

## Correlates of Achievement

### A Trend Report

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#### INTRODUCTION

The Indian teacher has been constantly facing, in his school situation, some of the immediate problems as follows: What content should he choose? How should he organise a particular content? Are there any specific, concrete activities and aids which can promote better learning? Are there some standard means and ways of dealing with children which he may have to learn through rigorous training? If the goal is the achievement of the learner, then educational research has to find out answers to these problems in terms of certain factors, viz., intelligence, study habits, attitude of pupils towards school, different aspects of their personality, socio-economic status, etc., which directly or indirectly influence academic achievement. These are correlates of achievement. For a better curricular development, these are the areas which deserve to be X-rayed through proper educational research.

#### CLASSIFICATION OF THE STUDIES

The present report is based on fortyfour studies of which thirtythree have been Ph.D. theses submitted to different Indian universities along with eleven projects undertaken or financed by the Ministry of Education and other central organisations like the NCERT, the CIE, etc., state bodies like the SIE, universities and various other autonomous institutions. Among the thirtythree Ph.D. theses, twentyfour have been in education (including arts and philosophy), and nine in psychology. The studies may be classified under the subheadings: 1) Correlates in general, 2) Personality correlates, 3) Socio-economic status, 4)

Backwardness and failure, 5) Over and under achievement, and 6) Miscellaneous.

#### *Correlates in General :*

All the six studies in this section have attempted to find out the effect of a number of independent variables on academic achievement. In each case, a large number of tools have been used, and the sample taken is comparatively large. Rao (1965) has studied the relationship of intelligence, study habits, attitude of pupils towards school and socio-economic status with academic achievement. He has found that the first three variables jointly contribute sixtysix percent of the predictability of scholastic achievement, while the contribution of socio-economic status has not come out to be significant. Singh (1965) has focussed his attention upon some non-intellectual correlates of academic achievement. He has found that academic achievement is related positively to restraint, thoughtfulness, parents' education, home and health adjustments and achievement, and negatively with ascendance, anxiety, social adjustment and extraversion. Some predictors of achievement in science subjects have been the focus of attention of two studies. Nayar (1971) has factor analysed the effect of six variables, viz., verbal reasoning, numerical ability, comprehension and interpretation, problem solving, critical thinking and spatial ability. He has identified three factors—General Factor 'g', Conceptual Facility and Numerical Facility. Jha (1970) has found that achievement in science is positively related to general intelligence, science aptitude and adjustment, negatively to anxiety, while socio-economic status is not significantly related to achievement in science.

In higher secondary schools, pupils are streamed into different courses at the end of delta class—class VIII. In this respect, a pertinent question may be asked, whether there exists a differential pattern of factors required for successful performance in different courses. This is exactly what Baqer (1965) has tried to find out. Inductive reasoning has assumed the greatest importance for the science course, while verbal meaning has turned out to be the best single predictor for the arts and commerce courses. In an experimental study, Bhatt (1961) has intended to devise methodology for assessment of achievement in Basic education and to compare achievements in Basic and non-Basic schools. Excepting in language, social studies and general science, Basic school children have been found to be superior to their peers in traditional schools, specially in respect of personality development and social adjustment.

#### *Personality Correlates :*

It is perfectly natural to expect that different aspects of personality will influence academic performance either positively or negatively. It is for the researcher to find out how it influences and in what way. Of the five studies in this section, two have tried to identify the personality correlates of academic achievement in general. Bhatnagar (1967) has reported that need for autonomy, intraception, succorance, dominance, nurturance, endurance and aggression correlate positively and need deference, affiliation, and abasement correlate negatively with academic achievement of students. The factor analysis of data in the study of Abraham (1969) has revealed three factors, viz., Scholastic Aptitude, Neuroticism and Extraversion-Introversion, the last two showing sex difference on academic achievement. In two other studies, causal connection has been attempted to be established between high and low achievement and different personality variables. Rao (1963) has stressed on academic background and Mishra (1962) on non-academic. They have reported that high and low achievers do not show significant difference in general mental ability excepting in traits such as anxiety, judgement, neuroticism, morale and sense of responsibility. In respect of some aspects of personality development and academic performance, five types of Basic and non-Basic schools have been compared in the study by Banerjee (1972). The analysis of variance has revealed the superiority of Basic school students in their achievement in the mother tongue, studies of environment and speed of handwriting. The difference between the groups in respect of their

personality development has not been found to be significant. This study has utilised quite a large number of tools, as many as sixteen.

#### *Socio-Economic Status :*

In a stratified society, as that in India, a researcher is apt to start with a hypothesis that socio-economic status contributes to academic performance. In one of the studies in this section, Mathur (1963) has studied the effect of socio-economic status on behaviour and achievement of secondary school students. He has noted that socio-economic status is significantly correlated to educational achievement, intelligence and conduct of the students. In his study, Chopra (1964) has examined the relationship between socio-economic factors and academic achievement, keeping the effect of intelligence constant. He has found that nearly ninety-six percent of students who discontinued education attribute the reason to poor economic condition of the family. On the basis of parents' education, occupation, family income, type of lodging, size of the family and cultural level of home, students belonging to the higher qualitative group show significantly higher achievement.

#### *Backwardness and Failure :*

The problem of backwardness and failure in academic achievement needs sustained efforts of educators for its intelligent and efficient tackling. Research findings in this respect will identify the factors responsible for the problem suggesting, thereby, possible remedial steps. This section includes eight studies. In the research project undertaken by Adaval, Kakkar, Agarwal and Gupta (1961) an attempt has been made to probe into the possible causes of failure in the high school examination and suggest ways and means of eradicating them. The study has also analysed the inherent weaknesses in examinations along with shortcomings of other environmental factors. In a similar study, Varma (1966) has tried to identify factors responsible for poor results in secondary school examinations and to assess their bearing on school success. He has found that intelligence, study habits and ego-involvement have positive and significant relationship with achievement.

A group of studies has centred round the problem of backwardness. Puranik and Kundley (1969) have studied educationally backward pupils with regard to their intelligence, vocabulary equipment, arithmetical ability and emotional problems. Lohithakshan

(1961) has used sociometric technique to determine the association of behavioural tendencies and socio-environmental factors with educational backwardness. Lulla, Shah and Darji (1966a, 1966b, 1966c) have investigated the academic causes of backwardness at the elementary stage, separately, in three studies—general backwardness in one, backwardness in social studies in the other and backwardness in mathematics in the third. Various curricular administrative factors have been identified in each of these studies. Fathepuria (1966) has probed into different restricting and promoting factors influencing scholastic backwardness.

#### *Over and Underachievement :*

Academic overachievement and underachievement and the factors involved therein have been the main focus of attention in a group of seven studies in this section. Sinha (1965) has identified factors like intelligence, anxiety, adjustment, and other intellectual and non-intellectual factors associated with students' performance. Pal and Saxena (1970) have tried to empirically determine the extent and nature of the problems of over, under and normal achieving students and to ascertain the degree to which these problems press upon the different groups of achievers, to help or retard their academic performance. They have also probed into the study habits, self-concepts, attitudes, interests and future vocational plans of these different groups of achievers. Srivastava (1967) has investigated into the factors related to educational underachievement. He has found that besides study habits, reading ability, health, social and emotional adjustments, underachievement is also related to various other background and personal factors like age, socio-economic status, number of siblings, birth order, reading interests, failure in school examination, and participation in cocurricular activities. Sharma (1972) has made a comparative study of the over, average and underachievers with regard to their adjustment in school and various other areas of life. Saxena's (1972) attempt has been to discover the differences between the over and underachievers with respect to their interests, need patterns, adjustment problems, study habits and personal and other background factors. Pathak (1972) has studied the factors which may differentiate high achievers from low achievers in science. The factors identified have been similar to some of those found by other studies. Dhaliwal (1971) has investigated into the personality correlates of academic over and underachievement. His findings have corroborated the conclusions arriv-

ed at in other studies. One of his significant findings has been that both over and underachievement go with higher need for achievement and greater anxiety in comparison to normal achievement.

#### *Miscellaneous :*

Academic achievement is the product variable which gets toned up or down by the positive or negative influence of a host of independent variables, the role of some of which has already been noticed in the studies reviewed so far. Yet there have been some sixteen studies which have investigated into this area taking up one or two correlates separately, for specific enquiry. Ascertaining the pattern of study habits, Jain (1967) has explored the relationship of study habits with students' attainment and has tried to develop a standardised study habit inventory, while Shivaramayya (1954) has found out that children's free activities significantly contribute to their better performance.

A group of three studies has centred round the role of self-concept and anxiety in learning and academic achievement. Ramkumar, V. (1969) has noted a positive relationship of self-concept with intelligence and achievement. Certain demographic and environmental variables like sex, area of residential community, position in family and educational level of father are related to self-concept as well as achievement, though the degrees vary. Sharma (1968) has reported a significant relationship of positive and negative self-concepts and general anxiety with school achievement. The study by Pandit (1969) has corroborated the fact that an overall negative relationship exists between anxiety and other independent variables of attainment.

Another group of studies has explored the relationship of intelligence, creativity, interest, neuroticism and extraversion with scholastic achievement. In Vidhu's study (1968) extraversion and neuroticism have been found negatively correlated to achievement. Through multiple correlation and factor analysis of examination marks, Kulshreshtha (1956) has noticed a high positive relation between intelligence and scholastic attainment. Rastogi (1964) has found that interest and intelligence are related more with achievement and less with each other. Passi (1972) has made a thorough analysis of creativity and found it to be normally distributed among school students. The presence of a curvilinear relationship between creativity and intelligence suggests the possibility of a threshold beyond which any increment in intelligence may not contribute to corresponding increment in creativity.

Adjustment difficulties of children in relation to their attainment have been investigated in two studies. Kumar (1963) has developed an adjustment inventory in Hindi and used it to study the adjustments of higher secondary students and their class attainment, ultimately finding a positive relationship between them. Rao (1963) has studied the effect of bilingualism on adjustment and academic achievement and found that the bilingual child shows relatively more problem behaviours than a monoglot and, to that extent, is mal-adjusted.

### REVIEWED

The effect of language ability on achievement has been the concern of three studies. Patel (1967) has studied the contribution of language ability along with reasoning and memory to school achievement. Srinivasan (1969) has also made a somewhat similar attempt and has found that language abilities and scholastic achievement are positively correlated. In a study conducted at SIE, Poona, (1971) the achievements of English and non-English medium school students have been compared with respect to science subjects. The difference in achievements has not been found to be significant.

Home is said to be the first school of the child. Home environment is one of the most potential factors influencing a child's achievement. This aspect of academic achievement has been studied by Jain (1965) who finds that the influence of home environment on achievement is positive and significant.

The organisational and administrative factors affecting the achievement of pupils are no less important. This aspect of the problem has been taken up by Pillai (1969) who has critically analysed the components of organisational and administrative factors in the present situation of our schools and assessed how they affect pupil achievement.

### RESEARCH TRENDS IN THE STUDIES

A close examination of thirtythree Ph.D. and eleven independent project abstracts reveals some clear trends. The researches seem, by and large, to be (1) extensive, (2) developmental and trait oriented, (3) horizontal, (4) based on concepts and methodology developed abroad, and (5) post facto psycho-social biased.

#### *Extensive Research :*

A very obvious trend evident at the first reading of the research undertaken during the past decade was to opt for extensive rather than intensive

investigatory work. Whatever were the reasons, the preference of the researchers has more often been for large samples, for a large number of variables, hypotheses, etc., and consequently for a large number of tools|tests|techniques for collection and analysis of data.

#### *Developmental and Trait Oriented Research :*

Except a lone case of induced experimental conditions, the research has been developmental, i.e., developing mainly the tests for measuring traits related to achievement. As a matter of fact, almost every investigator has claimed the development of at least one 'new' test. Some have claimed as many as six or more. It is obvious that in the absence of tools of measurement, the activities were concentrated and geared towards that goal. It appears that quite substantial strides have been taken in developing tests for measuring intelligence, personality, achievement (content as well as language), socio-economic status, neuroticism, extraversion, creativity, etc. Thus, the option for extensiveness might have been the result of necessity.

#### *Horizontal Research :*

It is quite true that research in a particular age will be dictated by the felt needs of that time and will be restricted by environmental conditions. All the same, one would expect that the growth and development will be vertical, that is to say that a new researcher would care to survey what has been done earlier and then carefully select a problem, adopt a methodology and through appropriate techniques arrive at conclusions which would indeed add something new to the already existing knowledge, thereby making vertical development possible. In this sense, the educational research does not seem to have grown from 1961 onwards. A quick glance at the titles will convince the reader that they had been carried out almost independently or even in isolation, most often repeating without even taking cognizance of what some other researchers had done earlier to him. Consequently, the reader will be amused to find similar titles, similar methods, similar tests and almost everything similar except the so called random samples of Indian children! One is seriously worried to note that even today, scores of researchers in the country are busy constructing one or the other 'new' (!) test refusing to accept that a good test is available somewhere and that it will be more economical, more

efficient, more appropriate and more contributing to use it, rather than constructing a new one or adapting a foreign one. The craze for adapting foreign tests in stead of making use of available Indian ones is quite disturbing. The researchers in various Indian universities pretend not to know what is happening and what is available in sister institutions in the country and at the same time seem to be quite conversant with what is happening and available in America, thousands of miles away. As a result, ten different (horizontal) versions of a particular foreign test are available, but absolutely no further (vertical) information is available after its adaptation, even in that particular language. The author is quite aware of the argument of cultural fairness of a test, but fails to understand why a Hindi adaptation of a particular test is less acceptable than the original test itself, particularly when validity and reliability indices reported are rarely below .80, unless the author wants to have them low! It is better if a trend to investigate in depth, whatever is already available—and that is in plenty—is initiated and established in order that vertical research development starts taking place.

*Based on Concepts and Methodology Developed Abroad :*

It is quite apparent from the above discussion that even these developmental, explorative and evaluative types of researches have been heavily influenced by the western, particularly the American, research. In a way, it follows a similar line of development that had taken place in that country. The Indian researcher had been, doubtless, on the receiving end in terms of concepts, operations, methods and evaluation techniques. It is pertinent to remind the reader that this is not so in Germany, USSR and such other countries. As a matter of fact, the Russians in particular have outrightly rejected the whole western approach of measurement and evaluation (essentially a normative one), while the Germans have always been more conceptually oriented (Gestalt) without ever sacrificing rigorous experimentation in their investigations. No new thinking has been generated—either conceptual or operational—in Indian Universities and consequently, there is no original contribution to the field.

It is a great paradox of thinking of the Indian social scientist—particularly of the educator and the psychologist—that while fully acknowledging the powerful role of environment as the determiner of human behaviour, he rarely hesitates to borrow culturally biased concepts and technology for studying

the same, thereby playing second fiddle to his counterpart in the West. There is absolutely nothing wrong in borrowing and adopting in the initial stage of development, as it not only saves time but also economises labour and money. Just at the same, it is equally pertinent to modify them to suit our environmental conditions and having experimented on them one should be in a position to make original contribution to the development of a theory. The horizontal trend in research can never rise up to such heights (theoretical) as it fails to add new knowledge to the existing one and remains in the rut of repetition indefinitely.

