

Correlates of Achievement

A Trend Report

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INTRODUCTION

At a time of lively appraisal of educational development in India, when many changes are being witnessed in organisation, curricula and teaching techniques, it is pertinent to seek systematic and upto date information on the significant correlates of pupil achievement. It is appropriate, in this context, to consider at once factors affecting the academic achievement such as pupil's socio-economic background, intelligence, language as medium of instruction, various personality traits of students, etc., etc. These factors are of utmost theoretical and practical importance in developing curricula and designing educational programmes to suit the needs of pupils with varied backgrounds. Further, the study of these factors assumes special significance in view of their implications in respect of day-to-day curriculum planning on the part of the classroom teacher. Investigations and studies on the correlates of achievement, thus, need to be thoroughly examined with a view to deriving maximum benefit from their findings for improved curricular development, efficient teaching and better academic achievement.

Studies classified

Dave, R. H. (1968) in the Third Indian Yearbook of Education (Educational Research) reviewed seventeen studies on 'Factors Affecting Achievement'. The studies included M.Ed. and Ph.D. dissertations and other research studies published by various institutions. The Review indicated that factors affecting achievement 'run all the way from intelligence to physical health, through the socio-economic status of the family, sex, caste, distance of the school from home, and leisure time activities.'

Dave, P. N. (1974) in 'A Survey of Research in Education' (Ed. Buch) reviewed fortyfour studies including thirtythree doctoral theses and eleven studies published by various institutions on the correlates of

achievement. He classified the studies into six categories, namely, correlates in general, personality correlates, socio-economic status, backwardness and failure, over- and under-achievers and miscellaneous.

The present report is based on the additional thirtyeight studies including thirty doctoral theses and eight research projects undertaken or financed by institutions such as the University Grants Commission, the National Council of Educational Research and Training, the Central Institute of Indian Languages, etc. Again, of the thirty doctoral theses, twentytwo have been approved for the Ph.D. and D.Lit. degrees in Education and eight for the Ph.D. and D.Phil. degrees in Psychology. A classification of studies of this kind essentially includes: cognitive variables (general intelligence, linguistic proficiency, etc.), personality variables (level of aspiration, ego-involvement, general attitude, health and physical conditions, study habits, etc.), and environmental variables (educational and cultural level of the family, socio-economic status of the family, institutional satisfaction, facilities and congenial atmosphere of studies at school and in home, etc.). Since trend reports on correlates of achievement dealt with in this section also take into account the trend reports on fortyfour studies included in the first volume of this publication, it may be profitable to classify the studies, more or less in the same manner in which they have been done earlier. Accordingly, the studies have been classified into the following categories: (1) Correlates in general, (2) Socio-economic status, (3) Personality correlates, (4) Poor curriculum organisation, (5) Over- and under-achievement, and (6) Miscellaneous correlates of achievement.

Correlates in general

Researches in this category have mostly concentrated on studying the effect of certain independent variables, viz., intelligence, non-achievement, parental

encouragement, emotional climate, educational facilities in the home, etc., on academic achievement. Sudame (1973) studied the effect of library work on the academic achievement of M.A., M.Sc., and B.Ed. students keeping SES and intelligence constant. He established the effect of library use on academic achievement in respect of pupils of all classes — the effect being most pronounced in the case of B.Ed. students. In the same study the level of intelligence was found as having a significant effect on the academic achievement of B.Ed. students but not on that of M.A. and M.Sc. students. Reddy (1973) factor-analysed the scores on the Cattell Culture Fair Test of Intelligence, the Mukerjee Sentence Completion Test, and university marks in various courses of studies in respect of arts and science undergraduates and found that intelligence, n-achievement, emotional climate in the home and parental care were significantly associated with achievement in one subject or the other.

Patel (1975) studied the identification patterns, motivation and school achievement of talented students by computing correlation coefficients of identification with models, motivation, behaviour orientations, and achievement value of models with student's own achievement value. He found that academic achievement varied directly as a function of the degree of talent; talented pupils differed significantly from average and below average in respect of motivation, mother identification and poor achievement value. Gupte (1973), in his study on the effect of health on academic achievement, found no relationship between physical health of the students and their academic achievement. Shirur (1972) tried to assess the impact of nutrition education programme on pupils and teachers with a view to correlate and integrate nutrition education and services with other learning areas and activities of the school, and reported improvement from eighteen percent to fifty-five percent of pupils who could read well and seventeen percent to fiftyfive percent who could write well in view of the introduction of the programme.

While studying factors associated with academic achievement, it is pertinent to investigate the differential patterns, if any, in respect of sex, different courses of studies such as arts and sciences, urban-rural residence, etc. Agarwal (1973) tried to investigate the factors which contribute to the success in science and found that a general factor, the interest factor and the reasoning factor contribute to the pupil achievement in various science subjects.

Singh (1974) analysed the scholastic aptitude for

learning geography and reported that the understanding of physical phenomenon, recall of facts and figures and comprehension of descriptive matter were the main abilities in the case of boys, whereas finger dexterity, drawing ability, recall of facts and comprehension of descriptive matter were the main abilities in the case of girls for learning geography. In his study on sex differences in factorial structure of cognitive area, Shahi (1973) established the hypothesis of no sex differences in mental structure of boys and girls. His other significant finding was that 'g' was represented among boys by a combination of reasoning and memory function along with verbal content while among girls it was represented by a combination of reasoning function along with verbal and spatial content. Lalithamma (1975) factor-analysed the effect of variables such as intelligence, study habits, interest in mathematics, socio-economic status, studying lessons daily, studying mathematics by writing, private tuition, electric light facilities, etc., etc., and found that achievement in mathematics was positively related to each of these factors. Her findings also reveal that the urban pupils were found superior to rural pupils, achievement of first-borns was better than that of the last-borns and that achievement of scheduled caste and scheduled tribe students was lower than that of the total sample.

Socio-economic Status

A set of potentially influential factors for pupil achievement are generally categorised as being associated either with home or school environment. It should, however, be noted that the distinction is more of convenience than of explanatory value. For one thing, the characteristics of the school one attends tend to vary according to one's home background. For another, it is not in themselves but in relation to his experiences at school that many of the distinctive characteristics of a pupil's home environment may influence his academic achievement.

While attempting to review researches on the familial influence upon achievement at school, one easily finds it related to social class. While some like Sudame (1973) and Reddy (1973) found no significant correlations between socio-economic status and academic achievements, others found significant correlations. Menon (1973) found over- and under-achievement as highly influenced by socio-economic status. Anand (1973) established relationship between SES and academic achievement even when the influence of intelligence of nonverbal and verbal type was partialled out. Abraham (1974) found achievement level in English as associated with socio-economic

status and Basavayya (1974) found overall language achievement as influenced by the parental occupation and education. In their study, Dave and Dave (1971) found a higher percentage of rank students as belonging to homes having higher parental incomes, occupations and education as compared to that of failed students. Correlation between socio-economic status and academic achievement as computed by Prakash Chandra (1975) was reported as positive. A study on difficulties in learning English by Dewal (1974) revealed effective teaching and learning as hampered by poor socio-economic background.

