievement in science.

4. To set up regression equations to predict over- and underachievement scores in science by using sociocultural and familial variables as independent (predictor) variables.

HYPOTHESES:

The investigator had proposed to determine the contribution of different non-intellective variables to variation in over- and underachievement scores. Therefore, it was not possible to hypothesize anything in advance as to how much each variable would contribute to the scores. However, the study has answered the following questions:

1. How well can we predict over- and underachievement scores in science with a knowledge of sociocultural and familial background of the learners?
2. Has much variance is accounted for by each of the sociocultural and familial variables in the scores on achievement tests in science?

METHODOLOGY:

1. Sample: As the study was proposed to be carried out on class VIII students, the average age of the subjects was expected to be 15 years. The sample consisted of 489 students of class VIII including 263 boys and 226 girls selected from rural and urban schools around Aligarh city. The cluster sampling technique was used for the purpose.

2. Tools: The following tools were utilised for the purpose of data collection.

   (i) Achievement test in Science: This test was constructed by the investigator as a part of her M.Phil degree programme. It consisted of a battery of three subtests, one each in Physics, Chemistry and Biology. The total test consisted of 75 items. The total score on the test was taken as a measure of achievement in science.

   (ii) Cattell's Culture Fair Intelligence Test: This test was used for measuring intelligence as a predictor of achievement. This is a culture fair standardized test
readily available in the market. The investigator obtained a few copies of the test from the library of the Department of Education, A.M.U.

(iii) Sociocultural and familial background assessment scale:
This scale was developed by the investigator in consultation with existing socioeconomic status scales and personal data schedules available in the market. This included some open-ended Questions to be answered by the respondents.

ANALYSIS OF DATA

The data processing was carried out on the computer in two stages. In the first stage over- and underachievers were identified by using a regression equation used to predict achievement in science by intelligence scores. The significant discrepancy between actual and predicted achievement score was taken as a measure of over-underachievement. In the second stage stepwise regression analysis of over- and underachievement scores was carried out on sociocultural and familial variables. This process was conducted separately for boys, girls and for the combined sample. F-test was used to test the significance of a particular prediction. Multiple correlations were also studied and regression equations were set up.
FINDINGS:

The study leads to the following findings:

1. The correlation between achievement in science and general intelligence was found to be between 0.29 and 0.60. These results corroborate with the results obtained by other researchers whose findings have been reviewed in the present study.

2. The number of over- and underachievers identified was between 15 and 16 percent of the total sample selected showing that about one third of the student population constitutes over- and underachievers.

3. The correlation coefficients between intelligence and most of the sociocultural and familial variables were found to be statistically significant showing that intelligence to some extent determined by sociocultural and family background.

4. Family income, parent education, family occupation and sociocultural background had significant correlations with academic achievement in science for all the samples.

5. In the case of boys overachievement is mainly determined by family income. The students whose family income is high are expected to achieve more than warranted by their cognitive abilities.
6. Underachievement among boys were mainly determined by family income and parent education. The children of parents with low education are likely to be underachievers.

7. In the case of girls, overachievement in science is determined by sociocultural background and family occupation. None of the predictor variables considered in this study happens to be potential predictor of underachievement in science.

8. When the samples of boys and girls were combined together, the overachievement in science was determined by family occupation alone.

9. Underachievement in the combined sample was determined by family income and parent education. The total variance explained by these variables was 29.4%.

10. The overall inspection of results obtained from multiple regression analysis show that sociocultural background and family occupation are important boosters of achievement in science. Similarly, low parent education is the root cause of underachievement. The family income plays a catalytic role in the sense that it boosts overachievement in the children of high educated rich and also boosts underachievement in the children of less educated rich.
IMPLICATIONS:

The traditional system of education is aimed at educating an average child along with others of the same ability. The psychology of individual differences states that every individual is different from every other in the world in all kinds of ability. It is obviously unreasonable to place all children in the same kind of learning situation. The educators are more concerned about those who fail to achieve to the level expected of their potential. In a normal classroom setting, the underachievers find it difficult to cope with the teaching methods followed in the class. On the other hand, overachievers do not find teaching learning a challenging situation. The variables studied by the present investigator are not controllable and therefore can not be subjected to modification or manipulation. It is rightly said that good sociocultural background cannot be a substitute for a superiority but poor sociocultural background can suppress superior ability. This points to differentiated programmes to be carried out within the same school system. A compensatory education for underachievers, an accelerated education programme for overachievers and a normal scheme for the rest. There is a need to identify underachievers coming of the poor home and treat them accordingly.
The sociocultural and familial variables explain only 15-25% variance in over- and underachievement score. This means that 75-85% variance remains unexplained showing that there exists other variables which can explain the remaining variance. These variables may be associated with school programmes and psychological aspects of personality of students. It is possible to carry out research studies in order to examine the role of these variables as determinants of over- and underachievements in different subjects.