*Post Facto Psycho-Social Biased Research :*

The author holds the opinion that the main reason for the state of affairs described above has been the lack of experimental approach in investigating the problems related to academic achievement. One is amazed to note that the all pervading, quite complex and extremely dynamic concept like academic achievement which concerns a specialist and a layman alike did not provoke the Indian researcher to think about experimentation. Psychometric orientation seemed to have temporarily blocked the development of experimental research.

Academic achievement is the prime concern of a teacher in the classroom. The teacher educator, having the responsibility of training a teacher for making classroom teaching-learning more effective, should have been concerned about immediate factors (variables, traits, characteristics, etc.) which might facilitate or adversely affect academic achievement in children. As is amply clear from the abstracts, they were more concerned about distant factors related to achievement. Children with varied socio-economic backgrounds, with varied mental abilities, with varied aptitudes, with varied emotional characteristics and diversified interests, attitudes, motivation and values in an average Indian classroom, are a reality; a heterogeneous classroom in Indian schools is a poignant, palpable fact. And, how would the knowledge of positive and/or negative correlations between them and achievement help an ordinary teacher in promoting achievement which is of immediate concern, not only to him, but also to parents and society? The educator, free from psycho-social bias, would have been more interested in investigating curriculum and methods (or content and process) and then evaluating academic achievement. Instead, it is remarkable to find that while a substantial majority of theses (22/33) were submitted for Ph.D. degree in education, there is no

qualitative difference between the approaches or investigations adopted by educators, psychologists and sociologists. On the contrary, the approach had been postfacto, psychometric (classical) and non-experimental.

### *FUTURE TRENDS*

The author would take this opportunity to state that the ground is ready for embarking on rigorous experimental research. Thanks to the efforts however diffused, many of them may appear to be, made by the investigators up till now. In his opinion, the future research should be (i) functional and curriculum oriented, (ii) sophisticated in all aspects of research—conceptual, operational and methodological with sufficient scope for (iii) experimentation and (iv) depth investigation.

#### *Functional and Curriculum Oriented Research :*

The training given to a budding teacher is usually left right behind him in the training college. It has become absolutely ritualistic and meaningless as far as the functions of teachers in regular classrooms are concerned. As a result, the training colleges have lost touch with schools and also seem to have very little impact on school practices. This is, indeed, a disheartening situation. The time has now come when the teacher educator has to do some hard thinking on how to make teacher training meaningful, efficient and task oriented. Something that definitely works has to be investigated, tried out, demonstrated and then handed over to the teacher. Generalisations which are more often than not borrowed or are otherwise arrived at from diffused research endeavours miserably fail to help the teacher to deal effectively with specific situations—academic, social as well as emotional. The author is convinced that this goal can be achieved only through experimentation in all aspects of curriculum.

It was earlier argued that researches done on distant correlates of academic achievement are not very useful to a teacher who has on all counts to face the reality of a heterogenous class. This situation is not going to change much for the Indian teacher. Therefore, the question facing him is how to promote learning in this situation. If the answer to this question can be given in definitive terms, the Indian teacher educator would be coming close to making his training functional.

It can now be seen that the normative research,

although very useful and necessary at the initial stage, does not help much. The normative research and the tests of measurement developed with respect to it, only indicate what the position of an individual is along a certain continuum of measurement. Since most of human characteristics pertaining to physical, mental social and emotional aspects are essentially developmental (amenable to change due to environmental influences), it is not sufficient to know and state that an individual stands at such and such position with reference to his group—small or large—may it be any characteristic, viz., achievement, creativity, cooperation, fear, achievement motivation, interests, values and so on. What is most pertinent from the points of view of a teacher, and parents too, is what he can do and how he can help a child to achieve higher goals of growth and development with respect to any one or all desirable characteristics. In other words, can the teacher educator guide him in precise terms saying that having a particular goal in mind, he may choose 'this' content(s), select 'that' method(s), and administer 'this or that test(s)', so that the teacher may be successful eight or nine times out of ten in achieving his goal? Or he may be in a better position to achieve his goal than he would have been without them. These are the problems of intensive investigations facing the teacher educator.

Fortunately, the time is most opportune and the climate most conducive in India for ushering in advanced research work in the area of academic achievement. It is gratifying to note that some institutions have taken initial steps in this direction. Special mention needs to be made of the research efforts of the Centre of Advanced Study in Education and the Regional College of Education, Mysore. If one were to undertake research on any one or all the aspects of curriculum, he would have to start with far more sophisticated ad hoc conceptual thinking than he would have started, say just five years ago. When the author mentioned 'opportune time' and 'conducive climate', he had in mind the strides that have been made in preparing ad hoc models of learning in the country. One should not be reluctant to accept the claim that research in this area is as good as anywhere else including U.S.A. and U.K. and there is a pretty good chance for Indian educational research to make valuable, indigenous contribution to the development of educationally biased theory of teaching-learning.

#### *Conceptual and Operational Sophistication :*

The first step that needs to be taken is to introduce sophistication and refinement in the definitions of

different concepts. It is relevant to ask, all over again, what is achievement. Is the prevalent concept close to reality? How far does the present quantification approximate the true concept and how much nearer is it to reality? Is there any gap between the concept and its operation? Has the stage come when, instead of quantifying a concept, attempts are being made to fit a certain quantification on the concept? It is strongly believed that in trying to fit a certain type of quantification on any concept, a researcher is committing an error of super-imposing an artifact on a natural happening, thereby distorting reality. This, in fact, is an example of reversing a scientific process. Thus sophistication of conceptual and operational terms will be quite necessary.

#### *Experimentation in Depth :*

This sophistication can be brought about only by rigorous experimentation. Empirical data, accumulated through years of controlled experimentation in the field, will help sharpen and refine concepts. Assuming that achievement is essentially developmental in character, the teacher must make sure that he knows what is to be developed. Here open up channels of tremendous potential for experimental research. Each question becomes a developmental goal and an investigation itself. Again, each investigation will bring to light more questions than what it will have answered, thereby leading the researcher into depth hitherto unknown. In such experimentation in depth,

the major practical problem to be solved is to identify from among existing materials, teaching methods and those aids which could help develop certain types of learning in a hierarchical order leading ultimately to the development of new materials, methods and aids for achieving higher developmental goals. No doubt, this will require intensive training for those who undertake such work. Nevertheless, it is quite certain that this type of approach will never fail to indicate the right direction in which further research work in this area should proceed and progress. It will also help the Indian researcher to make indigenous contribution to educational research in general.

To sum up, research in this particular area has so far been on the beaten track. When new and more ambitious programmes are gradually being taken up in the field of teaching-learning process at various centres of the country, research in correlates of achievement of the learner awaits a thorough organisation on a sound theoretical basis with a real concern for solving the problem of our education. What is urgently required is experimentation on real problems in this area and not sporadic studies on issues of mainly academic interest. In this regard, knowledge and experience accumulated abroad have to be taken help of, no doubt, but the Indian researcher has to try to stand firmly on his own legs. A lot of hard thinking about the clarity of concept, feasibility of the study and defensibility of the experimental design will ultimately, it may be hoped, bear rich fruit.

## ABSTRACTS : 399-442

399. ABRAHAM, P. A., *An Experimental Study of Certain Personality Traits and Achievement of Secondary School Pupils, Ph.D. Psy., Ker. U., 1969.*

This study attempts to determine the influence of the basic personality factors on academic achievement.

The sample consisted of pupils from standard X, selected from a twenty percent stratified random sample of schools in the Trivandrum educational district. The personality variables chosen were intelligence, introversion, extraversion, neuroticism, adjustment, persistence, level of aspiration, personal tempo and variability. The scores obtained by the sample in Malayalam, English, Hindi, social studies, general science and general mathematics and on psychological tests of verbal intelligence, nonverbal intelligence, introversion-extraversion and neuroticism scales of senior MPI, persistence inventory, personal tempo and school adjustment were taken for the final investigation. Level of aspiration scores on continuous addition test and the variability scores based on the performance levels on the continuous addition test were also included in the study. Since boys were found to be significantly superior to girls on several achievement variables, the data obtained for boys and girls were factor analysed separately.

In general, the major findings were: (i) scholastic aptitude had the maximum influence on academic achievement; (ii) the influence of the temperamental dimensions of neuroticism and introversion-extraversion on academic achievement showed sex differences; (iii) it was found that factor analysis of the personality variables and academic achievement evolved a factor pattern in which three factors could be identified, viz., Scholastic Aptitude, Neuroticism and Extraversion-Introversion; (iv) the personality factors evolved from the analysis of scores obtained from (a) a sample of boys and girls, (b) a sample of boys and (c) a sample of girls, were similar; (v) the personality factors evolved in the analysis had significant loadings on the personality variables and so the influence of the personality on academic achievement could be described in terms of the personality factors; (vi) boys were found to be superior to girls in their achievement and the same trend was noted in the loadings of the dominant personality factors.

400. ADAVAL, S. B., KAKKAR, A., AGARWAL, M. and GUPTA, B. S., *Causes of Failure in High School Examination, Dept. of Edu., All. U., 1961. (MOE financed)*

The present research project is an endeavour to probe into the possible causes of failure in high school examinations and to suggest ways and means of eradicating them. The study aimed at analysing the inherent weaknesses in the examinees as well as the shortcomings of other environmental factors.

This was a follow-up case study and the method employed was mainly the administration of psychological tests on failed candidates and holding interviews with the heads of the institutions, teachers and guardians. The sample, for the present investigation, consisted of eighty girls and 116 boys, thus making a total of 196 students who had failed in the examination conducted by the Board of High School and Intermediate Education, Uttar Pradesh. The cases were drawn from fourteen girls' and sixteen boys' schools from four districts of Uttar Pradesh, viz., Allahabad, Meerut, Bareilly and Moradabad. The cases were distributed over a wide age range from twelve plus to twentyone plus. The sample was heterogeneous so far as the income was concerned. Tools employed were: (i) the Bhatia's Battery of Performance Tests of Intelligence, (ii) the Rorschach Ink Blot Test (iii) the Asthana's Adjustment Inventory, (iv) a students' inventory, (v) a teachers' inventory, (vi) a principals' inventory and (vii) a parents' inventory. The intelligence scores were categorised according to the manual, but a new category, viz., "Rather Average" was introduced in order to give the benefit of doubt to those students whose IQs fell one or two points below the average level. For the other categories, the classification by Terman was followed.

The study revealed the following: (i) The majority of students were below average in intelligence. (ii) The majority of students were introvert. They had withdrawn themselves due to unhappy and 'traumatic experiences' in the environment. Their ego organisation was not satisfactory. The block of emotional depth was a major handicap in their general adjustment. The students were unable to make the optimum use of their potentialities due to many personality problems; (iii) The personality problems appeared to be the results of retarded mental development, physical handicaps and emotional disturbances. (iv) In the opinion of the principals, the following reasons were

responsible for the high rate of failure: (a) double promotions, (b) abolition of mathematics at the high school stage and its reintroduction, (c) defective curriculum and confused syllabus, (d) defective system of examination, and (e) teachers' inability to cope up with the demands of the situation because of unsatisfactory service conditions, inefficiency, lack of devotion, guardians' indifference to the proper education of their wards, ill-equipped libraries and laboratories and lack of teaching materials, poverty, home environment, large number of distractions, unsettling influences of political parties, social conditions and lack of genuine interests in studies. (v) In the opinion of teachers, the common factors responsible for failures in all the subjects were, (a) overcrowded classes, (b) subnormal intelligence of students, (c) students' poverty, (d) poor comprehension and expression power, (e) negligence and irregular attendance, (f) lack of interest and attention in the class, (g) careless and indifferent attitude towards the subject, (h) poor health of the students, (i) tendency on the part of the students to avoid written work, (j) promotion of weak students from class to class, (k) bad handwriting, (l) lack of coordination between the subject matter and practical life and (m) ill-equipped libraries and laboratories. (vi) The parents expressed two main contributory reasons, viz., (a) their financial difficulty and (b) lack of supervision of the study of their wards. (vii) The students enumerated factors from four areas, viz., home, school, health and emotional areas which were responsible for their failure to a considerable extent. The students faced difficulties at home due to unpleasant atmosphere, conflict with family members, lack of interest towards education on the part of family members and burden of household duties. Poor health, physical handicaps, working under anxiety and tension, and lack of guidance while selecting the courses were other reasons given by students.

401. BANERJEE, N. P., *A Comparative Study of Students in Basic and Non-Basic Schools in respect of their Scholastic Achievement and some aspects of Personality Development*, Ph.D. Edu., Viswa Bharati U., 1972.

The study aimed at making a comparative study of five types of Basic and non-Basic schools in respect of their scholastic achievement and some aspects of personality development.

Out of the five types of schools, viz., (A) senior Basic, (B) extended Basic with Basic school activities, (C) extended senior Basic without Basic school activities,

(D) non-Basic junior high schools, and (E) extended non-Basic junior high schools, twenty-nine schools were selected for comparison of intelligence, achievement and attitudes of students and eighteen schools were selected for the comparison of development of personality and intensity of interests. The sample consisted of 1,200 students of class VIII in the first group and 700 students of class VIII in the second group. The tools used were: (i) a group intelligence test developed by the Bureau of Psychological and Educational Research, David Hare Training College, Calcutta, (ii) eight scholastic achievement tests, (iii) five attitude scales, (iv) a situational test of projective type and (v) a set of questionnaires developed by the investigator.

Analysis of variance of the intelligence test scores revealed that schools in a descending order of mean scores were D, A, B, E and C, the differences being significant at .01 level. The Basic school students were slightly superior in intelligence to the non-Basic school students. The descending order of the adjusted mean scores of achievement in mathematics for various groups of schools was B, C, A, E and D. When Basic school students (A and B combined) were compared with those of non-Basic schools (D and E combined), it was found that Basic school students were significantly superior to non-Basic school students in their achievement in mathematics. The analysis of variance of attitude scores showed that attitudes towards manual work, respect to elders, law and creative work were least favourable in group A schools, followed by B, C, D and E groups in that order. With regard to the attitude towards democratic life, the order was A, B, E, D and C with A having the least and C having the most favourable attitude. As regards the comparison of development of personality traits, it was found that in the majority of the cases the differences were not significant. With regard to interest of students, the Basic school students were superior in eight out of nine cases. On the whole, Basic school students showed superiority over non-Basic schools in their achievement in mother tongue, studies of the environment and speed of writing.

402. BAQER, M., *Differential Factors in Pupil Success in Science, Arts and Commerce Courses at the Higher Secondary Stage*, Ph.D. Psy., AMU, 1965.

The study aimed at finding out whether there existed a differential pattern of factors required for successful performance in the science, arts and commerce courses offered at the higher secondary stage.

It was hypothesised that: (i) the respective abilities required for success in the three courses under study will differ and (ii) it is possible to differentiate between the successful candidates of the three courses at the beginning of the three-year course with the help of the ability measures used.