Most studies in this category have attempted at replicating earlier studies taking different samples and by including different school subjects at various levels. Their results show the trends revealed in earlier studies as reported in 'A Survey of Research in Education.'

Personality Correlates

Which personality characteristics in children are most conducive to academic success and in what circumstances? This is not an easy question to answer especially in the context of a rapidly changing society. However, characteristics which have with some consistency been found to be of value in predicting educational attainment include values, motives and other noncognitive traits. Walaytiram (1974) studied the effect of the different levels of three independent noncognitive variables, viz., neuroticism-stability, extraversion-introversion, and achievement motivation and of their interactions upon the academic achievement. The three-way analysis of variance revealed that achievement motivation had significant influence in various school subjects especially at lower level of intelligence. Neuroticism-stability was found to have significant relationship while extraversion-introversion dimension of personality was reported as playing no significant role in any subject in the lower intelligence either in its main effect or in its interaction with any other variable in the study. Other studies that examined various personality characteristics associated with achievement were those of Rai (1974), Kulwant Kaur (1974), Srivastava (1974), Sinha (1967), Pandey (1974), Bhaduri (1971) and Jayagopal (1974). While Kulwant Kaur found study habits as highly related to achievement at school, Rai's study revealed that anxiety as a personality trait had a changing role in scholastic achievement in as much as low level of anxiety helped in achieving high, whereas very high level of anxiety was detrimental to achievement. The latter also found n-Ach, IQ, and

adjustment as significantly related to achievement, whereas aspiration level was not found to be a significant correlate of achievement. Srivastava used a number of fairly sophisticated tools in an experimental study to find that 'reserve-outgoing' and 'less intelligent-more intelligent' traits of personality significantly influenced the academic achievement when SES was held constant. In the same study, the personality traits of 'shy-venturesome', 'expedient-conscientious' and 'undisciplined-controlled' were also found as significantly correlated with achievement though on less confidence level. The traits of 'tough minded-tender minded', 'phlegmatic-excitabile', and 'relaxed-tense' were, however, negatively and significantly correlated with achievement when SES and IQ were held constant. Another significant finding of the study was that academic motivation was found to influence the academic achievement even if SES and IQ were held constant.

A few studies have attempted to find if there exist differential personality patterns associated with school achievement. In a comparative study of over- and under-achievers, Bhaduri (1971) found that the two groups within each subsample differed in one or more of the twenty-six variables studied. She noted that overachieving students tended to be less neurotic and less anxious than the underachievers and that overachievement was correlated significantly with study habits, attitude towards school, and religious-cultural background. Sinha's study (1967) revealed that while intelligence and achievement at school were correlated significantly, science students scored significantly higher on the intelligence test than their counterparts in the arts subjects. Further, in the same study, high and low achievers were significantly discriminated on intelligence, achievement motivation, manifest anxiety, extraversion-introversion and neuroticism and emotionality.

Pandey (1974) got similar results as the adolescents taking arts courses were found inferior to adolescents taking science courses in intelligence and emotional stability. This study also concluded that academic achievement of adolescent students was significantly related to rural and urban backgrounds and that in the arts upperachieving group the industrial background was more favourable for high academic achievement than rural background. Jayagopal (1974) in his study, 'Personality Profile of the Under- and Higher Achievers', found high achievers to be reserved, humble and toughminded in comparison with underachievers whose personality profile revealed that they were characterised by spontaneity, vigour, spirit

to associate with the group readily, and uninhibited and zestful nature.

Poor Curriculum Organisation as a Factor in Achievement

Among the factors responsible for low attainments among pupils, poor curriculum organisation has been identified by investigators as a potent one. Mankad (1974) who worked on the development of an objective-centred syllabus in the teaching of Gujarati as mother tongue found that nearly half of the teachers and one-fifth of the schools did not possess the copies of the syllabus and that seventyfive percent of the teachers in the sample undertook no responsibility of supplementary and extra reading by students. Suthar (1974) also probed into the various teaching-learning aspects of Gujarati as mother tongue and found the methods of instruction as most 'hackneyed', the use of audio-visual aids as highly inadequate, and the organisation of remedial work as traditional and unscientific. In a similar study on the teaching of English, Vora (1973) shockingly found that seventy percent of the teachers teaching English had their training in subjects other than English and that they had extremely poor choice in respect of use of the instructional materials. Dewal (1973) also attributed the difficulties hampering effective teaching and learning of English to the shortage of trained teachers, lack of subject competence and dearth of good instructional materials. While comparing the study habits of pupils in ordinary schools with those in model school, Kulwant Kaur (1974) found the understanding of both mechanics and methods of effective study as a precondition in helping them to develop positive attitudes towards study. Gupta (1973) considered the organisation of agricultural education in certain institutions as poor and attributed it to traditional system of curriculum planning, ineffective use of aids and faulty examinations. He also found the semester and trimester systems of education as more effective than the traditional annual system in respect of increased credit hours, more instructional days, better results and in terms of the improvement in overall teaching-learning situation.

Over- and Under-Achievement

While over-and under achievement at school has been identified by many researchers, little detailed evidence is available in respect of factors significantly associated with this phenomenon. Some attempts have of late been made in this direction. Among the characteristics found to be associated with high or low academic achievement, the presence or absence of

the drive to excel — the drive to do well relative to some standard of excellence is one of the most important ones. This is the concept of achievement motivation. Rai (1974) found achievement as a prerequisite for high achievement as it drove the students to academic activities. Similar findings were reported by Sinha (1968) and Srivastava (1974). Menon (1973), in an experimental study probed into the personality characteristics of high ability over- and under-achievers. His investigation revealed that overachieving groups of boys and girls of superior ability showed greater academic interests, endurance and persistence. This study further revealed that overachievement and underachievement were found to be influenced by socio-economic and demographic characteristics. Abraham (1974), who used intelligence and achievement in English as the bases for classifying the sample into over, normal, and under achievers, empirically found that the achievement level was associated with attitude toward English, personal adjustment, social adjustment and socio-economic status. This study also showed that underachievement was more frequent in rural schools while overachievement was a characteristic of urban schools, and that for the overachievers linguistic disposition and general adjustment were needed to account for variance with general group while underachiever's variance could be explained by factors such as group adjustment, socio-personal adjustment, scholastic disposition, etc. Kulwant Kaur (1974) made a comparative study of over, normal, and under achieving pupils with regard to their study habits, personality characteristics and personal problems in a model school and ordinary basic schools taken separately. Sinha (1967) employed a number of psychological tools to obtain data that revealed that the two groups of over- and under-achievers differed significantly in intelligence and emotionality and that while neuroticism was found to be positively related to academic achievement, manifest anxiety and extraversion were found to be negatively related to academic achievement.

Miscellaneous Correlates of Achievement

As noticed, academic achievement is influenced by a number of independent variables acting singly or coupled with certain other variables. While it is cognitive characteristics of personality which are most directly and obviously related to educational success, there are certain other miscellaneous factors such as language as medium of instruction, bilingualism of instruction, (or multilingualism), load of language learning, etc., that promote or hinder academic

achievement and about which detailed evidence has remained inconclusive.

The importance of language for educational attainments is established in as much as the verbal reasoning ability is taken as the best predictor of academic achievement in secondary schools. Particularly language as a communication medium may have interfering or facilitating effect which needs to be investigated thoroughly. Further, researches in the western countries show that it is not a study of the second language as such but when it is made medium of instruction, that it hinders academic achievement. Indian scholars have recently attempted to investigate such factors in Indian setting. Dave and Dave (1971) in their experimental study established the hypothesis that the nonverbal intelligence of rank students studying through English was superior to those studying through the medium of their mother tongue (Kannada). It may be pointed out in this respect that since there is ample evidence of relationship between nonverbal intelligence and academic achievement, it is fairly logical to believe the English medium students would perform better than their counterparts in the mother tongue medium. This is what exactly was revealed in a study at the Central Institute of Indian Languages when Basavayya (1974) found that the students with English medium did better in all subjects than their peers in the Kannada medium even though their socio-economic background did not vary significantly. In the same institute, another study by Misra and others (1973), on the other hand, did not find any difference in achievement in social studies through Hindi medium between Hindi speaking and non-Hindi speaking pupils of Kendriya Vidyalayas. Likewise Anand (1973) found that students studying through Kannada medium achieved significantly higher mean score than those studying through English medium even when the influence of nonverbal and verbal intelligence was partialled out. This study also showed that although media of instruction and socio-economic environment were related to nonverbal and verbal intelligence independently, the effect of both did not seem to be similar: the relationship of media of instruction to intelligence was found inconsistent, whereas that of socio-economic environment remained almost identical. Yet in another investigation, Dave and Anand (1971) studied the effect of the load of language learning on mental abilities and academic achievement. The analysis by t test and analysis of variance revealed no difference in verbal intelligence and academic achievement between pupils studying through mother tongue or the second language (English or the regional language) for

seven, eight, nine or eleven years. It was further revealed that the load of either studying two or three languages or that of a medium of instruction other than one's own mother tongue did not seem to retard the growth and development of mental and scholastic abilities.

Most Indian children are bilingual or even trilingual by different circumstances. Two or more languages are used at school and in the immediate environment of the community. In attempting to study about the effect of bilingualism on educational success, Basavayya (1974) found no significant difference between the first language achievements of monolinguals and bilinguals (or multilinguals). He also found that the overall performance of monolinguals and bilinguals did not differ significantly.

RESEARCH TRENDS IN THE STUDIES

The extrapolation of supposed current trends is quite a risky affair. This is no less true of educational research than of other phenomena, especially since educational research in this country is of recent origin and when its growth has certainly not adequately progressed. However, the research abstracts of both the doctoral theses and the institutional projects financed by various organisations such as the NCERT, the UGC, the CIIL, etc., in respect of correlates of achievement show some clear trends which may be categorised as: (1) extensive research, (2) developmental and trait-oriented research, (3) horizontal research, (4) research based on foreign concepts and borrowed methodology, (5) post-facto psychosocial biased research, and (6) curriculum oriented research. An attempt will now be made to have an analytical look at each one of these categories and predict prospects of further research on achievement.

Extensive Research

Indian educational researchers have, by and large, preferred extensive work to intensive investigations. A common tendency has been to probe into a multiplicity of variables in a single research exercise, employ a large number of tools, whether standardised, adapted, or constructed especially for a study, and use various statistical techniques for analysing data. In most studies a large number of hypotheses are proposed. The results of analyses show some of these as accepted, some others rejected and still some others accepted with lesser degrees of freedom. This is especially so in respect of those studies that are submitted for doctoral awards. Lack of in-depth studies focussing attention on one variable or a set of sub-variables within a single variable probing into the

cause-effect phenomena are conspicuous by their near absence. Further, a number of studies in the area of achievement attempt at replicating the results of studies undertaken earlier and thus can hardly be described to have made significant addition to knowledge in this field.

Developmental and Trait-oriented Research

Another trend revealed from the review of the abstracts is that most researches have been developmental in nature. That is to say that investigations concerning factors influencing academic achievement have, in general, focussed their attention, besides other things, on the mechanism of developing instruments of measuring traits associated with academic achievement. This may both be considered a contribution as well as a limitation so far as Indian researchers are concerned. The role of developing instruments for measuring personality characteristics as well as academic achievement of pupils is important indeed. Especially, in view of non-availability of tools standardised on Indian children this developmental aspect is a step in right direction and hence a contribution on the part of Indian research workers. But should the development of an instrument necessarily be a part of research in the area of correlates of achievement? Barring a few researchers, almost everybody has either constructed one or more than one test whether or not this was one of the purposes stated in the study. This, in a way, may mean sidetracking the real issue. A large number of researchers and research organisations/institutions have already developed or adapted various kinds of tests including some very sensitive ones. In this area there is a good deal of on-going research as well. These tests could conveniently be used by researchers working in the field of achievement rather than constructing and standardising them for use in each new project. There is no reason why this effort should be duplicated, and that too, at the cost of intensive research which the researchers would otherwise be obliged to undertake.

Horizontal Research

Much of the research in India in the area of achievement at school has developed horizontally rather than vertically. This is so in as much as addition to existing knowledge in this field has only been marginal in spite of considerably large number of studies undertaken by scholars in various universities and institutions of higher learning in our country. The overall function of educational research is to improve educational procedures through the refinement

and or extension of knowledge. The refinement of existing knowledge or the acquisition of new knowledge which is essentially an intermediate step toward the improvement of the educational process can best be ensured when the research grows vertically. For instance, findings of researches resulting from hypotheses stated on the basis of the available body of organised information and tested by means of appropriate statistical techniques could be employed as premises for further investigations rather than retesting the already tested hypotheses time and again taking a new and enlarged (or small) sample. This is precisely what has not happened to the growth and development of educational research on correlates of achievement. Research does not aim at knowing what is already known. Nor does it envisage proving or establishing the obvious. And yet in Indian context, study after study on academic achievement is seen dealing with same variables and coming out with almost similar findings. It is amusing to come across studies which not only are similar in their approach regarding purpose, statement of problem, hypotheses, treatment of data, etc., but have almost similar titles. "An investigation of differences existing among overachieving, normal achieving and underachieving high school students", "A comparative study of certain psychological characteristics of the over- and the underachievers in higher secondary schools", "A comparative study of personality characteristics of over- and underachievers", and "Personality profile of the under and high achievers of some of the schools in Madras City" are only some of the examples of common titles of the researches reviewed in this section.

With regard to instruments, however, some strides have in recent years been made. While the overall trend of using the foreign tools especially in measuring the personality traits continues, a large number of tests are now available which have been suitably modified. Further, a considerable number of tests developed by Indian scholars are also being used and the craze for using the tests developed abroad is considerably reduced. Some of these tests used in the researches under review in this section include: the Sinha's Anxiety Scale, the Sinha's Adjustment Inventory, the Sinha's Level of Aspiration Test, the Mehta's n-Achievement Test, the Jalota's Group Test of General Mental Ability, the Kuppuswamy's Socio-Economic Status Scale, the Nafde's Non-verbal Test of Intelligence and the General Mental Ability Test — Verbal (Form A and Form B), the Personality Inventory and the Motivational Inventory developed by the Kerala University's Department of Psychology.