The study was designed on a follow-up basis. Pupils entering class IX in the three courses, viz., science, arts, and commerce were studied for a period of three years in order to see which of the factors covered in the present study showed a significant relationship with the ultimate success at the end of class XI when they took a public examination. Three hundred and sixtyfour students in the science course, 325 students in the arts and 414 students in the commerce course, studying in five large representative urban schools of Delhi, were selected. The Predictive Battery of Differential Scholastic Aptitude Tests consisting of nine sub-tests, viz., numerical, verbal, inductive reasoning, deductive reasoning, spatial, perceptual speed, finger dexterity, rote memory and physical relations (test-retest reliability coefficients for speed tests ranged from .60 to .75 and for non-speed tests from .82 to .92), Prantiya Shikshan Mahavidyalaya (P.S.M.) Interest Inventory, and the Brown-Holtzman's Survey of Study Habits and Attitudes were used for data collection. Pass-fail results and annual examination marks were used as criteria of success. Product-moment correlations and biserial correlations were computed and technique of analysis of variance was employed for analysing the data.

It was observed that the findings supported the hypothesis that the combinations of factors required for success in three courses did show differences both in kind and in degree. Thus, while inductive reasoning assumed the greatest importance for the science course, verbal meaning turned out to be the best single predictor for the arts and commerce courses, the magnitude being the highest for the arts course. The second best predictor for science was verbal meaning, for arts numerical facility and for commerce verbal facility. A combination of two factors in each case seemed to provide the best multiple correlation. As regards the comparative usefulness of the tests included in this battery for predicting academic success, it might be said that out of the eight ability tests only three, viz., verbal meaning, inductive reasoning and numerical facility seemed to be important. Study habits and interest, when measured by inventories of the type included in this study did not seem to contribute significantly to the prediction of academic success. With the type of correlations obtained for the three courses, the study suggested that better predict-

ion was possible for those subject areas with which the pupils had longer acquaintance. The study showed that when academic criteria were involved, differential prediction with the help of differential aptitude tests was not a very promising approach. The study cast serious doubt on the assumption made by many counsellors and guidance workers that a significantly higher level of general mental ability was required for success in science course than for success in the arts and commerce courses, atleast at the higher secondary stage.

403. BHATNAGAR, R. P., *A Study of some of the Personality Variables as Predictors of Academic Achievement, Ph.D. Edu., Del. U., 1967.*

The present study attempted at finding out : (i) the relationship between personality needs and academic achievement of high school students in a treatment model, keeping age, sex, and intelligence constant and (ii) to predict academic achievement on the basis of personality needs. Hypotheses tested in the study were : (i) personality needs and intelligence would be correlated and (ii) some of the personality needs as measured by Edward's Personal Preference Schedule (EPPS) would be related to academic achievement of high school students.

Male students of class XI of Rajasthan formed the sample of the study. Of the 1,941 students, 912 belonged to humanities group, 476 to commerce group, and 553 to science group. The Hindi adaptation of Edward's Personal Preference Schedule was used to measure fifteen personality needs. The academic achievement was assessed in terms of composite scores of students on objective attainment tests in Hindi, elementary arithmetic, general science and social studies. Intelligence was measured by Jalota's Group Test of General Mental Ability. Two sets of correlations were computed for each age-group. One set of correlations was between each of the fifteen personality needs and academic achievement and the other set was between intelligence and each of the personality needs. In order to take out the variability which could be predicted from intelligence, partial correlations were computed between personality variables and academic achievement after partialling out the effect of intelligence. The correlation coefficients were found to be significant. Personality and intelligence were found to be significantly correlated. It was found that need for achievement, autonomy, intraception, succorance, dominance, nurturance, endurance and aggression correlated positively and need for deference, affiliation, and abasement

correlated negatively to academic achievement of the students.

404. BHATT, G.P., *An Experimental Study of the Achievements in Basic Education in the State of Saurashtra, Ph.D. Edu., MSU, 1961.*

The study intended to (i) devise a methodology of assessment of achievement in Basic education, (ii) find out and apply the analytic tools of evaluation and (iii) compare achievements in Basic and non-Basic schools.

The sample for the study consisted of ninety pairs of students from Basic and non-Basic schools. These pairs were selected on the basis of socio-economic status and intelligence. The tools used for the study were : (i) standardised achievement tests constructed by the Faculty of Education and Psychology, M.S. University of Baroda, (ii) the Physical Education Tests constructed by N.N. Shukla, (iii) the Minnesota Manual Dexterity Test, (iv) the Personality Rating Sheet of University Experimental School, Baroda, (v) the Adjustment Inventory constructed by H.S. Asthana and (vi) the Group Intelligence Test developed by the Faculty of Education and Psychology, M.S. University of Baroda. The Student 't' test was used for testing the significance of difference between means.

The major findings were : (i) there were significant differences between means of the achievement scores made by the two groups of children in the different school subjects—languages, social studies and general science, and the traditional school children were superior to Basic school children in all these aspects; (ii) in personality development and character qualities, the Basic school children were found to be superior to the traditional school children; (iii) the mean scores on the Physical Education Achievement Tests of Basic school children were significantly better than those of traditional school children; (iv) the Basic school children were found to be superior in social adjustment to the traditional school children; and (v) mean score on the Minnesota Manual Dexterity Test also showed superiority of Basic school children over traditional school children.

405. CHOPRA, S.L., *A Study of Relationship of Socio-Economic Factors with Achievement of the Students in the Secondary Schools, Ph.D. Edu., Luc. U., 1964.*

The investigation aimed at studying the relationship between socio-economic factors and academic achievement with measured intelligence held constant.

The data on intelligence, socio-economic background and academic achievement were collected from a group of 1,359 students, selected from a sample of 1,423 students of class X (age range from fourteen to twentyseven years), studying in nineteen urban and sixteen rural schools of Lucknow district. The tools for research were : (i) the Raven's Progressive Matrices, (ii) a questionnaire prepared to collect the information regarding socio-economic background of students and (iii) the marks in the high school examination of 1963. For a detailed study, students were classified into different qualitative groups and the mean of high school examination marks for the different categories were studied with the help of analysis of covariance technique. Multiple correlation method was used for studying compared relationships.

The following were the findings of study : (i) None of the sons of fathers engaged in professional, administrative, executive and managerial jobs expected to discontinue education, the corresponding figures for the agriculturist and unskilled worker groups were as high as sixtyfour and sixty six percent, respectively; 96.09 percent of students who discontinued education attested the reason of poor economic conditions of the family. (ii) The percentage of failures among the students from the professional, administrative, executive and managerial groups was twentyseven, while that for the other groups ranged between fifty nine and sixty one. (iii) The percentages of students securing first class marks were twenty eight and seven, respectively for the two groups. (iv) On the basis of fathers' education and occupation, family income, type of lodging, size of the family, cultural level of home, students belonging to the higher qualitative group showed significantly higher mean achievement than students coming from lower categories. (v) The difference between the academic achievements of different castes was significant at .05 level. (vi) Comparatively larger percentage of people belonging to lower castes were engaged in lower occupation and were thus economically poorer than those belonging to higher castes. The groups of different castes matched for fathers' occupation did not show significant difference in achievement. (vii) Multiple correlation between a combination of these factors (.350) was significantly higher than the multiple correlation between those and intelligence test scores (.255). The difference observed in this study was the differences in averages, and the results, therefore, do not imply that children from the higher socio-economic group are bright and that from lower socio-economic group are dull and it will not be possible to predict the academic achievement of the individual children from the socio-economic level of their families alone.

406. *DHALIWAL, A.S., A Study of some Factors contributing to Academic Success and Failure among High School Students—Personality Correlates of Academic Over, Underachievement, Ph.D. Psy., AMU, 1971.*

The purpose of the present investigation was primarily to study personality correlates of academic success-failure, or to be more precise, of academic over and underachievement, which has been operationally defined respectively as positive and negative discrepancies between the actual academic achievement and the predicted achievement, predicted on the basis of regression equation between intelligence and achievement.

The study was completed in two phases. The pilot study was carried out on a sample of 441 high school students. In the main study, a large sample comprising 887 subjects was taken up. The measures of academic over and under achievement in the main study, i.e. the 887 negative and positive discrepancies between the predicted achievement and the actual achievement, were treated as a continuum and were correlated with such variables which had shown any kind of relationship, linear or curvilinear in the pilot study. For the identification of academic success or failure as defined in terms of over and underachievement, two measures were needed, viz., a measure of intelligence which was used as the predictor variable, and a measure of actual academic achievement which was used as the criterion variable. For the former measure, the Raven's Progressive Matrices and the two forms of the Cattell's Culture Fair Intelligence Test (Scale 2) were employed, while for the criterion variable essay type examination marks were utilised. The intelligence test score of each individual in the sample was transformed into the measure of predicted achievement by means of regression equation in which the coefficient of correlation between intelligence and achievement was used. The discrepancy between the measure of actual achievement and the measure of predicted achievement was worked out for each pupil in the sample separately. In the pilot study, contrasting groups design was employed. Using the 441 positive and negative discrepancies between the predicted achievement and the actual achievement, three comparison groups of overachieving, normal-achieving and underachieving students were formed. The three contrasting groups, thus formed, were equated with regard to intelligence test scores, but differed significantly in terms of academic achievement. The mean differences for these three comparison groups on study habits, on Cattell's fourteen factors of personality (HSPQ), on adjustment, security-

insecurity feelings, anxiety and on need of achievement were put to t test of significance. The results of the pilot study indicated two kinds of relationships, viz., linear and curvilinear between some of the above mentioned non-intellectual variables on one hand, and academic over and underachievement on the other.

The results arrived at in the two phases of the investigation revealed that (i) superior study habits, reservedness, high verbal ability, home, emotional and school adjustment, poor social adjustment and security feelings corresponded with overachievement, i.e. academic success, whereas inferior study habits outgoing tendencies, low verbal ability, emotional instability, assertiveness, happy-go-like temperament, poor adjustment in home, emotional and school areas, good social adjustment and insecurity feelings were associated with academic underachievement, i.e. academic failure; and (ii) anxiety and need for achievement bore a curvilinear relationship with over and underachievement, implying thereby that both overachievement and underachievement go with higher need for achievement and greater anxiety in comparison to normal achievement.

407. *FATHEPURIA BYANWALA, S., Scholastic Backwardness in Calcutta High Schools (Class VIII), D. Phil. Edu., Cal. U., 1966.*

The purpose of the present study was to investigate into the different restricting and promoting factors which influence scholastic backwardness.

The sample consisted of seventy children of class VIII of different Calcutta high schools, those who were normally progressing in the class, plus seventy children who were failing continuously for two years. It was noted that the intelligence of 140 children was average. The sample comprised both boys and girls. Questionnaires and schedules were used for the collection of data. The data were analysed statistically to draw out information concerning the following three categories: (i) environment; (ii) economic circumstances; and (iii) personality of the children. The investigator interpreted the results in terms of different restricting and promoting factors influencing scholastic backwardness.

The findings of the study mainly revealed that (i) scholastic success depended upon how joyfully the child applied his mind to the task; and (ii) unhappiness was a positive source of scholastic backwardness of the children.

408. JAIN, S., *An Experimental Study of the Relationship between Home Environment and Scholastic Achievement, Ph. D. Edu., Agra U., 1965.*

The study was designed to investigate experimentally into the influence of home environment as a correlate of scholastic achievement with reference to particular school subjects and to assess the relative importance of other contributing factors in the education of boys and girls.

Five hundred and four students, of age group thirteen plus to fifteen plus of both the sexes were selected from ten higher secondary schools of Allahabad. All of them were putting up with their families. The home environment questionnaire with three sections, viz., physical and topographical, emotional and socio-economic, was prepared. All the questions were rated on a five point scale. Each question was provided with five descriptive alternative answers and the student was required to underline any one of them. To ensure objectivity in scoring, bipolar method of rating was used. It was tried out. The final draft comprised fifty items. The test-retest reliability coefficient was .86 and its validity against Saxena's inventory was found to be .75. A Group Verbal Test of Intelligence (B.P.T-14—prepared by Bureau of Psychology, Allahabad) was used to measure the general intelligence. All these tests were administered to students in groups. The influence of home environment was assessed first without applying any control and subsequently by controlling intelligence, personality adjustment and schools. The basis of assessing the scholastic achievement was the U.P. Board's high school examination marks, divided into the total scores in compulsory subjects and grand total in all the subjects (compulsory and optional subjects combined). The influence of home environment on the total scores in the compulsory subjects and the grand totals was assessed first for the entire sample and then separately for boys and girls. The influence of each of the physical, emotional and socio-economic factors was also assessed separately. Other variables were controlled by cancelling out all the cases which were beyond  $M \pm 1$  SD score in tests of intelligence and personality adjustment. The schools were controlled by eliminating qualitatively extreme schools. Thus, the homogeneity of groups was maintained in respect of intelligence, personality adjustment and schools. Next, the influence of intelligence and personality adjustment on scholastic achievement was also assessed separately. The influence of all the three

variables on scholastic achievement was evaluated by statistical partialling.

The correlation coefficients even after partialling out the effects of all the three variables on scholastic achievement were found to be significant at .01 level. The study revealed that (i) the influence of intelligence on school achievement was the greatest and it had higher relationship with achievement of boys as compared to that of girls; (ii) the influence of home environment on achievement was positive and significant; (iii) out of the three factors of home environment, the effect of physical and topographical factor was the greatest on school achievement followed by the emotional tone when no control was applied; but when controls were applied, the effect of emotional tone of the home became the greatest followed by the physical conditions; (iv) socio-economic conditions seemed to have no relationship with school achievement; (v) the influence of emotional tone of the home on school achievement was positive in the case of boys, while it was negative in the case of girls; and (vi) personality adjustment tended to bear almost a negative and significant relationship with the scholastic achievement, although the amount of relationship was negligible.

409. JAIN, S. K., *Study Habits and Academic Attainment in Uttar Pradesh Colleges, Ph.D. Psy., Agra U., 1967.*

The study aimed at developing a standardised study habit inventory and ascertaining the pattern of study habits of university students of Uttar Pradesh. It also aimed at exploring the relationship between the study habits and students' attainment.

A study habit inventory was developed with 190 statements from eight areas, viz., understanding, planning, working habits, notes taking, concentration, interest in studies, memorization and consultation habits. These were given to three experts for their judgements. Based on the face validity of the language and suitability of items to Indian conditions, 143 items were retained. Preliminary test was tried out on a sample of sixtytwo students. Item analysis was carried out using critical ratio to find out the index of discrimination of the items. The second draft contained one hundred items. A second tryout was carried out on a sample of one hundred college students. Item analysis was done using biserial correlation. The final draft contained ninety items. Reliability was found by split-half method, the Spearman Brown formula ( $r=.83$ ) and test-retest method ( $r=.90$ ).

The inventory was validated against teachers' ratings ( $r=.697$ ) and against marks obtained in annual examination ( $r=.597$ ). The normative data was collected from a sample of 960 students drawn from the eight universities of Uttar Pradesh.

The main findings of the survey were: (i) most of the items discriminated sufficiently between various attainment levels; (ii) the scores on the study habit inventory correlated significantly and positively with attainment and (iii) the coefficients of correlation ranged from .29 for consultation to .59 for the working habits.