Research Based on Foreign Concepts and Borrowed Methodology

Despite the encouraging research work turned out both by individual educational researchers and the research institutes and the oft-repeated statements by educationists and public men of the need for educational research in Indian setting, Indian research workers have continued to borrow heavily from their counterparts in the west in respect of concepts, methods and evaluation tools and techniques. The basic reasons for this continued dependence on imported ideas may be a lack of adequate and relevant Indian literature, lack of confidence, and lack of competent and devoted research personnel who could constantly enrich and rejuvenate educational thinking. Most competent people in the university departments of education and other institutions concerned directly or indirectly with research have unfortunately foreign research orientation and this again is bound to influence the conduct and guidance of research accordingly. One is often dismayed to witness the lack of original thinking on the part of Indian educational researchers who have yet to evolve a sound research base of their own emerging from the indigenous educational context, both theoretical as well as practical. True, one cannot envisage the exclusion of foreign ideas completely especially in the research area like achievement, but what is required is primarily to create new knowledge and literature relevant to our needs by building up 'a structure and a fountain-head from which ideas will flow and enrich the entire field of education.'

Post-facto Psycho-social Biased Research

Another trend revealed by investigations in the area of academic achievement is the absence of experimental approach on the part of educational researchers in attempting to unravel the complex determinants of success. It is true that any attempt to understand the complete causal chain associated with school attainment must include the effect of psycho-social factors on the child's work at school, but primary concern of educationists is to identify the immediate environmental variables having positive or negative influence on school attainment and attempt to answer questions related to over- or under-achievement. That is to say that the chief task of educational researchers is to research in the educational field which of course, is concerned primarily with variables like teaching and learning, the laws that govern teaching-learning process and the organisation of such knowledge in educational practice to ensure better academic attainments. As indicated earlier, socio-

psychological aspects of schooling are in no way less important in studying the problems of achievement but the point of issue is that they are a concern primarily of sociologists and psychologists and that educational researchers have contributed little by imposing upon themselves fields of research which belong to others.

Education has recently been accepted as a discipline since its study is characterised by uniqueness of a system. In other words, education is primarily study of a unique system referred to as schooling. The emphasis of research in this discipline therefore should be oriented towards phenomenon which may be identified with educational process. Unfortunately psycho-social bias of educationists has resulted in studying the variables which are only distantly related to schooling. Further, the approach of study has mainly been post-facto and psychometric (classical). It has been little realised that the influence of factors such as social class, intelligence and various other personality traits on academic achievement has well been established and that repeated replications in this respect do not, in any way, help the classroom teacher in his day-to-day efforts to promote high attainments among pupils.

Yet another trend in research on achievement is marked by lack of experimentation which may partially be attributed to psychometric (classical) orientation of scholars. Research abstracts on pupil achievement clearly reveal that investigators have chosen large samples caring little for the application of sampling techniques. Again, a multiplicity of variables have been studied without considering appropriate research designs and by means of instruments that lack precision. Under these circumstances, interpretations, however carefully they may be made, can hardly be taken as valid especially in their implications for curriculum planning.

Future Prospects

The comments in the preceding pages help to predict future trends and bring out the needs for further research in the area of pupil achievement. Beside other things, poor curriculum organisation as a factor in achievement has recently attracted the attention of Indian educationists and one can hopefully anticipate research growth in this area. This curriculum-oriented research awaiting further exploration has essentially to be functional and applied in nature if it has to tackle the problems of underachievement. Present attempts are symptomatic of shedding the traditional research bias for theoretical research in

favour of needed functional research so far as academic achievement is concerned. Further, faith in the contribution of research to help solve problems of underachievement is bound to ensure overall research sophistication and experimentation in depth. The remainder of this chapter will therefore be devoted to the consideration of the following factors in the incoming research: (i) functional and curriculum-oriented research, (ii) sophistication in research, and (iii) in-depth experimentation.

Functional and Curriculum-oriented Research

As pointed out, emphasis is to be laid on the overall functional aspect of educational research and especially the curriculum-oriented research in respect of promoting academic achievement. Research results and findings in the sphere of academic achievement should immediately be usable by the research consumers — classroom teachers on the one hand and curriculum experts on the other. A knowledge of distant correlates of achievement does not in any way help the teacher in organising curricular activities geared to immediate gains by students in terms of knowledge, understanding, skills, values and so on. Normative research conducted so far can at best be taken as pointing out the position of an individual with regard to various characteristics or traits at a certain stage of continuum of measurement. But so what? Does it, in any way, help in encouraging this same individual in moving up on the continuum? Needed educational research geared to that end is curriculum-oriented and achievement-oriented research.

It may be pointed out that what is central to education is the educative process in as much as it is a definite process that results in contemplated products. Much of the research effort therefore needs to be directed first to a thorough understanding of the educative process and then suitably modifying it with a view to ensuring maximum learning. In an exercise such as this the first step obviously lies in identifying the objectives of various courses of studies and academic subjects. Thanks to the efforts of the NCERT and various State Boards of Education, an awareness of the objectives of various subjects of study at school level has made a good headway over the years. The job of the research workers now lies in studying analytically these objectives in terms of specific behavioural outcomes, suitable content, related learning experiences and appropriate evaluation devices. This needs to be done at all levels and in all subjects and findings made available to the classroom teacher who is immediately concerned with the teaching-learning process. All this calls for intensive work on the part

of the educational researchers in exploring the all pervading, highly complex and dynamic concept such as academic achievement.

It is highly gratifying to note that some useful work has in recent years been undertaken in the area of academic achievement in our country. Studies on micro-teaching, programmed learning and teacher effectiveness undertaken at the Centre of Advanced Study in Education, Technical Teachers Training Institutes, various university departments of education and other institutions and organisations is a laudable step in this direction. The Regional Colleges of Education at Mysore and Ajmer have not only made strides in preparing indigenous models of learning but have successfully and profitably used them in teaching-learning process. Efforts of the NCERT in preparing and disseminating teaching units in various subjects and that of the University of Calicut in developing tried out question banks for use in its affiliated colleges again are geared to effect improvement in the teaching-learning process. These attempts compare favourably with those being made in the western countries in the field of educational process and one can hope that Indian researchers are well set both for theory developing and theory testing research in this area.

Sophistication in Research

Sophistication is essential in investigating process variables in teaching and learning or in various aspects of curriculum planning. To begin with, a redefinition of concerned terms, concepts, etc., seems a logical necessity in ensuring indigenous contribution to the development of educationally-oriented theory of teaching-learning. What is meant by achievement and what exactly does it imply in terms of academic performance of pupils? How can curriculum planning and evaluation in our present day school system correspond to or result in anticipated outcomes? Is it possible to develop a theoretical model of improved curriculum planning and validate it empirically? Answers to questions such as these which essentially aim at improving the educative process and thereby ensure better achievement by pupils call for conceptual and operational thinking in educational research. This emphasis on in-depth experimentation can go a long way in heralding a new era of original, developmental, and experimental research on academic achievement in as much as various models in the areas of objectives, content and process can be developed and validated empirically. All this would enable in providing educationists, teacher educators and above all classroom teachers specific, concrete, practicable and

functional information needed for improving teaching-learning process. It is gratifying to note that this idea is beginning to receive acceptance in developing curriculum. The monumental work done at the Regional College of Education, Mysore, in preparing Physics Resource Materials on the lines suggested above may be cited as an example in this respect.