410. JHA, V., *An Investigation into Some Factors related to Achievement in Science by Students in Secondary Schools, Ph.D. Edu., Pat. U., 1970.*

The study examined the nature of relationship between intelligence, science aptitude, adjustment, anxiety, extraversion, study habits, and socio-economic status on one hand and achievement in science on the other. Hypotheses tested in the study were: (i) there exists a substantial positive relationship between achievement in science and each of the factors, viz., general intelligence, scientific aptitude, adjustment, study habits, and socio-economic status; and (ii) there exists a substantial negative relationship between achievement in science and anxiety and extraversion.

A random sample of 342 boys and 104 girls was drawn from two boys' and two girls' schools situated in the same locality with identical features. The Mohsin's General Intelligence Test, the Roy Choudhary's Science Selection Test, the Sinha and Sinha's Adjustment Inventory, the Taylor's Manifest Anxiety Scale, the Antarmukhi Bahirmukhi Vyaktitva Prashnavali, the Wren's Study Habit Inventory, and the Kuppuswamy's Socio-Economic Status Scale were used as tools of research. Achievement in science was measured by having the average of two preceding annual examination marks in science subjects. Statistical analysis was carried out with the help of correlation, chi-square test, t test, and Mann-Whitney U test.

Following were the findings: (i) there was a significant positive relationship between achievement in science and (a) general intelligence, (b) scientific aptitude and (c) adjustment; (ii) there was a significant negative relationship between achievement in science and anxiety in the case of boys and combined samples, but not so in the case of girls; (iii) there was no relationship between achievement in

science and extraversion; (iv) there was a significant positive relationship between achievement in science and study habits in the case of boys and combined samples, but not so in the case of girls; and (v) there was no relationship between achievement in science and socio-economic status.

411. KULSHRESHTHA, S. K., *A Study of Intelligence and Scholastic Attainments of X and XI Class Students in Uttar Pradesh, Ph.D. Phil., All. U., 1956.*

The study aimed at (a) measuring the intelligence and the effect of rural and urban origin on it; (b) finding out the possible relationship existing between intelligence and scholastic attainments of students in different subjects; and (c) finding the factors responsible for the relationships and finding the significance of differences between the students offering literature and science groups of study.

The study was conducted on a sample of 1520 students of classes X and XI taking all the students of a section of literature, science and commerce streams from twentyeight schools and inter-colleges distributed all throughout the province. The sample of students comprised those who appeared in the high school examination in 1954 and 1955. The tools used were the Nonverbal Test of Intelligence (Group Test 70/23), Form Relations Test (both prepared by the National Institute of Industrial Psychology) and the Jalota's Group Test of General Mental Ability. The examination marks were taken as the measure of attainment. The data thus collected were subjected to multiple correlation and factor analysis.

It was found that (i) in all the three tests the science group proved to be superior to the literature group in each class; (ii) the intellectual maturity of students in the intermediate science was far superior to the intermediate literature group; (iii) in comparison to the intermediate literature group, the students in the high school offering science group occupied a superior position; (iv) the correlations of the intelligence test scores with the subject marks were comparatively smaller than the inter-correlations amongst the scores of subjects themselves—most of the correlation coefficients between intelligence test scores and subjects marks were too small to have any predictive value; (v) the factor analysis by Thurstone's centroid method yielded three factors in each of (a) high school literature group—General Educational Ability, General Reasoning (GR) and Verbal Comprehension (VC), (b) high school science group—General Educational Ability, Logical Reasoning (LR) and Gene-

ral Reasoning (GR) and intermediate literature group—General Educational Ability, Verbal Comprehension (VC) and Logical Reasoning (LR); (vi) General Reasoning (GR) factor identified in the high school literature and high school science groups was orthogonally opposite to the General Educational Ability factor; (vii) GR found its representation only on those variables which did not seem to contain any factor saturation; all such variables were from the intelligence test group; (viii) VC factor could be identified only in the literature groups of high school and intermediate; (ix) LR found its representation in the high school science group and the intermediate literature group.

412. KUMAR, V., *Maladjustment among certain Higher Secondary Students and its relation to their Attainment*, Ph.D. Psy., Agra U., 1963.

The study aimed at quantitatively studying the adjustments of higher secondary students and their relationship with their class attainments. It also aimed at developing a valid and reliable adjustment inventory in Hindi for the use in this study.

Study was concerned with the adjustments of preadolescents and adolescents. The problem areas explored were related to home, social and school situations as well as health and emotional life. Items relating to the areas mentioned were presented to fifty students of class IX. 'Problems of concern' were ascertained from the responses. An adjustment inventory was developed on the basis of the Woodworth's Personal Data Sheet and the Bell's Adjustment Inventory. The Laird Adjustment Inventory and the Asthana's Adjustment Inventory were also consulted. Item analysis was done after experimental tryout on one hundred students. The final draft consisted of eighty items from the areas of home adjustments, social adjustments, health and emotional adjustments and school adjustments. The split-half reliability coefficient for odd and even items came to 0.94. The validity against teachers' ratings and parents' ratings was established. The above test was used to assess the adjustment of students of high schools in Meerut, in class IX. The sample consisted of 874 students from ten institutions, but the class attainment was studied only for 755 students.

It was found that about half of the students were excessively dependent upon their parents. One-fifth of the students felt they were not loved in the family and felt their parents were disappointed with them. Responses on social scale manifested a majority of the students as being introverted, shy and

possessed of insecurity feelings. One-third of the students were touchy having a deep rooted sense of inferiority. School adjustments also of these students were poor. The coefficient of correlation between the adjustments and class attainments was found to be .27 with  $PE \pm 0.026$ . It was found further that class attainments were very much affected by the quality of home and school adjustments.

413. LOHITHAKSHAN, P. M., *An Analytical and Experimental Study of Backwardness at the Primary School Stage*, Ph.D. Edu., Madras U., 1961.

The purposes of this investigation were (i) to determine the association of social environmental factors with educational backwardness, (ii) to experimentally analyse the behavioural tendencies of backward children and (iii) to study these children by using the sociometric technique.

The sample was drawn from two upper primary classes of seven primary schools within the radius of four miles. Eightytwo boys and fiftysix girls of backward group and seventysix boys and fiftytwo girls of normal group were studied on the basis of testing and teachers' ratings. For behaviour traits, fifty pupils of normal group and fiftysix pupils of backward group were studied through observation. The study was limited to the backwardness in only two subjects, viz., mother tongue and arithmetic. For general backwardness, intelligence and achievement, tests were used. The Draw-a-Man Test, the Schonell's Essential Problem Arithmetic Test, the Silent Reading Test and a language composition test were used with modifications. Some information was also collected by a case study schedule. A sociometric test was administered to ascertain the part played by the backward child in the classroom group.

The important findings were as follows: (i) the educational backwardness was associated with communal backgroundness; (ii) early admission to higher classes on the basis of private study had a healthy influence on educational achievement; (iii) the first-borns were not different from others; (iv) poor economic home conditions as well as irregular school attendance were related to educational backwardness; (v) the pupils of backward group were significantly lower in intelligence; (vi) the backward children were inferior with regard to the following traits: confidence, persistence, assertive attitude, observation, capability, concentration, favourable attitude towards school work, sociability, sensitivity to praise and

blame, and regard for self; (vii) the backward pupils tended to be less enterprising in school work, less envious and less cheerful; (viii) they seemed to be less adjustable; the boys were less social and the girls less adjustable; (ix) the backward children preferred normal children as their friends.

414. LULLA, B. P., SHAH, G. B., and DARJI, D. R., *Investigation into the Academic Causes of Backwardness in Mathematics at the Elementary Stage (Classes I-VII)*, Centre of Advanced Study in Education, Baroda, 1966a.

The study was undertaken with the following objectives: (i) to study the factors in the schools which lead to low achievement of pupils in mathematics; (ii) to know the causes leading to low achievement of the pupils in the subject as viewed by the teachers and headmasters of the elementary schools of Gujarat; (iii) to have an idea of the position of teaching mathematics; (iv) to collect suggestions to improve the teaching of mathematics from teachers and headmasters of these schools; (v) to explore the possibilities of preparing remedial programme or material for such low achievers in mathematics; and (vi) to recommend measures of improvement in courses, textbooks, teaching methods, evaluation scheme and school administration with a view to helping low achievers in the subject.

For this purpose a questionnaire was prepared and administered. It was found that every teacher in the elementary school could be regarded as a teacher of mathematics.

Some of the findings were (i) the syllabus was out of date, lop-sided, impractical and far away from the realities; (ii) some content in the syllabus was difficult to teach; (iii) the textbooks made use of both the old and new measures; (iv) limited scope for oral work weakened the skill of calculation in the pupils; (v) self-explanatory illustrations were found quite inadequate; (vi) for first three grades, there were no prescribed textbooks; (vii) teachers failed to understand four fundamental methods to be followed; (viii) majority of the schools had no reference books; (ix) sometimes pupils were admitted at a premature age; (x) timetable was not rigidly followed; (xi) there was no provision for effective and useful teaching aids; and (xii) overcrowded classes, frequent transfer of the teachers, irregularity of attendance contributed a lot to the low achievement of the pupils.

415. LULLA, B. P., SHAH, G. B., and DARJI, D. R., *Investigation into the Causes of General Backwardness at the Elementary Stage (Classes I-VII)*, Centre of Advanced Study in Education, Baroda, 1966b.

The investigation aims: (i) to study the factors in school which lead to low achievement of pupils in general; (ii) to know the causes or conditions leading to low overall achievement of the pupils in school subjects as visualized by the teachers and headmasters of the elementary schools of Gujarat; (iii) to have an idea of the present position of teaching various subjects in the elementary schools of Gujarat; (iv) to collect suggestions for improving teaching in the elementary schools of Gujarat from the experienced teachers and headmasters of such schools; (v) to explore the possibilities of preparing remedial programme or material for such low achievers in various subjects; and (vi) to recommend measures of improvement in courses, textbooks, teaching methods, evaluation scheme and school administration with a view to helping low achievers.

The investigation was conducted with two approaches, viz., through circulation of the questionnaires among the teachers and headmasters of the elementary schools of Gujarat and the case studies of the children of municipal schools of the Baroda city, whose achievement in general was low at three successive examinations. The questionnaires were mailed to 1,000 elementary schools of Gujarat. It covered all types of schools in rural areas, urban areas and semiurban areas.

The general findings of the study were: (i) adverse school conditions affected pupils' achievement; (ii) scholastic underachievement was both a social and a school problem, i.e. pupils' backwardness in schools was intimately related to their family conditions and social background; (iii) quality of teachers affected both school progress and performance of pupils; (iv) faulty habits of pupils were directly related to their scholastic backwardness; (v) poor school administrative procedures hindered pupils' achievement; (vi) unplanned curriculum and inadequate textbooks were also responsible for low achievement of pupils; and (vii) emphasis on narrow subjective examinations affected pupils' performance adversely.

416. LULLA, B. P., SHAH, G. B., and DARJI, D. R., *Investigation into the Academic Causes of Backwardness in Social Studies at the Elementary stage (classes I-VII)*, Centre of Advanced Study in Education, Baroda, 1966c.

The investigation was undertaken with the follow-

ing objectives: (i) to study the factors in the school which lead to low achievement of normal pupils in social studies; (ii) to know the causes leading to low achievement of the pupils in the subject as viewed by the teachers and headmasters of the elementary schools of Gujarat; (iii) to have an idea of the then prevailing position of teaching of social studies in the elementary schools of Gujarat; (iv) to collect suggestions to improve the teaching of social studies in the elementary schools of Gujarat from the teachers and headmasters of schools; (v) to explore the possibilities of preparing a remedial programme or material for low achievers in social studies; and (vi) to recommend measures for improvement of courses, textbooks, teaching methods, evaluation scheme and school administration with a view to helping low achievers in the subject.

The investigation was conducted with two approaches, viz., through circulation of the questionnaires among teachers and headmasters of the elementary schools of Gujarat and through case studies of the children of municipal schools of Baroda city, whose achievement in social studies was low at three successive examinations. These case studies revealed the factors in home and community and the factors in school leading to low achievement of the children in social studies. The data collected through questionnaire revealed the academic factors leading to the low achievement of the children in social studies, as perceived by the teachers and headmasters of the elementary schools of Gujarat. To have a rough idea about the causes of low achievement of the children in general and in different subjects in particular, a seminar of the teachers and the headmasters of elementary schools of the Baroda Municipal Corporation was held by the CASE. With the help of the deliberations of the seminar, an opinionnaire was constructed and circulated among the teachers and the headmasters of the elementary schools of Baroda Municipal Corporation and the elementary schools of Baroda District. Another questionnaire was constructed on the basis of these opinions and administered. Personal interviews with these teachers and headmasters were also conducted.

The following were found to be the academic causes of backwardness in social studies. They pertained to defects in curriculum, teaching material, teachers and teaching methods, administration, in schools, and of examinations. Majority of the teachers found the prescribed syllabus of the subject as too heavy, divorced from real life situations and sometimes even beyond the grasp of a teacher. Textbooks in geography were found to have outdated maps, while those of history were found overloaded with

facts. These books failed to cater to the needs of students. Explanations to the fundamental concepts were lacking. Teaching aids were either not available at all or were scarcely used. Two-thirds of the teachers lacked training and were wholly dependent on the textbooks. On the spot excursions and study tours could not be organised due to paucity of funds. Classes were overcrowded. Teachers were overburdened with nonacademic work. Therefore, personal guidance to these low achievers was not possible. Proper inspection and supervision by the heads of the schools were lacking. Teachers were weary of transfers. Private tuitions and cheap guides formed a great hindrance in the mental development of these low achievers. Examination system in vogue failed to evaluate the efficacy of learning experiences provided to the children. Results of these examinations were used only for promotion purposes and no particular follow-up work was done to help the low achievers. Other defects noted for causing underachievement were that of physical defects in children, poor and discouraging home conditions and lack of motivation and aptitude towards the subject.

417. MATHUR, K., *Effects of Socio-Economic Status on the Achievement and Behaviour of Higher Secondary School Students, Ph.D. Psy., Agra U., 1963.*

The study was designed to test the following hypotheses: (i) students of higher socio-economic status (SES) show significantly higher educational achievement; (ii) variation in educational achievement positively corresponds to variation in intelligence; (iii) the conduct of students who belong to higher socio-economic status (SES) is better than those who belong to lower socio-economic status; (iv) IQ positively corresponds with the socio-economic status of students; (v) behaviour is positively related to intelligence; and (vi) students of higher socio-economic status are younger than their counterparts.

Five hundred students (309 boys and 191 girls) of classes IX and X were selected randomly from seven boys' and three girls' higher secondary schools of Aligarh. The study was conducted at three stages, viz., pilot study, main study and an interpretative study which was actually a supplementary study to find out the causes underlying the differences. This interpretative study was conducted on a stratified random sample selected by picking seventeen per cent cases from the sample of the main study. The research tools used included (i) the SES scale—the ratings of independent judges on a five point scale

according to the social prestige of the occupations; (ii) the achievement test of the Bureau of Educational and Vocational Guidance, Bihar; (iii) a five point rating scale constructed for measuring the personality components and behaviour; (iv) the Standardised Test of Intelligence of U.P. Bureau of Psychology; (v) the Bell's Adjustment Inventory (student form); (vi) the Maslow's Security-Insecurity Inventory; and (vii) an inventory of study habits. Correlational and t test techniques were used for the analysis of data.

The results revealed that : (i) the SES did contribute to the differences in the ratings about the conduct of students; (ii) the phi coefficients between achievement and SES, and between intelligence and SES were .70 and .84, respectively; (iii) the students who were rated high in personality components were superior in intelligence also; (iv) students of higher SES were younger than the students of lower SES; (v) the percentage of students belonging to higher SES was high for superior intelligence; (vi) achievement was highly correlated ( $r=.67$ ) to adjustment; (vii) more secure individuals were better in their behaviour as well as in achievement; (viii) calculated ratios between scores of adjustment inventory with rated conduct, security-insecurity inventory and intelligence were .87, .72 and .89, respectively; and (ix) the variable of study habits was highly correlated ( $r=.78$ ) with scholastic achievement.

418. MISHRA, H. K., *Personality Factors in High and Low Achievers in Engineering Education*, Ph.D. Edu., IIT, Kharagpur, 1962.

This is a comparative study of nonacademic background and personality structure of high and low achievers in engineering education.

Two groups of high and low achievers were formed from amongst different engineering courses. In addition to studying personality traits, data on income, aspirations, identification of ideal engineers and rural and urban living were obtained for both the groups.

The study revealed that personality patterns of the two groups differed in traits like anxiety, judgement and neuroticism. There were, however, no differences in their intelligence, attitude towards teachers, social adjustment and total emotionality. Groups did not seem to differ on other dimensions either.

419. NAYAR, P. P., *Some Predictors of Achievements in Science at the Secondary School Stage*, Ph.D. Edu., Ker. U., 1971.

This study attempted to predict achievements in science with the help of following six variables : verbal reasoning ability, numerical ability, comprehension and interpretation, problem solving, critical thinking ability and spatial ability. Factor analysis of the correlation matrix of the above variables was also carried out to study the amount of variance that could be attributed to aptitude for science.

The pretesting for conducting item analysis for the tools used was done on 370 students (195 boys and 175 girls) studying in standard X in selected schools in Trivandrum revenue district, Kerala. The tools used were: (i) Verbal Reasoning Test of the NCERT (VR); (ii) Numerical Ability Test Form A of the Differential Aptitude Test (NA); (iii) adapted version of the Comprehension and Interpretation of the Educational Testing Service Cooperative Science Test Form Y (CI), Part III; (iv) the Problem Solving Test based on the Cooperative Sequential Test of Educational Progress Science Test; (v) adapted version of the Watson-Glasser Critical Thinking Appraisal; and (vi) the revised Minnesota Paper Form Board Test AA (FB) to measure spatial ability. Reliability of these tests were established by test-retest ( $N=135$ ) and split-half ( $N=441$ ) methods. Standard errors of measurement of test scores were also calculated. Tests were validated against school marks in science. Predictive validity studies were attempted by following up fortytwo students of first year pre-degree class and 180 of second year predegree class taking marks in science as criterion. A stratified sample of 441 students (231 boys and 210 girls) was drawn considering the variables of sex, area (rural or urban) and age.

The main findings were: (i) the differences between the mean scores of boys and girls on Numerical Ability, Problem Solving and Critical Thinking Appraisal Tests were significant at .01 level, boys being superior; (ii) there was however, no significant difference between the mean performance of rural and urban students on the six experimental and the criterion variables; (iii) the correlation coefficient between the scores on critical thinking criterion, in case of boys, was significant at .05 level; (iv) there were significant differences at .05 level between boys and girls in their correlations in VR and CI, girls being superior in both the cases; (v) the multiple correlation coefficients were: NA and VR=.6005, NA, VR and CI=.6383 and NA, VR, CI and FB=.6525; (vi) the variances of the four tests for school science

were 15.6 percent (NA), 13.6 percent (VA), 9.5 percent (CI) and 5.6 percent (FB); (vii) these four tests had highest validity of any combination of tests chosen from the six tests used; (viii) three common factors were revealed in this study, which have been named as General Factor 'g', Conceptual Facility and Numerical Facility; and (ix) the study revealed agreement, to a great extent, between the findings obtained through multiple correlation and through factor analysis.

420. PAL, S. K., and SAXENA, P.C., *The Problems of Over, Under, and Normal Achieving College Students*, Dept. of Edu., All. U., 1970. (NCERT financed)

The investigation was undertaken with the purpose of empirically determining the extent, range and nature of problems of over, under and normal-achieving students and to know the degree to which these problems press upon the different groups of achievers to help or retard their academic performance. It also sought to probe into the study habits, self-concept, attitudes, interests and future vocational plans of overs, unders and normals. The hypotheses examined were: (i) the underachievers are troubled with larger number of problems as compared to overs and normals; (ii) the underachievers tend to indicate more problems in the areas of finance and adjustment to college work; (iii) the underachievers are concerned more with outdoor games as compared to others; (iv) the overachievers have better study habits; they devote more hours to study and possess positive attitudes towards school, peers, teachers and education; (v) problems of the under, over and normal-achieving students differ from curriculum to curriculum and (vi) the unders, overs and normals, from university and associated colleges are alike with respect to their problems, study habits, self-concept, study hours and attitudes.

The random sample consisted of 305 students from biology curriculum and 517 from mathematics curriculum of science faculties of Lucknow, Gorakhpur, Allahabad universities and two affiliated colleges.

The three groups of over, under and normal achieving students were identified on the basis of the ability scores on the Joshi's Test of Mental Ability and the achievement scores (B.Sc. Part I marks). Those above average in ability and below average in achievement were regarded as the underachievers. The diagonally opposite categories represented the overachievers. Those who had achievement commensurate with their mental ability were designated as

normal achievers. Thus, 173 overachievers and 259 underachievers were identified. The rest were treated as normals. The three groups were matched for age, sex, caste, marital status, parental education, income and occupation. Personal data schedule, interview schedules for the under and over achievers and teachers, the Mooney's Problem Checklist (college form) and a Hindi Adaptation of the Brown and Holtzman's Survey of Study Habits and Attitudes were used.

The analysis revealed the following: (i) The underachievers had higher problem levels. They differed from curriculum to curriculum and were more interested in outdoor games. (ii) As regards the mathematics curriculum sample in universities, the underachievers showed more concern over finances, living conditions and employment than the others; they also had more problems in areas of adjustment to college work, the future vocational and educational plans, curriculum and teaching procedure as compared to the overachievers; they looked more for personal help from the teachers; they were also more inclined to be members of political parties; and study hours, attitudes and self-concept did not contribute to the underachievement of this group. (iii) As regards the biology curriculum sample, the three groups were alike in their problems. The underachievers identified numerically more problems in areas of finance, living conditions and employment and future vocational and educational plans; and study hours, study habits and self-concepts did not influence underachievement. (iv) The underachievers showed more positive attitudes towards school, peers, teachers and studies. (v) The biology underachievers were less interested in botany and chemistry and their interests were in reading stories and playing outdoor games. (vi) As regards the mathematics and biology curricula in the associated colleges, there were few areas on which the under and overachievers from associated colleges had more problems as compared to the underachievers from the university. (vii) Their problems were concentrated in areas of health and physical development, finances, living conditions and employment, social-psychological relations, home and family, morals and religion and the vocational and educational future. (viii) As regards the biology curriculum sample, the underachievers of associated colleges expressed more problems. (ix) The underachievers assigned underachievement to family's economic needs, defective college education, overcrowding in classes, lack of motivation, parental disinterestedness and sociability. (x) Teachers thought underachievement was due to chance factors in examinations, weak background, nonacademic activities

and financial difficulties. (xi) The overachievers in the mathematics curriculum of the three universities had fewer problems regarding finances, living conditions and employment, adjustment to college work, future vocational and educational plans, curriculum and teaching procedure as compared to the underachievers. (xii) The overachievers marked higher in problems of health and physical development and they possessed better study habits, study hours, attitudes towards school, teachers, peers and studies. (xiii) As compared to other groups, the biology overachievers of universities expressed numerically more problems in areas of social and recreational activities, home and family, adjustment to college work and curriculum and teaching procedure, and differed significantly from the other groups on the second and last areas; study did not help achievement; and more overachievers preferred teaching profession. (xiv) Comparing the overachievers of colleges and universities of the mathematics curriculum, the former appeared more concerned about health and physical development and differed significantly from the unders; and the overs from the associated colleges had better study habits and attitudes towards school, teachers, peers and studies. (xv) The overachievers in biology curriculum were more concerned with problems in the area of social and recreational activities, and differed significantly from the unders in health and physical development, but not as regards study habits, self-concept and attitudes towards school, teachers, studies and peers. (xvi) The overachievers attached importance to motivation and parental education. (xvii) The normalachievers of the mathematics curriculum of universities had problems in adjustment to college work; they put in more hours of study, had better study habits and possessed more positive attitudes towards studies, peers, school and teachers, but the self-concept made no difference; and their reading interest was high in detective stories and they participated more in social activities. In the biology curriculum, the normals put in less hours of work and possessed less positive attitude towards school, teachers, studies and peers, and they preferred professional colleges.

421. PANDIT, K. L., *The Role of Anxiety in Learning and Academic Achievement of Children*, Ph.D. Edu., Del. U., 1969.

The purpose was to study the role of anxiety in academic learning and achievement of school boys of grade V. The major hypothesis was that an overall

negative relationship exists between anxiety and other independent variables.

The sample consisted of 145 grade V boys in one elementary school in Delhi. The CIE Group Test of Intelligence (11-12) and the adaptations of four anxiety scales (MAS, GASC, TASC, AASC) were used. Two questionnaires, one seeking information about socio-economic status and the other, regarding the relationship of the subjects with their respective parents and siblings, and the demands which the parents impose on them with regard to their academic achievement, an observation schedule and achievement tests in Hindi and Mathematics were also prepared and used.

The important findings were: (i) anxiety bore a negative relationship with learning and academic achievement; (ii) subjects having less anxiety were found superior in learning and achievement, irrespective of the task difficulty, to those having more anxiety; (iii) high learners and achievers were more anxious than low achievers and learners in motivating content situations; (iv) when anxiety was experimentally induced, lowest anxiety group showed a significant improvement in achievement in the retest, while the highest anxiety group showed poor performance in the retest; (v) subjects with low intelligence and high anxiety did not improve in achievement upto the expectation as a result of induced anxiety; (vi) better achievement did not act as a reinforcement in improving achievement of high anxious low achievers; and (vii) anxiety interfered with the retention of learning.

422. PASSI, B.K., *An Exploratory Study of Creativity and its relationship with Intelligence and Achievement in School Subjects at Higher Secondary Stage*, Ph.D. Edu., Pan. U., 1972.

The aims were (i) to develop a battery of tests of creativity (both in English and Hindi) for measuring verbal and nonverbal factors involved in creativity; (ii) to explore the relationship between creativity on the one hand and the variables of intelligence-verbal and nonverbal, scholastic achievement, sex, residential background and age on the other; and (iii) to suggest measures for incorporating the applications of research findings. Nine research hypotheses were framed as follows: (i) the distribution of the scores of creativity based on the battery of tests of creativity is normal for the total sample; (ii) low relationship exists between creativity and intelligence; (iii) creativity is a multi-factor construct having both verbal and nonverbal type of factors; (iv) there is

significant sex difference in creativity; (v) urban and rural groups of students differ significantly in creativity; (vi) grade to grade (IX through XI) differences exist in mean scores on the Tests of Creativity (the hypothesis implies that the developmental trends indicating increase in mean scores from lower to the higher grade are likely to be observed); (vii) low relationship exists between creativity and achievement at higher secondary stage; (viii) double-talented (high creative-high intelligent), single-talented (high creative-low intelligent, and high intelligent-low creative) groups of higher secondary stage students differ significantly with regard to achievement in school subjects; and (ix) creativity and intelligence have significant contribution (beta coefficient) for predicting the criterion of school achievement when studied with the help of multiple regression equation approach.

Six different samples of higher secondary school students were drawn at different stages of the research project in order to fulfil different purposes, viz., (i) selection of the type of test items, (ii) pooling source material for test items, (iii) item analysis of the battery of tests of creativity, (iv) reliability and validity, (v) testing the hypotheses, and (vi) cross validation of multiple regression equation. The fifth sample meant for testing the hypotheses consisted of 600 higher secondary school boys and girls of rural and urban areas of the Punjab, Haryana and union territory of Chandigarh. Multi-stage random clustered design of sampling was employed to pick up the sample from the population of students of grades IX, X and XI of the above states. Different tools, viz., questionnaire for personal data, the Things-Done-of-Your-Own checklist, the Raven's Standard Progressive Matrices, the Jalota's Group Test of General Mental Ability, school records for scholastic achievement and the Passi's Tests of Creativity, were used to collect data. The battery of tests, viz., the Passi's Tests of Creativity which included six subtests—both verbal and nonverbal—was constructed and standardised in Indian conditions. The different subtests included in the battery are (i) the seeing problems test, (ii) the unusual uses test, (iii) the consequences test, (iv) the test of inquisitiveness, (v) the square puzzle test and (vi) the blocks test of creativity. Fifteen different types of scores like seeing problems, fluency, flexibility, originality, persistency, inquisitiveness, etc., were derived from this battery of tests of creativity. Test-retest, split-half reliability, concurrent-convergent, divergent and factorial validity were worked out. Test-retest reliability coefficients for the six tests of creativity ranged between .68 and .97 (median  $r = .83$ ). The split half coeffi-

cients for three verbal tests had a median  $r$  of .80. The median validity coefficients against external measures of the Things-Done-on-your-Own checklist, the Raven's Standard Progressive Matrices, the Jalota's Group Test of General Mental Ability and achievement scores were .60, .27, .27 and .30 respectively. The first coefficient represents convergent validity, while the latter three represent divergent validity coefficients. Factorial validity of the tests against factors, viz., Verbal Creativity and Nonverbal Creativity ranged from .305 to .745. Percentile norms for all the six tests were established.

It was found that creativity scores were normally distributed among higher secondary students. The product-moment coefficients between creativity on the one hand and nonverbal and verbal intelligence on the other, were .266 and .335 (significant at .01 level) respectively. The presence of curvilinear relationship between creativity and intelligence suggested the possibility of a threshold beyond which any increment in intelligence score would not contribute to corresponding increment in creativity scores. The principal component and varimax solution suggested that intelligence and creativity are two different constructs. Also creativity is a multi-factor construct having verbal and nonverbal factors. The four-way analysis of variance followed by  $t$  test demonstrated that except sex, the other variables, viz., residence, grade and intelligence contributed significant variance for the criterion variable of creativity. The interaction of sex  $\times$  grade  $\times$  residence  $\times$  intelligence was significant at .01 level. The  $t$  test demonstrated that girls were superior to boys in nonverbal creativity and boys superior to girls in verbal creativity. The significant developmental trends of creativity scores along grades were observed from grade IX through grade XI. Urban students were found to be significantly better than rural students. (The study of the criterion variable of scholastic achievement was found to be significantly influenced by the major effects of sex, residence, grade, creativity and intelligence as well as the interactional effects of sex  $\times$  residence  $\times$  grade. The double-talented, single-talented and non-talented groups were found to have significantly different mean achievement scores — differences in favour of talented groups. Even the multiple regression analysis suggested the same thing, i.e., (verbal intelligence and creativity, although have low relationship with achievement ( $R = .462$  and  $R = .385$  respectively), yet each of them contributes significant variance.) The multiple regression equation was cross-validated with a different sample. Educational implications of the findings are also given in the study.