In-depth Experimentation

The ideal of sophistication can best be realised by means of a thorough experimentation in all aspects of curriculum planning. Thorough experimentation in this context implies problems of defining and/or refining concepts on the one hand and of suitable methodology on the other. After assuming, for in-

stance, that achievement is essentially developmental in character, one needs to know the kind of experimentation required and the way to go about. Most researchers in India adopt as a frame of reference Bloom's taxonomy of educational objectives, Flanders' classroom interactional analysis, NCERT's model of educational evaluation, etc., etc., as priority systems. So far so good, but how to establish the empirical validity of various assumptions involved in these systems is the most crucial aspect of in-depth experimentation. Certainly it is difficult to secure empirical evidences by direct measurement and this necessitates the use of advanced experimental methodology and complex statistical design.

ABSTRACTS : 476-523

476. *ABRAHAM, M., Some Factors relating to Underachievement in English of Secondary School Pupils, Ph.D. Edu., Ker. U., 1974.*

The study attempted to identify factors leading to underachievement in English of secondary school pupils. Hypotheses relating to the different variables, namely, attitude towards academic work, attitude towards English, language interest, study habits, personal adjustment, social adjustment, socio-economic status, teacher effectiveness, sex, age, residence, and school category, were formulated.

The study was conducted on 820 secondary school pupils drawn from the schools of Trivandrum district of Kerala. The sample was drawn to give proportionate representation to categories like sex, rural-urban residence, governmental and private schools, educational levels — standards VIII, IX and X, and school efficiency. The data on study habit, socio-economic status, and intelligence were collected through standardised tools. Those on personal and social adjustment were collected by adapting two parts of a standardised personality scale. The remaining variables were measured by using tools developed by the investigator. Intelligence and achievement in English were used as the basis for classifying the sample into over, normal and underachievers. This classification was done, by using Farguhar's method, by developing three regression equations for each instructional level using intelligence scores as independent variable and achievement as dependent. Analysis of variance, tests of significance for difference between means, and centroid method of factor analysis were used for statistical treatment of the data.

The study revealed that (i) the achievement level was associated with attitude towards English, personal adjustment, social adjustment and socio-economic status; (ii) there was greater proportion of normal achievers among girls as against boys; (iii) underachievement was more frequent in rural schools and overachievement in urban schools; (iv) overachievers were proportionately more in private schools than in government schools; (v) underachievement was more in higher age group and overachievement was more in lower age group; (vi) the factor pattern of the total sample was significantly different from the factor pattern obtained for the underachievers and the overachievers, whereas it was highly comparable with the pattern obtained for the normal achievers; (v) the three factors obtained were Scholastic Dispo-

sition, General Adjustment and Social Stimulation which accounted for variance of both general group and the normal achieving group; (vi) for the overachievers only Linguistic Disposition and General Adjustment were needed to account for total variance; (vii) for underachievers, Group Adjustment, Socio-personal Adjustment and Scholastic Disposition were found to be the factors responsible for explaining total variance.

477. *AGARWAL, K. K., Prediction of the Scholastic Success in Science Subjects with the Help of a Battery of Psychological Tests among High School Students of Uttar Pradesh, Ph.D. Psy., Agra U., 1973.*

The present research was concerned with the preparation of a battery of psychological tests which could predict success in science subjects and the scientific group of the students of high schools. It also aimed at finding out the factors which contributed to the success in science and at helping the teachers to make proper selection for science course.

A sample of 300 students of Allahabad city high schools studying in class X was selected for tryout of the tests. For the first draft of the tests a sample of 1400 students was selected. Following tests were administered : (i) the Verbal Group Test of Intelligence of Manovignan Shala; (ii) the Minnesota Paper Form Board Test; (iii) the Reasoning Test; (iv) the Numerical Ability Test; (v) the Science Information Test; and (vi) the Science Vocabulary Test. Out of these, the last four tests were constructed and standardised by the investigator. Validity of the tests was computed against three criteria : (i) marks obtained in science; (ii) marks obtained in mathematics; and (iii) total marks obtained in all the subjects at the high school examination. Validity of the battery of tests was found by calculating the multiple correlation of the criteria. For this purpose Wherry-Doolittle selection method was used. The tests were selected in the order of their statistical usefulness. The values of multiple correlations were checked with the help of regression equations. Significance of 'R' was also calculated. Success ratios were found out for different selection ratios. Factor analysis was used for analysing the data obtained from the battery of tests. Thompson's method was used for explaining criteria.

Findings revealed that : (i) the first factor had positive loadings on all the tests; it was called a General Factor; (ii) the second factor had high loadings

on the criterion (marks obtained in science); it was named as the Interest Factor; (iii) the third factor had loadings on the test of reasoning and the Minnesota Paper Form Board Test; it was named as Reasoning Factor; and (v) the two sexes differed significantly on all the tests except the Verbal Group Test of Intelligence.

478. ANAND, C. L., *A Study of the Effect of Socio-Economic Environment and Medium of Instruction on the Mental Abilities and the Academic Achievement of Children in Mysore State, Ph.D. Edu., Mys. U., 1973.*

The study was designed to investigate the effect of socio-economic environment and medium of instruction on mental abilities and academic achievement. The specific objectives of the study were : (i) to study the relationship between socio-economic environment and nonverbal intelligence; (ii) to study the influence of medium of instruction — the mother tongue or English — on nonverbal and verbal intelligence; (iii) to study the effect of socio-economic environment on academic achievement when the influence of nonverbal and verbal intelligence was partialled out; (iv) to study the effect of media of instruction on academic achievement when the influence of nonverbal and verbal intelligence was partialled out; and (v) to study the interaction among SES, medium of instruction, intelligence and academic achievement.

The sample consisted of 1897 pupils of standards VIII, IX and X (956 of the Kannada medium and 941 of the English medium) chosen randomly from eighteen urban high schools. The tools administered were : (i) the Kuppuswamy's Socio-Economic Status Scale (urban); (ii) the Nafde's Nonverbal Test of Intelligence (NVTI) and the Group Test of Scholastic Abilities — verbal (GTSA-Verbal) developed by the State Bureau of Educational Guidance, Bangalore; (iii) the Battery of Achievement Tests in general mathematics, general science and social studies for standards VIII, IX and X; and (iv) the information inventory prepared by the investigator. The data were analysed with the help of chi-square test and analysis of variance.

The analysis revealed the following : (i) the F values of scores on all the criteria tests were found significant; (ii) three SES groups differed significantly from one another in their nonverbal and verbal intelligence; high SES group achieved higher mean score than pupils in both low SES group and middle SES group, whereas the mean score difference between middle and low SES groups was not significant; (ii) the relationship between SES and academic achieve-

ment was found to exist even when the influence of intelligence of nonverbal as well as verbal type was partialled out; (iv) pupils studying through different media of instruction differed significantly from each other in their nonverbal and verbal intelligence; the English medium pupils showed higher nonverbal intelligence than the Kannada medium pupils, whereas the same Kannada medium pupils showed greater verbal intelligence than the former; (v) students studying through Kannada medium achieved significantly higher mean score than those studying through English medium; and (vi) the relationship of media of instruction to intelligence was found inconsistent, whereas that of socio-economic environment remained almost identical; the impact of socio-economic environment was found to influence mental abilities and academic achievement.