423. PATEL, K., *Survey of Language Achievement, Reasoning Ability and Memory in relation to Academic Achievement among High School Pupils attending English Medium Schools in and around Calcutta, St. Xavier's College, Calcutta, 1967. (NCERT financed)*

Some important objectives of the present investigation were (i) to consider some of the factors which influence memory, reasoning and mastery over language; (ii) to see the relationships between the language, reasoning and memory variables; and (iii) to study the contribution of language, reasoning and memory to school achievement and the contribution of reasoning and memory to language achievement.

The investigation was conducted on 367 boys and 198 girls of class X drawn from eighteen English medium schools located in and around Calcutta. The technique of stratified sampling with proportional allocations was adopted for drawing the sample. The 1960 revision of the Cooperative English Test, Form 2B was used to measure language achievement. Four factorial reasoning tests of the Appraisal Division, Indian Statistical Institute (analogies, incomplete sets, combinations and verbal reasoning) were used as measures of reasoning, while the Wechsler Memory Scale, Form (T) was used as a measure of memory.

The salient findings of this study were: (i) the Indian students of grade X learning English as the first language obtained scores comparable to grade X students of USA, while those learning it as a second language were about two years behind; (ii) the factors influencing the performance of students on the language, reasoning and memory tests were, (a) subject stream, (b) school leaving examination, (c) whether English was being learnt as a first or second language and (d) the type of school in which they studied, the school being classified according to the amount of fees charged; (iii) the intercorrelations among the language variables were fairly high, while those among the reasoning variables were very moderate; the correlations among the school achievement variables indicated that a good student, as rated by the school teacher, obtained high marks in English, the elective subjects, core subjects and the Indian language; (iv) memory and verbal reasoning made significant contributions to total school achievement, while combination of verbal reasoning and memory made significant contribution to performance in the core subjects for both the sexes; and (v) the verbal reasoning, memory and combinations made significant contributions to each of the three criterion variables obtained for the Cooperative English Test for both the sexes.

424. PATHAK, A. B., *Factors Differentiating High and Low Achievers in Science, Ph.D. Edu., Udaipur, 1972.*

The purpose of this investigation was to study factors which would differentiate high achievers from low achievers in science. To fulfil the objectives in view it was sought to develop a tool to assess the study habits as well as skills of science students.

The sample consisted of 105 high and 100 low achievers in science, selected from 1,910 science students of class X of eleven higher secondary schools in Rajasthan. In order to have a representative sample, the schools were selected from three different educational levels. The high and low achievers were selected on the basis of two criteria, viz., (i) the school examination marks and (ii) the scores obtained by students on the achievement test constructed by the investigator. The top ten per cent who scored high in the achievement test and whose school marks were also high, were considered as high achievers. The low achievers were those ten per cent who scored less in both. Intelligence, personality traits, interest patterns, socio-economic status and the study habits of high and low achievers were surveyed and compared. The differentiating factors were thus located. Five tools were used: (i) the Jalota's Test of General Mental Ability, (ii) the Mehta's Vocational Interest Checklist, (iii) the Rotter's Incomplete Sentence Blank, (iv) an achievement test in science developed by the investigator (v) the Socio-Economic Blank and (vi) the Study Habits and Skills Inventory.

The important findings were: (i) the high achievers had a significantly higher mean IQ (131.2) than the low achievers (93.7); (ii) eightyfour per cent of the low achievers frequently expressed fear of failure in examination and lack of interest in studies, whereas the high achievers were more optimistic about academic future and they aspired to achieve high standards; (iii) even less confident high achievers did not worry about failure, but they were worried about retaining their division; (iv) the overall socio-economic status of high achievers was significantly higher, (v) the high achievers were mostly from the top three occupational categories, i.e., professional, semi-professional, clerical; (vi) the overall adjustment of the high achievers was significantly better than the low achievers; (vii) both had favourable attitude towards their mother, but were non-committal about their attitude towards their father; both had hostile attitude towards the older generation; both high achievers and low achievers showed difference in their attitude towards their peers as well;

more high achievers had a favourable attitude towards their peer group than the low achievers; (viii) occupations like farming, business, clerical jobs were preferred by equal percentage of high and low achievers; (ix) the educational background as well as the financial condition of parents was better in the case of high achievers; (x) study habits and skills of high achievers were better than those of low achievers; and (xi) the two groups did not differ significantly with regard to their interest patterns.

425. PILLAI, N. P., *An Investigation into the Organisational and Administrative Factors which affect the Achievement of Pupils in Secondary Schools*. Dept. of Edu., Ker. U., 1969. (NCERT financed)

The study aimed at finding out the non-instructional factors affecting the achievement of candidates appearing for the Secondary School Leaving Certificate (SSLC) examination in Kerala in the year 1963.

Twentyfour schools from Trivandrum district were selected for the study of which twelve were government and twelve private, twelve urban and twelve rural, eight boys', eight girls' and eight mixed. Nine schools had been producing consistently good results and seven consistently poor results, while the remaining eight had produced fairly good results in 1963, but not earlier. From these twentyfour schools, a total of 2,257 students appeared in the SSLC examination in the year 1963. A proforma, a questionnaire and a data sheet were used to collect the data. The proforma aimed at collecting information regarding the management (private or government) of the school, locality, etc. The questionnaire contained sixtyone items relating to pupils' marks in the school and SSLC examination, time spent in going to and returning from school, parental interest in education of the pupils, family size, details about the other family members, leisure time activities, facilities in the school, home work, class tests, composition work, pupils' attitudes towards school life, type of punishment in the school, attendance in school, cocurricular activities reports, etc. The data sheet was used to collect information pertaining to equipment and facilities in the school.

It was found that factors affecting the achievement of pupils were of three types, viz., (i) teacher factors or instructional factors; (ii) social and educational factors or environmental factors; and (iii) organisational and administrative factors or non-

instructional factors. Of all the three factors, environmental factors exerted the maximum influence on achievement. The components of teacher factors were composition work, exercises and home work, periodical tests, evaluation of tests, issue of progress reports, holding extra classes and giving special attention to examination subjects. The components of environmental factors were time taken to reach the school, educational status of parents, availability of separate room for study, study habits, availability of tuition at home, interest taken in films, provision for noon meals, attitude towards school, attendance at school and average monthly income of parents. The organisational factors constituted laboratory facilities, provision for audio-visual aids, library facilities, parental cooperation, keeping cumulative records, awarding prizes and medals for academic distinction, nature of punishments, facilities for sports and games, literary and other school associations, size of the class section, classroom accommodation, facilities provided for correction work by teachers, the number of qualified teachers in the school, frequency of transfer of teachers and promotion criteria in the lower standards. In the urban areas, the schools were situated very near to each other, but the rural schools were at a distance of at least two miles from one another. The total pupil strength varied between 149 and 2,194 and the strength in class X varied between twelve and fiftyfive. In fourteen schools, classrooms were adequate for instructional purposes. Due to lack of accommodation three of the schools were being run in two shifts. Space was scarce in every school for the increasing number of pupils being admitted. Temporary sheds had been erected in a large number of schools. Some of the semi-permanent buildings had neither walls nor partitions. Separate teachers' rooms for men and women teachers were provided in nine schools, while in eight only a common teachers' room was available for the teachers. No teachers' room was provided in at least two schools. Only eight schools had properly equipped laboratories. In seven schools no separate library room was provided. NCC or ACC was organised in eleven schools and at least one room was set apart for this. National Discipline Scheme instructors were appointed in most schools, but were observed to carry on with physical education as well in the absence of separate physical education instructors. The number of teachers in the high school section varied from six to forty-nine, while the number of trained graduate teachers showed that no school was badly lacking in fully qualified teachers. The teacher-pupil ratio ranged between 1:32 and 1:20.

It was noticed that during the earlier academic months teachers had a heavy work load due to shortage of staff. Appointments, and transfers following the fixing of staff strength were invariably made only long after the academic session commenced. The average number of casual leaves taken by the teachers in different schools varied between six and fourteen. The maximum percentage of pupils belonging to scheduled castes and tribes was thirty. Only three schools claimed that they were maintaining some form of a cumulative record. Most of the schools were issuing progress reports twice a year. In sixteen schools, marks secured in the terminal examinations were also considered in deciding the promotions, while in the remaining, promotions were based on final examination marks. In eight schools benches and desks were insufficient in number. The position in this respect was better in private schools than in government schools. Only five schools and good laboratories Audio-visual aids had been provided in all the schools. All the schools had libraries and the total number of books in each varied between 719 and 12,263. In most schools, prizes, medals, and scholarships were being awarded to motivate pupils to pass examinations. No school was completely devoid of cocurricular activities like literary associations, sports, arts clubs, etc. Eleven schools had parent teacher associations. Medical inspection had not been carried out efficiently in any school. Absence in schools so far as pupils of class X were concerned could be due to unavoidable causes; in all schools percentages of attendance were above ninetyfour.

426. PURANIK, G. A. and KUNDLEY, S., *A Study of the Educationally Backward Children in the Age-Group 8-12 years in Nagpur Schools. University Training College, Nag. U., 1969. (NCERT financed)*

The present study was undertaken to study educationally backward pupils with regard to their intelligence, vocabulary equipment, arithmetic ability and emotional problems.

A sample of 2,000 students in the age group from eight to twelve years, from classes III, IV, V and VI was drawn from Nagpur. The sample included students from all socio-economic groups. Annual marks and teachers' ratings were used to identify 100 backward and 100 bright students and to have a comparative study on variables stated above. Objectively developed and standardised tests were administered to these two groups to collect required data, which were

analysed to study mean performances of the groups. Data were collected with the help of examination records for achievement, rating scale, the Pathak Intelligence Test, vocabulary test, arithmetic test and a problem inventory.

Findings revealed that educationally backward and bright children differed significantly on intelligence, vocabulary, and arithmetic ability, bright ones scoring high on each test. These factors seemed responsible for fifty percent of the backwardness among the children. The backward children had adjustment problems related to studies, teachers and examinations. They suffered from inferiority complex, health problems, brooding and lack of security. They were, however, adjusted with their families. They hailed from very low socio-economic strata. Of the factors studied, poor socio-economic conditions seemed to be more responsible in causing backwardness among the children.

427. RAMKUMAR, VASANTHA, *Self-Concept and Achievement in School Subjects of Prospective University Entrants, Ph.D. Edu., Ker. U., 1969.*

The investigation aimed at studying the relationship between the self-concept and achievement of college students, and the influence of certain variables on that relationship. Hypotheses tested in the study were: (a) there exists a positive relationship between self-concept and achievement, between intelligence and achievement and between self-concept and intelligence; (b) the relationship of environmental variables to self-concept is similar to their relationship with academic achievement; and (c) it is possible to differentiate high and low achievers on the basis of their self-concepts.

Following the stratified random sampling technique six colleges were selected from a total of eleven colleges in Trivandrum District where predegree students were enrolled. Two out of six were boys' colleges, two girls' and the remaining two were coeducational. One of each type was located in the rural area, and the others in urban area. From a total of thirty-one batches, nine representative batches were selected on the basis of elective subjects. Seven hundred students out of 2,539 were drawn by cluster sampling. The data were collected by using a self-concept measure, Nafde's Nonverbal Test of Intelligence, a questionnaire, and college records. The self-concept measure was prepared for the particular population using the Q-sort method based on the Q-technique. A questionnaire prepared here was used to collect informa-

tion on sex, community, residential area, size of family, etc. The average marks for all the subjects at two terminal examinations were used as the index of achievement for each student.

It was found that (i) positive relationship existed between self-concept and achievement ( $r=.43$ ), between self-concept and intelligence ( $r=.11$ ), and intelligence and achievement ( $r=.25$ ); (ii) high and low achievers could be differentiated on their self-concept scores; they could also be differentiated when drawn from the subsamples as boys, girls, forward community, urban and rural students, small or big size families and ordinal positions in the family; (iii) low and high achievers classified on residential area, community and family size could be differentiated on self-concept scores; (iv) certain demographic and environmental variables like sex, area of residential community, position in family, and educational level of father were related to self-concept, as well as achievement though the degree varied.

428. RAO, D. G., *A Study of Some Factors Related to Scholastic Achievement*, Ph.D. Edu., Del. U., 1965.

The study was undertaken (i) to find out the relationship of intelligence, study habits, socio-economic status, and certain attitudes towards the school with the academic achievement of the grade VIII pupils of Delhi and (ii) to find out the feasibility of predicting the academic achievement of these students.

Five hundred boys of twelve higher secondary schools of Delhi formed the sample. The scholastic achievement of pupils was measured using the Jamia Achievement Test Battery which included three important school subjects, viz., social studies, general science and mathematics. The CIE Group Test of Intelligence was used to measure intelligence. An inventory was developed on the pattern of the Wrenn's Study Habit Inventory to measure the study habits. The Kuppuswamy's Socio-Economic Status Scale was used to measure the socio-economic status. For measuring attitude towards school, a new tool was developed.

The following conclusions were drawn from the study about the interrelationship of different variables. (i) The three independent variables—intelligence, study habits and school attitude were significantly related to the prediction of scholastic achievement, while socio-economic status was not. (ii) The multiple correlation coefficient between achievement score and the scores of intelligence, study habits and attitude towards school was 0.81, which was

quite high. This indicated that one can place high reliance on the prediction of the scholastic achievement of a pupil from the independent variables. (iii) The variables—intelligence, study habits and attitude towards school, accounted for sixty-six percent of the predictability of the scholastic achievement and remaining thirty-four percent of the variance in achievement remained to be accounted for. The dependence of scholastic achievement on various other factors such as motivation and interest, the time available for study, level of aspiration, values, etc. was generally recognised to explain this variance.

429. RAO, S. N., *Students Performance in relation to some Aspects of Personality and Academic Adjustment*, Ph.D. Psy., SVU, 1963.

This research aimed at investigating the role of certain aspects of personality and patterns of academic adjustment in scholastic performance.

Three hundred and five subjects comprising three groups, viz., over, under and normal achievers in the professional (Engineering) and nonprofessional (Arts and Science) categories were tested in the study under normal classroom conditions in groups of size ranging from twenty to thirty. Three instruments, viz., the Academic Adjustment Inventory, the Shri Venkateswara University Personality Scale, and an inventory to study students' opinions were developed by the investigator to assess academic adjustment, neurotic difficulties and morale of the students selected for investigation. Sense of responsibility was assessed by means of a situational device. Also a modified and abridged Mooney Problem Checklist and the Raven's Standard Progressive Matrices were chosen to assess their problems and mental ability. Employing four predictor variables, viz., academic adjustment, sense of responsibility, moral and neurotic difficulties, achievement at the graduate level was predicted by means of a multiple regression equation for each one of the undergraduate students in the University colleges. The subjects for the investigation were chosen by comparing the predicted achievement plus or minus one standard error (S.E.) of estimate with the actual achievement in five terminal examinations. Students who achieved beyond their predicted performance plus 1 S.E. were designated 'overachievers'. Those who achieved below the level predicted for them minus 1 S.E. were called, 'underachievers'. A third group of subjects who achieved about the same level of performance predicted for them were termed 'normal-achievers'. The data derived from the tests were analysed, employing the statistical treatments, like mean,

SD, critical ratio, chi-square test and product-moment as well as partial correlations.

The findings of the investigation were: (i) the high and low achievers did not show significant difference in general mental ability; (ii) the level of academic achievement was positively related to academic adjustment; (iii) differences in achievement were found to be significantly related to aspects of personality like, neurotic difficulties, morale and sense of responsibility; (iv) academic adjustment was found to be significantly related to the considered aspects of personality; (v) differences in academic adjustment were not found to be significantly related to differences in mental ability; and (vi) differences in the aspects of personality were not significantly related to differences in mental ability.

430. RAO, T. S., *A Study of Adjustment Difficulties and their relation to Second Language Attainment of Bilingual Children. Ph.D. Edu., Madras U., 1963.*

The purpose of the study was to find out the effect of bilingualism on adjustment and academic achievement. The hypotheses examined were: (i) the bilingual child shows relatively more problem behaviours than a monoglot and to that extent is maladjusted and (ii) the degree of maladjustment is related to the second language attainments.

A sample of 226 children comprising an equal number of boys and girls with Kannada or Telugu as their mother tongue, was drawn from grades I to V of thirty primary Tamil medium schools in the city of Madras. The age range was from six to ten years. These children came from lower middle class. Two adjustment inventories devised by the investigator and the Raven's Progressive Matrices were used. For measuring accomplishment in language, the subjects were tested with the Picture Vocabulary Test, the Direction Test and the Comprehension Test. For testing the first hypothesis, the matched group technique was adopted. The three-way analysis of variance was used to analyse the maladjustment scores.

The study revealed that: (i) the bilingual girls showed poor academic achievement in comparison with Tamil girls, whereas the same does not appear to be true for boys; (ii) the mean maladjustment scores for the experimental group was higher than those of the control group; and (iii) the difference in maladjustment scores was due to the difference in the scores of the girls in the two groups. Thus, the first hypothesis was partially acceptable. The second hypothesis did not sustain the test as the maladjustment scores showed very low negative correlation with

second language attainment scores. It was significant to note that the bilingual girls were found to be superior to boys in language.

431. RASTOGI, K. G., *A Study of the Relation between Intelligence, Interest and Achievement of the High School Students, Ph.D. Edu., Raj. U., 1964.*

The present investigation aimed at studying the relationship between intelligence, interest and achievement in English and science of high school students.

Standardisation sample for the test of interest in English comprised 1,600 students of class X from seventeen institutions, while for the test of interest in science there were 1,626 students of the same classes and institutions. Sample for the relationship study consisted of 560 students. Intelligence was measured by the Jalota's Test of Mental Ability and achievement was measured by taking marks obtained in the U.P. Board Examination.

Results revealed that: (i) the reliability coefficients calculated by split-half and test-retest methods for the test of interest in English were found to vary from 0.66 to 0.80, whereas in case of the test of interest in science, they varied from .68 to .82; (ii) validity indices for the first test ranged from 0.60 to 0.69, whereas in case of the latter, they varied from 0.66 to 0.70; (iii) the relationship between interest and achievement in English ( $r=.50$ ) and that between interest and achievement in science ( $r=.37$ ) in the present study were not found to be so high that interest could be said to be the major predictor of achievement; (iv) the relationship between intelligence and interest in English and that between intelligence and achievement in science were found to be significantly positive; (v) interest and intelligence were found, more or less, equally correlated with achievement in English and with that in science; (vi) interest and intelligence were found to be related more with achievement than between each other; (vii) the relationship of intelligence with achievement in English and that of intelligence and achievement in science were found nearly to be the same; and (viii) a combination of intelligence and interest was a better predictor of achievement in English and in science than either interest or intelligence alone.

432. SAXENA, P. C., *A Study of Interests, Need Patterns and Adjustment Problems of Over and Under achievers, D.Phil. Edu., All. U., 1972.*

This investigation sought to discover the differences between the over and under achievers with res-

pect to their interests, need patterns, adjustment problems, study habits, and personal and background factors.

The initial sample, consisting of 1769 boys of class XI of age group fifteen and above was drawn using the cluster sampling method of randomly selected class-sections. They belonged to mathematics, biology, commerce and arts streams of the higher secondary institutions of Allahabad. The over, normal, and under achievers were identified using a multiple regression equation for each curriculum separately, on the basis of the discrepancy between the actual and the predicted scores. Underachievers were defined as those individuals whose actual achievements fell at least one standard error of estimate below the regression line of prediction on achievement. Similarly, overachievers were designated as those individuals whose actual achievements fell one standard error of estimate above the regression line. The following testing instruments were used to investigate the problem: (1) the Joshi's Group test of Intelligence (JGTI), (2) the Standard Progressive Matrices (SPM), (3) the Chatterji's Non-language Preference Record (CNPR), (4) the Edward's Personal Preference Schedule (EPPS), (5) the Saxena's Vyaktivta Parakh Prashnavali (VPP), (6) the Mooney Problem Check list (MPCL), (7) the Holtzman and Brown's Survey of Study Habits and Attitudes (SSHA) and (8) the Personal Data Schedule (PDS). The aggregate of marks obtained at the high school examination of the U.P. Board were used as the criterion measure.

Some of the important findings were as follows: (i) achievement in an area was found to require interests in associated activities; having interests at random did not discriminate between over and under achievers or from one stream of study to another; (ii) the overachievers were those who aspired to higher achievement, had sufficient endurance and possessed a capacity for fighting out their case while the underachievers were meek, submissive, timid, brooding, impulsive and dependent type of immature individuals; (iii) the overachieving students had a consistently and significantly lower number of problems of adjustment in the various areas measured than the underachievers, who were burdened by a greater number of problems in general, however, a few minor differences in the absence or presence of particular area was noticed in some streams; (iv) better study habits characterised the overachieving group, implying that higher achievement required system and planned approach to preparing lessons, a proper distribution of time, careful attention in the classroom, taking of meaningful notes and the formation of expressive answers; (v) a student who was older than the aver-

age age in a particular class was more likely to belong to the underachieving group than a student of average age or below; (vi) better health status was found associated with overachievement in mathematics and biology groups only; (vii) income was found to distinguish the over from the normal and under achievers (Over-Normal-Under); (viii) longer study hours distinguished the overachievers, and shorter ones were typical of the underachievers practically in all streams; (ix) the overachievers had a positive attitude towards school, study, peers and school work; (x) a positive self-concept was associated with higher academic achievement in mathematics, commerce and arts streams; (xi) parents' education was associated with academic achievement in mathematics and biology streams; (xii) contrary to the expectations, the overachievers in the mathematics group indicated difficulty in understanding the teaching of some subjects and a lack of individual help from their teachers; and (xiii) the underachievers were conspicuously of the opposite type, being unaware of their actual difficulties and their need for individual help.

433. SHARMA, K. G., *A Comparative Study of Adjustment of Over and Under Achievers*. Ph.D. Edu., AMU, 1972.

The present study aimed at identifying the overachievers and underachievers and comparing them with regard to their adjustment in the school, after school, self, social, home, sex, health, religious and miscellaneous areas of life, as also at ascertaining the degree of relationships between over and under achievement on the one hand, and each one of the adjustment areas, on the other hand. In addition, the study compared the intellectually above average and below average children with regard to their adjustment and also determined the relationship of intelligence with adjustment in different areas. It was hypothesised that (i) mental abilities and socio-economic status being the same, those having more effective adjustment in different areas of life are likely to make better academic achievement than those having less effective adjustment and (ii) other things being equal, those having high intelligence are likely to have better adjustment in different areas of life than those having low intelligence.

The study has been carried out in two phases—preliminary and final studies. The preliminary study was based on a small sample of ninetyeight subjects of one institution, while the main study was on a large sample of 525 subjects of several institutions. Subjects of both the studies were male students of grade

VIII of age range from thirteen to fifteen years; in order to derive indices of over and under achievement in the preliminary study, two measures, viz., actual academic achievement and expected academic achievement were worked out for each pupil. For actual academic achievement, examination marks for each pupil in six school subjects, viz., Hindi, English, history and civics, geography, science and mathematics were used, while for expected academic achievement, regression equation between scores on the Mehta's Verbal Intelligence Test and examination marks was computed and intelligence score of each pupil was transformed into a measure of his expected academic achievement. Having two measures for all the pupils, they were classified into over and underachievers with the help of Tsao's (1943) technique. This technique requires the determination of a ratio (E) between the actual academic achievement and the predicted academic achievement which was multiplied by 100 so as to get achievement quotients. Before using the quotients E thus obtained, their reliability was determined and was found to be .63 which is reasonably high. Besides ensuring the dependability of the achievement quotients, it was also ensured that they were not merely due to errors of measurement. The sample was then categorised into overachieving, averageachieving and underachieving subjects by applying the stanine scale.

This treatment gave a distribution consisting of twentyfive overachievers, fifty average achievers, and twentythree underachievers. These three groups were then compared with regard to their adjustment in school, after school, self, social, sex, health, religious and miscellaneous areas of life. The adjustment scores of these three groups were then subjected to one-way and two-way analysis of variance in each one of the above eight areas of life. To predict academic achievement, the main study employed three predictors, viz., intelligence, socio-economic status and past academic achievement.

The results showed that (i) there were significant differences among the overachievers, average achievers, and underachievers with regard to their adjustment in the school, home, social and religious and miscellaneous areas only; (ii) the overachievers had better adjustment than the underachievers in all these areas of adjustment; (iii) three types of discrepancy scores were obtained—the positive scores which indicated that the actual academic achievement scores exceeded the predicted academic achievement scores, the negative scores which showed that the actual achievement scores fell short of the predicted achievement scores and the null scores

which showed an exact correspondence between the actual achievement score and the predicted achievement score; (iv) the discrepancy scores were independent of the errors of measurement; (v) those who had more effective adjustment in school, home, social, religious and miscellaneous areas were overachievers and those having less effective adjustment in these areas were underachievers; and (vi) intelligence was related to adjustment in all these areas, which implied that adjustment was at least partly dependent upon intelligence.

434. SHARMA, S., *Relationship of Self-Concept with Anxiety and School Achievement of Adolescents*, Ph.D. Edu., Pan. U., 1968.

The study investigated the relationship of self-concept (two measures: positive/negative self-concepts; and self-ideal discrepancies) and general anxiety with school achievement.

Seven hundred urban adolescents (362 males and 338 females) randomly selected from class X of thirteen higher secondary schools, of four Indian states, were selected as sample. The Self-Concept Inventory and the General Anxiety Scale, both standardised by the investigator, were administered under non-stress conditions about four months before the final examination. The achievement scores in the final examination included the scores obtained by the students in a similar examination held a year earlier by the Panjab University.

The following were the main findings: The value of 'r' between self-concept scores (positive/negative dimension) and self-ideal discrepancy scores was  $-.80$ , which was highly significant. Thus, the two scores were negatively related and an increase in self-concept scores was accompanied by a decrease in self-ideal discrepancy scores. The value of 'r' for self-concept scores and anxiety scores was  $-.51$ . The value of 'r' for self-ideal discrepancy scores and anxiety scores was  $-.50$ . These values denoted a significant linear relationship between two measures of self-concept and anxiety. Subjects with negative self-concept (or high self-ideal discrepancy) were significantly more anxious than subjects with positive self-concept (or low self-ideal discrepancy). Both self-concept scores and self-ideal discrepancy scores were curvilinearly related to school achievement. The beta coefficients were .18 and .20 respectively. Thus, the subjects with a very high self-concept (or with a very low self-ideal discrepancy) as well as those with a very low self-concept (or very high self-ideal discrepancy) were low achievers, as compared to those who came in

the middle (i.e. those with adequate self-concept)—thus supporting the inverted U hypothesis. Such a relationship was claimed to be observed for the first time.

435. SHIVARAMAYYA, D., *Children's Free Activity and Achievement, Ph.D. Edu., Bom. U., 1954.*

The study sought to investigate into the relationship between children's free activities and their achievements.

The sample of 305 students was selected from schools in Malleshwaram, Hallanahalli, Devanahalli, Bettalhalasoor, Korcharpalli and the city of Mysore. A Kannada achievement test with a section each, on language, arithmetic, social science, physical and biological sciences and handwork and craft was prepared. The reliability of the test was worked out by the method of rational equivalence and the coefficient was found to be 0.88. A questionnaire on free activity was constructed. The students were asked to construct within half an hour anything they liked from the materials presented to them—wet clay ball, sand, pebbles, bunch of leaves, two pins and two brown sticks, one square piece of paper, one needle with thread and a piece of cloth, soap and copper wire. A questionnaire for the scale of interest was also prepared. Another questionnaire was issued to teachers of practising schools and the men's training colleges in Mysore requiring particulars about students, their examination scores and activities.

The major findings of the study indicated that non-Basic school children performed better in language, arithmetic and social sciences, whereas Basic school children were superior to non-Basic children in other subjects. Children of the backward classes were superior in interests to those from the advanced classes. Urban children were superior in intelligence. The coefficient of correlation in school subjects and other activities was 0.48 in the Kannada practising schools, 0.05 in the Urdu schools, 0.2 in the Urdu middle schools and 0.36 in men's training colleges.

436. SINGH, B. N. K., *Some Non-Intellectual Correlates of Academic Achievements, Ph.D. Arts. Pat. U., 1965.*

The purpose of this study was to discover some of the non-intellectual correlates of academic achievement of college students.

The study was conducted on a sample of 370

male students of graduate courses in two colleges of Patna. Tools used for data collection included the Personal Data Sheet, the Raven's Progressive Matrices Test, adapted version of the Guildford—Zimmerman Temperament Survey, the Bell's Adjustment Inventory, the Maslow's Security-Insecurity Inventory, the Taylor's Manifest Anxiety Scale (short form), the Edwards' Personal Preference Schedule (n-Achievement scale only), and an academic inventory developed locally. All personality inventories were rendered into Hindi and their reliability coefficients computed by test-retest method were found reasonably high. Means of the aggregate marks in previous three public examinations were used as measures of achievement. Product moment and partial correlations and correlation ratio in addition to Student t ratio and chi-square were used to study the relationships.