*479. BARKI, B. G., *An Enquiry into the Causes for Superiority of X Standard Public Examination Results in South Kanara to the Results in other areas of Karnataka State, Ph.D. Edu., Mys. U., 1976.*

The following were the main objectives of the study : (i) to analyse the comparative indices of failure and success at the X standard public examination conducted by the Karnataka State Secondary Education Board from 1963 to 1971 on several bases; (ii) to find out what inherited and environmental factors in South Kanara were responsible for overwhelmingly high percentage of pupils' passes at the X standard public examination as compared with low percentage of results in other areas of the State; (iii) to find out in a general way what effect, if any, such factors as efficient school system, parental involvement, educational equipment, audio-visual aids, laboratory and library facilities, etc., had on scholastic performance of pupils at the X standard public examination in Karnataka State; and (iv) to suggest remedial measures for improving the examination results throughout the State thereby suggesting methods for reducing the enormous wastage and misery.

The sample consisted of 6863 students studying in standard X and 1300 teachers from 190 high schools in the state of Karnataka. The parents of the students who formed the sample were also involved in the study. A group test of intelligence, a scholastic aptitude test, a study habit inventory, an achievement motivation inventory, a questionnaire, a school information blank, interviews and observations were used to collect the data.

The following were the findings of the study : (i) Interest was found not to be a factor for superior

achievement of South Kanara pupils. (ii) The pupils of South Kanara had better scholastic aptitude than pupils elsewhere in the State. (iii) The pupils of South Kanara had much better study habits than the pupils of other districts. (iv) The pupils of South Kanara had better achievement motivation than the pupils of other districts of the State. (v) Personal parental care and attention to the education of the ward was bestowed to a considerable extent by the parents of South Kanara. (vi) Teachers of South Kanara were aware of their responsibility in pupil success in the examination. (vii) In respect of laboratory and library facilities available to the high school pupils, there was no significant difference in the high schools of various districts of the State. (viii) Teachers of South Kanara high schools paid more individual attention to the correction of written work by their pupils. (ix) Heads of high schools in South Kanara reposed very high confidence in their teachers and in their ability to deliver the goods. (x) Strict promotion of only the deserving in the standards VIII and IX and weeding out the weaker pupils was taken up by South Kanara high schools. This step was not implemented properly by the high schools in other districts of the State.

480. *BASAVAYYA, D., Effect of Bilingualism on Language Achievement, CIIL, Mysore, 1974.*

The objectives were : (i) to study the effect of bilingualism or multilingualism on language achievement; (ii) to study the influence of medium of instruction upon language achievement; (iii) to study the achievement differences between the first and third languages; (iv) to study the relationship between the socio-economic environment and language achievement; and (v) to study the relation between the achievement in languages and in other subjects.

A small proforma was prepared to collect the information regarding the biodata of the students studying in the tenth class of five selected schools of Mysore city and marks obtained in different subjects in their annual examinations of seventh, eighth and ninth classes. The information was collected by personal visits to the schools. The statistical measures computed were mean and SD. These were used to give an idea about the averages and variations of the marks of monolinguals and bilinguals. Wilcoxon matched pairs signed ranks test and Smirnov's test (small sample) were used to test the differences between the groups. Regression and correlation techniques were used to explain the relationship. Percentage polygons were used for graphical representation.

The findings revealed that (i) there was no signi-

ficant difference between the first language achievements of monolinguals and bilinguals (or multilinguals); (ii) in the case of third language (i.e., Hindi), perforce the bilinguals did better than the monolinguals; (iii) the overall performance of monolinguals and bilinguals did not differ significantly; (iv) the average first language performance of both monolinguals and bilinguals was better than their average overall performance except in case of the group (HK) which offered Hindi as first language and Kannada as third language; (v) the different bilingual groups did not differ significantly in their performances in all the subjects; (vi) individual variations in the achievements of bilinguals were more than those of monolinguals; (vii) the students with English medium did better in all subjects than Kannada medium students even though their socio-economic background did not vary significantly; and (viii) language achievement was found to be influenced by the parental occupation and education and the language achievement of teachers' children was slightly better than that of the others; however, the limitations of the findings were that standardised tests were not used for getting the scores and that the bilingual competence was not measured and graded.

*481. *BAYTI, J., The Effect of KR (Knowledge of Results) on Achievement of School Subjects in Relationship with Certain O-Variables, Ph.D. Edu., Kur. U., 1975.*

The objectives of the study were : (i) to study if the knowledge of results (KR) brings in progressive improvement in the academic achievement of pupils; (ii) to study the effect of knowledge of results of earlier performance on the later academic achievement of pupils of various levels of intelligence; (iii) to study the effect of knowledge of results on the academic achievement of pupils with different personality traits; (iv) to study the sex differences in the academic achievement as produced by the knowledge of results; (v) to study the effect of knowledge of results on the pupils' academic achievement in certain school subjects such as mother tongue, English, general science and elementary mathematics with regard to the level of intelligence.

The sample consisted of 1200 children drawn from six higher secondary schools of Bikaner. The tools administered were : (i) the Cattell's Fourteen Personality Factor Questionnaire (Junior A form), (ii) the Jalota's Group Test of General Mental Ability, and (iii) the records of achievement on six successive tests in four school subjects. Mean, standard deviation, standard error of means, coefficient of

variation and analysis of variance were employed to analyse the data.

The study revealed the following: (i) Above average intelligence boys of the experimental group improved their academic achievement with the help of knowledge of results. Boys of average intelligence and below average intelligence of the experimental group improved their scholastic performance with the help of KR in the subsequent tests. (ii) Girls of above average intelligence, average intelligence and low intelligence of the experimental group achieved better academically in all the subsequent tests with the help of KR as compared to the girls of control group. (iii) Outgoing, obedient and toughminded boys of the experimental group improved their academic achievement with the help of KR in all subsequent tests while the boys of control group were fluctuating. The boys of following personality traits, namely, reserved, sober, disregarding rules, shy, casual, relaxed, extrovert, assertive, happy-go-lucky, conscientious, venturesome, and tense of the experimental group improved their academic achievement with the help of KR in all the subsequent tests while the boys of the above characteristics in control group were fluctuating in their performance in all the subsequent tests. Tender minded and self sufficient boys of the experimental group achieved better in their academic achievement with the help of KR in all the subsequent tests while the achievement of the boys with these personality traits of the control group was fluctuating. (iv) The girls of personality traits, namely, shy, control, casual, toughminded, obedient, disregarding rules, relaxed, introvert, group dependent, conscientious, and outgoing improved in all the subsequent subtests while there were rises and falls in the achievement of girls of control group.