The study revealed that (i) academic achievement was significantly and positively related to intelligence, concept formation ability and academic motivation; (ii) academic achievement was negatively related to ascendance, personal relations and anxiety, though the relationship was restricted to the middle range of achievement in the case of first two and to the two extremes in case of last, and with the ability held constant, the relationship was found to be statistically significant for ascendance; (iii) restraint, thoughtfulness, home adjustment, health adjustment and n-Achievement (EPPS) tended to be positively associated, but general ability, sociability, social adjustment, friendliness and extraversion tended to be negatively associated; in addition, neuroticism and insecurity tended to have a nonlinear relation with academic achievement; (iv) academic achievement had significant positive correlation with father's education and occupation; (v) relationship between achievement and family income though positive was not statistically significant; (vi) academic achievement was positively related with rural background, but negatively with urban; (vii) academic achievement was significantly related to the students' participation in extracurricular activities; and (viii) academic achievement was not found to have any relationship with marital status and mother's education.

437. SINHA, D. N., *A Psychological Analysis of some Factors Associated with Success and Failure in University Education, Dept. of Psy., All. U., 1965. (NCERT financed)*

The study aimed at identifying factors like

intelligence, anxiety, adjustment, and other intellectual and nonintellectual factors associated with students' performance at the university level.

A sample of 185 high achievers and 190 low achievers on the basis of the last university examination marks was selected. The high achievers were students who scored fiftyfive percent and above, while low achievers were repeaters and those passing in third division. The Personal Data Sheet, a Study Habit Inventory, the Moshin's Bihar Test of General Intelligence, the Sinha's Anxiety Scale, the Saxena's Vyaktitva-Prashnavali (MA-62), a general adjustment inventory, the Aronson's Graphic Expression Analysis (for measuring achievement motivation), a self-concept inventory and a graphic rating scale were used. The subjects were intensively interviewed and put through a number of tests in the laboratory to assess their level of aspiration and persistence.

The investigation revealed the following: (i) As regards personal background, the high achievers as compared to the low achievers were a little younger, mostly unmarried and lived generally with their parents or guardians. (ii) Many of the low achievers were residing in hired rooms and a large proportion hailed from rural areas. (iii) No difference existed between the two groups with regard to pre-primary education. (iv) Most of the high achievers had received their secondary education in convents or in government or public schools, and were students of science; their earlier academic performance had been superior and most of them had no incidence of failure, while a large number of low achievers required more than one attempt to pass their examinations. (v) Membership of the National Cadet Corps (NCC) appeared to be associated with success and failure. Many low achievers had joined the organisation, and its membership was looked upon by almost half the subjects in each group as being harmful or moderately harmful to studies. (vi) High achievers had clear and definite vocational plans, while the low achievers displayed considerable vagueness about the nature of the stated vocations. (vii) The high achievers were more systematic and regular in their studies and used to start their preparation for the examination much earlier in the year. (viii) In their intellectual capacity the more successful students were significantly superior with a mean IQ of 112.98 as against that of 102.49 of the low achievers. (ix) Over sixtysix percent of the low achievers and only thirtynine percent of the high achievers were classed as 'average' in intelligence. (x) A comparison of anxiety scores revealed the low achievers to be signi-

ficantly more anxious. On the adjustment inventory, the superiority of the high achievers was significant. (xi) The high and low achievers did not differ in their achievement motivation. (xii) The high achievers were more persistent and enthusiastic than the low achievers. (xiii) The overall levels of aspiration and flexibility were higher amongst the low achievers. (xiv) As regards the self-concept the low achievers tended to perceive themselves in a more favourable light. They felt that other persons, both friendly and hostile, underestimated them on good qualities and ascribed more of unfavourable qualities to them. (xv) The social conflict index was present and was higher among the low achievers. To this extent, they displayed greater susceptibility to maladjustment. (xvi) In the eyes of the faculty, high achievers were much superior on cognitive intellectual qualities, and showed greater industry, perseverance, and motivation. (xvii) The attitudes of high achievers towards their parents were positive. The high achievers displayed greater reliance on their own thinking and placed a premium on novelty in expression and often valued research as a career. (xviii) In social relationships, they were quite withdrawn and were liked only by a few close friends. They were systematic and regular in study, were ambivalent in attitude towards the university, critical of the administration and examinations, and emphasised the need for new ideas and a fresh spirit of growth. (xix) The parents of low achievers were poorly educated. A happy uneventful childhood was recalled along with parental pressure for early schooling. A distant and ambivalent relationship with the father was noticed with the attitude of 'fear' towards him. (xx) Family trouble and tension due to pressure of responsibility were persistent sources of worry of low achievers. They often utilised passive behaviour and helplessness for gaining others' acceptance and they spent leisure time in aimless activities, roaming about and gossiping.

438. SRINIVASAN, R., *A Comparative Study of Language Abilities and Scholastic Achievement of Secondary School Children belonging to certain Social Class Categories, Ph.D. Edu., Del. U., 1969.*

The main aim was to study the process by which a given social climate becomes part of the experience of the individual and the way it influences his school education. The major hypotheses tested were: (i) children coming from professional group will be found superior to the children coming from,

urban labour class and rural artisan peasant group; (ii) the conditions of home environment of different categories will exhibit differences in favour in the middle class on certain variables related to school performance; (iii) variations in the levels of intelligence will be found along the same line; and (iv) the indices showing language abilities and scholastic achievement will be positively correlated.

The sample representing the three categories was drawn from classes VIII and IX of twelve high schools in Madras City as well as in the rural areas. Data regarding the social status were obtained by using the Kuppaswamy's Socio-Economic Status Scale, examination of school records and through interview. The language ability was tested by a test of 180 items, developed for this study and the scholastic achievement was indicated by consolidating marks obtained by the individual in two consecutive terminal examinations held in September, 1968. Intelligence was measured by the Raven's Progressive Matrices.

The major findings of the study were as follows: (i) Eightyfive percent of the fathers of professional group had education above the high school level, whereas about sixty percent of the other two categories had no education. (ii) The parents of middle class children took more interest in education of their children than the other two classes. (iii) Children of the middle class had a decidedly favourable home environment. (iv) Children of urban professional sample performed better on the Raven's Progressive Matrices than the other two groups; the difference was significant at .01 level. (v) Children of middle class family got better scores in the language ability test than the other two classes and the difference was significant at .01 level. (vi) The difference between the urban and the rural lower class boys in the test score was negligible, but urban girls were found to be superior to the rural girls. (vii) The marks secured by the middle class students were found to be higher than those of the lower class pupils in both the samples. (viii) Scores on language ability test and scholastic achievement were found to have a coefficient of correlation of .65.

439. SRIVASTAVA, A. K., *An Investigation into the Factors related to Educational Underachievement*, Ph.D. Psy., Pat. U., 1967.

The purpose of this study was to investigate into the factors related to educational underachievement.

Four separate groups of under, over, high and low achievements, with 150 pupils in each were formed out of a random sample of 1,837 male pupils studying in classes X and XI of nine secondary and higher secondary schools of Patna district in Bihar, on the basis of their scores on verbal and nonverbal tests of intelligence, serving as the predictor variables, and average of examination marks spread over six consecutive examinations, serving as the criterion variable. These groups were then compared in respect of the scores obtained by them on measures of the variables, viz., study habits, reading ability, academic motivation and personality characteristics, in addition to a large number of background factors. The data were analysed using product-moment correlation, analysis of variance, t test, chi-square and phi coefficient.

Findings indicated that (i) underachievement was related to (a) poor study habits, (b) poor reading ability which included poor reading speed, vocabulary and spelling, (c) low academic motivation, (d) poor health, (e) poor social and emotional adjustment and (f) problems concerning family and school; (ii) underachievement was related to various background and personal factors like age, socio-economic status, father's profession, size of family, number of siblings, birth order, reading interests, failures in school examination and participation in games and sports; and (iii) no significant relationship was found to exist between under achievement and intactness of parental structure, hobbies, interest in games, sports and music and attitude towards school.

440. VANARASE, S. J., *Ability and Scholastic Underachievement*, Ph.D. Psy., Poona, U., 1970.

The purpose of the study was to investigate into the possible causes for the differences in scholastic performance of normalachieving and underachieving high school students.

For the present study underachievement was defined as follows: "When a student performs scholastically at a lower level than another student of same or comparable ability, he may be identified as an underachiever". Each pair consisted of a normalachiever and an underachiever matched on the basis of scores on intelligence test, previous year's annual examination marks and age. The pairs were matched on intelligence with the help of the Nafde's Nonverbal Test of Intelligence. There were fortythree pairs from standard IX and thirty-

two from Standard X. Factors which were explored for possible significant differences between the two groups were: (i) verbal ability, (ii) personality, (iii) personal problems, (iv) interest, (v) attitude towards school, (vi) study habits, (vii) educational performance of friends, (viii) reaction to school subjects, (ix) skipping of standards, (x) socio-economic status, (xi) health, (xii) parental attitude towards studies, (xiii) domestic work, (xiv) importance of practical knowledge, (xv) hobbies, (xvi) discipline at home, (xvii) individual freedom at home, (xviii) social participation within the family, (xix) sick relatives at home, (xx) parents living or dead, (xxi) position in the order of birth, (xxii) parental adjustment, (xxiii) vocational planning, (xxiv) proximal and distant goals and (xxv) disparity vis-a-vis non-disparity. Instruments used for collecting the data were: (i) the Kothurkar's Test of General Mental Ability, (ii) the Sohoni's Test of Personality, (iii) the Kulkarni's Youth Problem Inventory, (iv) the Chatterji's Non-Language Preference Record and (v) a questionnaire prepared by the investigator.

The major findings of the study were as follows. (i) The achievers showed greater verbal ability than the underachievers. (ii) The achievers were found to be more self-confident, more independent, more mature, emotionally more stable and more conscientious when compared with the underachievers. (iii) The normalachievers showed better study habits than the underachievers. (iv) The parents of underachievers did not tolerate inferior performance of friends, while this problem was not felt severely by the normalachievers. (v) The underachievers showed a greater liking for languages, history, geography and social studies, while the normalachievers seemed to like mathematics more. (vi) The underachievers reported science as an easy subject, while the normalachievers reported mathematics and science as easy subjects. (vii) The percentage of skipping one or two standards was found to be more in underachievers. (viii) There were greater number of underachievers whose fathers were in business as compared with those of the normalachievers. (ix) Mothers of the normalachievers were engaged more in teaching and clerical jobs as compared with the mothers of underachievers. (x) The normalachievers were superior in health as compared to underachievers. (xi) While studying the parental attitude towards studies, it was observed that when the performance was better, the student was encouraged by the parents. (xii) The underachievers were found busy in carrying out the domestic work. (xiii) The underachievers were slightly better disciplined than the normalachievers. (xiv) The normalachievers had

lesser individual freedom than the underachievers. (xv) In considering the position in the order of birth, greater number of underachievers were observed to be in the middle ones. (xvi) The underachievers had more maladjusted parents than normalachievers. (xvii) The underachievers aspired for immediate gratification, while the normalachievers could delay it. (xviii) As compared with the underachievers, greater number of normalachievers reported disparity between their aspiration and achievement.

441. VARMA, M., *Significant Correlates of Secondary School Failures*, Dept. of Edu., Gor. U., 1966. (NCERT financed)

The major aims of this study were (i) to identify factors responsible for poor results in the secondary school examination and (ii) to examine their bearing on school success.

The study was conducted on randomly selected 515 class X students, representing science, humanities and commerce groups of institutions in the districts of Azamgarh, Basti, Deoria, Gonda and Gorakhpur. Cognitive, personality and environmental areas were taken up for the study. In cognitive area, four variables, viz., general intelligence, linguistic proficiency, speed and legibility of handwriting; in personality area, six variables, viz., level of aspiration, ego involvement, typological classification, attitude towards religion and morality, health and physical condition and study habits; in environmental area, seven variables, viz., emotional relationship in the family, educational and cultural level of the family, economic status of the family, cocurricular activities, private tutor facility, institutional satisfaction and marital status were studied. All the students were divided into two groups—successful and failures. Students obtaining thirtynine percent and above were treated as successful, the rest were treated as failures. Total Number of passes and failures in Hindi were 404 and 111 and in mathematics 337 and 178 respectively. The tools used were the Jaiota's General Mental Ability Test and questionnaires. Biserial 'r' was used for analysis.

The following were the major findings of the study: (i) Intelligence had positive correlation with the achievements in both criterion subjects. Being innate ability, intelligence of the child could not be increased much, but utmost growth could be attained by providing academic environment. (ii) Students expressing high degree of ego involvement and good study habits had comparatively secured better marks in their final examination. The ego involvement

indicated the degree of persistence. Obviously, students having a high level of aspiration and ego involvement tried to secure better points. (iii) The successful students expressed positive attitude towards morality and had received encouragement from their tutors. Speed and legibility of their handwriting were comparatively better. They had better socio-economic background. These positive motivational factors were found to play important roles in the lives of students. (iv) Emotional relationship and institutional satisfaction were found to influence mental life of the child. It was found that he would not find any difficulty in the adjustment at home and school. Under these circumstances, frustration, anxiety, etc. were not found to appear. (v) Linguistic proficiency, attitude towards morality, institutional satisfaction and level of aspiration of the child were found to depend on his environment.

442. VIDHU, M., *The Relationship of Neuroticism and Extraversion to Intelligence and Educational Achievement at Different Age Levels*, Ph.D. Psy., Pan. U., 1968.

The hypotheses examined in the study were: (i) there is a negative correlation between academic achievement and extraversion; (ii) the introverts work longer and with more persistence on a task like the Raven's Progressive Matrices, whereas the extraverts work for a short time but with less accuracy; (iii) the introverts are better on the Raven's Progressive Matrices than the extraverts; (iv) the female subjects score less on extraversion than the male subjects; and (v) the subjects in younger age

group score higher in extraversion than the subjects in the older age group.

Three hundred students proficient in English as well as in Hindi were chosen from schools, mostly from classes VIII to X, colleges and university departments. The group was subdivided into three subgroups (of age groups from ten to fifteen, from fifteen to twenty and from twenty to twentyfive years), each consisting of fifty boys and fifty girls. The tools used were: (i) The Junior Personality Inventory for the first group; (ii) the Maudsley's Personality Inventory for the second and the third groups; (iii) the Raven's Progressive Matrices for measuring intelligence of all the groups; and (iv) a vocabulary test. Statistical analysis of data was done by correlational techniques.

The important findings were as follows: (i) Extraversion and neuroticism were negatively related to age (age groups from fifteen to twenty and from twenty to twentyfive years). (ii) The correlation between intelligence and academic performance was positive and highly significant. (iii) Extraversion and academic achievement were negatively associated. (iv) The introverts were found to take less time than extraverts on the Raven's Progressive Matrices. (v) Intelligence and extraversion were not related significantly, but introverts were better on the Raven's Progressive Matrices in the age group of twenty to twentyfive years; in the case of the other two groups this was the other way round. (vi) The relationships between neuroticism and educational attainment, and that between neuroticism and vocabulary, were negative. (vii) As regards speed, the neurotic students took much less time on the Raven's Progressive Matrices than the extraverts. (viii) Girls scored higher on neuroticism than boys at all age levels.