*482. *BEEDAWAT, S. S., A Study of Academic Under - Achievement Among Students, Ph.D. Edu., Raj. U., 1976.*

The major objectives of the study were: (i) to study the incidence of academic underachievement among students of class IX of secondary schools of Bikaner division; (ii) to study the factors related to academic underachievement; (iii) to make a comparative study of incidence of underachievement among boys and girls; (iv) to make a comparative study of incidence of underachievement in rural and urban areas; (v) to make comparative studies between underachievers, overachievers and average achievers; (vi) to study the relationship between intelligence scores of underachievers and scores on (a) personality characteristics, (b) factors of personality adjust-

ment, (c) motivation, and (d) study habits; and (vii) to make some case studies to identify factors responsible for underachievement.

The sample of the study was selected randomly. Data were collected with the help of (i) the Cattell's 14 PF (HSPQ), (ii) the Saxena's Personality Adjustment Inventory, (iii) the Frymier's Junior Index of Motivation, and (iv) the Rao's Study Habit Inventory. The subjects under study were interviewed also. The collected data were analysed by employing univariate analysis of variance, t test, Z test, percentages and product-moment correlation.

The major findings of the study were: (i) the intensity of incidence of underachievement was more or less uniform in the urban and rural areas; (ii) the incidence of underachievement was higher in science groups; (iii) the proportion of underachievers among girls was larger than that among boys; (iv) very few of the underachievers were found to be outgoing, warm hearted and easy-going; (v) seventyfive percent of the students among underachievers possessed average emotional stability; and (vi) about forty percent of students were found to be possessing qualities like impulsively lively and gay enthusiastic.

483. *BHADURI, A., A Comparative Study of certain Psychological Characteristics of the Over- and the Under-Achievers in Higher Secondary Schools, D.Phil. Psy., Cal. U., 1971.*

The major objectives of the present investigation were: (i) to find the similarities and differences between the overachieving and underachieving students with respect to sex, grade and academic courses; and (ii) to make a comparison between the two groups over several psychological characteristics.

This is a comparative correlational study with testing of a large number of null hypotheses. Comparison of the over- and under-achievers was made with respect to twenty-six psychological characteristics selected from three noncognitive areas, viz., personality-temperamental, interest-motivational and environmental-biographical. The randomised two group design was adopted for the study. The subjects for the investigation were sampled from the student population of grades X and XI of the higher secondary schools of North Calcutta. By the method of stratified random sampling, first the schools were selected, and then the selection of discrepant achievers from grades X and XI of the selected schools was done. Taking 832 boys and 619 girls from four boys' and four girls' schools, the over- and under-achievers were identified by comparing their expected achievement and the ac-

tual achievement in school examination marks. The final sample thus selected for the study consisted of 213 overachievers and 216 underachievers. Tools used were : (i) Reasoning and Numerical Ability subscales of DAT (Form A); (ii) the Jr.-Sr. High School Personality Questionnaire (Form A), devised by Cattell and Beloff; (iii) the Kuder Preference Record (CH — Vocational Form); (iv) a forced choice questionnaire, devised by Mukherjee, B.; (v) a study habit questionnaire, prepared by Jammuar; and (vi) a biographical data schedule, developed by the investigator. In analysing data, examination marks and aptitude test scores were converted into T-scores and r 's and multiple R 's were computed. Regression equations were established and t test was applied for testing the hypotheses.

The major findings of the study were as follows : (i) The over- and under-achievers within each subsample differed on one or more of the twentysix variables under study. But the differentiating variables were not consistently the same in all subsamples. Even on the same variables, the directions of the obtained differences were not always the same. (ii) A variablewise comparison showed a certain degree of stability in neuroticism and anxiety. Overachieving students tended to be less neurotic and less anxious than the underachievers. (iii) The group difference was in favour of the overachievers on social service and outdoor interest, whereas the musical interest and achievement motivation of this group were found to be lower than those of their underachieving peers. (iv) The overachievers showed higher scores on study habits, attitude to school and religious-cultural background. (v) The underachievers, on the contrary, tended to have a higher socio-economic status, a more congenial home condition and more of leisure time activities. (vi) Considering the findings related to the three noncognitive areas it could be noted that the similarities were most pronounced in the personality-temperamental area and least marked in the environmental-biographical area.

484. BHASIN, M. P., *Relationship of School Perception to Academic Achievement at High School Level, Ph.D. Edu., Pan. U., 1974.*

The study attempted to find out the relationship of total school perception to academic achievement of students at high school level, keeping in view the variables of intelligence, self-concept, sex, socio-economic status and teacher perception of students' behaviour. The main objectives were : (i) to prepare and develop an objective instrument, viz., a projective test for measuring the total school perception

(SPPT); (ii) to prepare and develop a scale for school perception for validating the school perception test (SPS); (iii) to prepare and develop a scale for teachers' perception of students' behaviour (TPS); (iv) to determine factors in school perception; (v) to find out the relationship of school perception with academic achievement; (vi) to study the relationship of school perception with intelligence, self-concept, sex and socio-economic status; and (vii) to find out the relationship between school perception and teachers' perception of their students' behaviour.

The sample consisting of 200 students (100 boys and 100 girls) was selected randomly from two randomly selected high schools at Phagwara, Panjab. The SPPT, the SPS and the TPS were developed. The SPPT was a picture test, semi-structured and covered the following areas of school perception; (i) physical environment of the school, (ii) behaviour of headmaster and teachers, (iii) classroom teaching and learning activities, and (iv) academic achievement. Similar situations were taken for the SPS also. Teachers' perception of the students' behaviour related to the areas of work habits, study skills, general conduct, ambitions, personal liking, prodding, acceptance by other students, acceptance by other teachers, realization of study objectives, emotional balance, and thinking ability. Test-retest reliabilities for an interval of 15 days were 0.939, 0.849, and 0.873 for the SPPT, the SPS, and the TPS respectively. The convergent validity coefficient of SPPT with SPS was 0.512. Along with these tools, data were collected using the Modified Army Alpha—Form 9, the Deo's Personality Word List, and the DES scale developed by Deo and Mohan. School examination marks were also noted. The data were analysed using point biserial correlation, F ratio and t test.

The major findings of the study were as follows : (i) The correlations of SPPT with other variables were (all positive and significant at 0.01 level) — with academic achievement 0.354, with intelligence 0.341, with self-concept 0.201, with socio-economic status 0.212, and with sex 0.584. (ii) The correlations of SPS with other variables were — with academic achievement 0.205, with intelligence 0.206, with self-concept 0.353, with socio-economic status 0.192 and with sex 0.395. (iii) The multiple R for SPPT with academic achievement, intelligence, self-concept and socio-economic status was 0.455 and for SPS with these variables was 0.409. (iv) It was found that those high on academic achievement, intelligence, self-concept and socio-economic status had high school perception and low on these variables had low

school perception. (v) Girls exhibited higher school perception as compared to boys. (vi) Teachers with students of higher school perception showed higher perception of their students' behaviour and teachers with students of low school perception had lower perception of their students' behaviour. (vii) The varimax factors located were — (i) Nonverbal Perception of School, (ii) Verbal Perception of School, (iii) Self-Concept, (iv) General Intelligence, (v) Verbal Perception of Academic Achievement and Academic Authorities, and (vi) Socio-economic Status.

485. DAVE, P. N. and ANAND, C. L., *The Load of Language Learning, Intelligence and Academic Achievement*, RCE, Mysore, 1971. (NCERT financed)

The main purpose of the study was to investigate the effect of the load of language learning (the number of languages, the number of years one had to learn them, and the stage at which they became the media of instruction) on mental abilities and academic achievement of college students. The hypotheses tested in the study were : (i) students having mother tongue as the medium of instruction for eleven, ten, nine, eight and seven years will achieve a significantly higher mean and percentage score than their counterparts having either English or regional language as the medium of instruction in university examinations; (ii) the retardation in verbal and nonverbal intelligence and academic achievement will be greater for the regional language group than for the mother tongue group; and (iii) an increase in the load of studying through English medium will be accompanied by a significant decrease in the mean scores attained by both the mother tongue and regional language groups.

The sample consisted of 402 students admitted to the Regional College of Education, Mysore, in the year 1971-72, belonging to four states, namely, Andhra, Karnataka, Kerala and Tamil Nadu. The marks obtained by the students in the preuniversity and first year university examinations were collected from the office of the college. The following tools were administered to the sample : (i) the Nafde's Nonverbal Test of Intelligence and the Babu's Test of Verbal Intelligence; and (ii) the Special Content Test and the Simple Questionnaire developed by the investigators. The data were analysed by t test and analysis of variance.

The results of the study revealed that (i) no difference in verbal intelligence, nonverbal intelligence and academic achievement was found between pupils studying mother tongue or the second language (En-

glish or the regional language) for seven, eight, nine or eleven years; (ii) the triple load of languages on the RL group did not affect the growth and development of their mental and cognitive abilities; (iii) F test for any load and for any test was not significant except on the content test; and (iv) the load of studying through a medium of instruction other than one's own mother tongue did not seem to retard the growth and development of mental and scholastic abilities; thus, the students having triple load of languages (the RL group) were in no way inferior to students with double load (the MT group) in verbal intelligence, nonverbal intelligence and academic achievement.

486. DAVE, P. N. and ANAND, C. L., *Validating the Hierarchy of Educational Objectives and relating it to the Medium of Instruction of Adolescents of Mysore State*, RCE, Mysore, 1973.

The investigation was undertaken to test the following hypotheses : (i) differences will exist among the levels of learning identified as knowledge (K), understanding (U) and application (A); (ii) the levels of K, U and A would not be independent of each other, but form a cumulative hierarchy; and (iii) differences will exist between the attainment levels of students taught through the media of the mother tongue and the other tongue.

The sample consisted of 659 students studying in standard VIII. The classification of the test items under K, U and A categories was done by the content-cum-method masters. The final classification of each item was accepted on the basis of the higher percentage agreement between several judges. The statistical techniques used were the Friedman's ANOVARA Test, and the McQuitty's syndrome analysis.

The findings were as follows : The learning outcome, even when not derived through a controlled teaching learning process with specific goals, was found to form the hierarchy as envisaged by Bloom; the learning outcomes in terms of K, U and A were different and were found to be hierarchically related.

487. DAVE, P. N. and DAVE, J. P., *Socio-economic Environment as Related to the Non-Verbal Intelligence of Rank and Failed Students*, RCE, Mysore, 1971.

The objectives of the study were : (i) to investigate the relationship of some factors in the home environment, i.e., parental income, education, occupation, caste, religion and concern, to the nonverbal intelligence of rank and failed students; (ii) to ex-

amine the environmental background of the students pertaining to each of the factors mentioned above; and (iii) to study the effect of sex and the medium of instruction on nonverbal intelligence.

The stratified samples of 128 and 80 academically good and poor, i.e., students who secured first five ranks in the annual examination of the standard VII and those who failed to get the promotion in the standard VIII (rank and failed), were chosen from sixteen high schools of Dharwar, Hubli, Madras, Trivandrum and Hyderabad. The data regarding their parental concern, income, education, occupation, caste and religion were collected. The Nafde's Nonverbal Test of Intelligence was administered. The analysis of variance and chi-square were used for the analysis of the data.

The findings of the study revealed that (i) the nonverbal intelligence of the rank students was superior to that of the failed students; (ii) there existed significant differences in the intelligence of students coming from homes having different parental incomes and occupations; (iii) the nonverbal intelligence of rank boys was superior to that of rank girls; (iv) the intelligence of rank students studying through the medium of English was superior to those studying through the medium of their mother tongue; (v) no such differences were found in the intelligence of failed students classified with respect to all the above variables; (vi) a higher percentage of rank students belonged to homes having higher parental income, occupation and education, whereas a higher percentage of failed students belonged to homes having lower parental income, occupation and education; (vii) size of the family was not related to the academic achievement; and (viii) parents of the rank students showed more academic concern about their wards than those of failed students.

*488. GOSWAMI, P. K., *A Study of Self-Concept of Adolescents and its Relationship to Scholastic Achievement and Adjustment*, Ph.D. Edu., Agra U., 1978.

The objective of the investigation was to study the self-concept of the school-going adolescents and its relationship to sex, intelligence, place of residence, scholastic achievement and adjustment.

The sample consisted of 765 students (male and female) of class X of the secondary schools of Agra city and two of its tahsils. The tools used were: (i) a self-concept test entitled 'Swatva-Bodh Prakashan', which was prepared for this purpose; (ii) a test of general ability developed by Joshi; and (iii) a test of

adjustment entitled, 'Vyaktitva Parakh Prashnavali' developed by Saxena.

The findings of the study were: (i) the global self-concept of male adolescents was significantly different from that of female adolescents; (ii) self-concept and intelligence had a significant positive correlation; (iii) self-concept mean scores of urban and rural students had no significant difference; (iv) global self-concept and scholastic achievement had a significant positive correlation; and (v) self-concept and adjustment had a significant positive correlation.

489. GUPTA, M. P., *Agricultural Education Systems — Analysis and Reforms*, Ph.D. Agri. Extn. Edu., PAU, 1973.

The objectives were: (i) to delineate different aspects of agricultural education systems; (ii) to develop a suggestive model for assessing agricultural education system; and (iii) to compare different agricultural education systems.

The sample was selected from three institutions: (i) College of Agriculture, Udaipur, for trimester; (ii) Rajasthan College of Agriculture, Udaipur, for semester; and (iii) Khalsa College (Agriculture section), Amritsar, for traditional system. The respondents were teachers and students with a minimum of three years' exposure to a particular system of education. One-third of students and one-third of teachers were selected through statistical random sampling technique. In this way sixtyeight respondents from semester system, 152 under trimester system, and forty under traditional system were obtained. The qualitative aspect of education systems was appraised through: (i) the agricultural education systems as a whole through paired comparison technique; (ii) various components of agricultural education systems and their effectiveness systemwise with the help of rating scales, mean and weighted mean scores; (iii) various components of agricultural education systems and their scope of improvement systemwise through the use of rating scale, mean score; and (iv) different systems of agricultural education in accordance with the suggestive model. For analysing data t test was used. The suggestive model was developed with its three main components as teaching-learning situations, education system, and cocurricular activities. The assessment of quantitative aspects of education systems were related to (i) admission requirements, (ii) increase in course contents covered, (iii) instructional days in an academic year, and (iv) percentage of passes.

The findings revealed that (i) the trimester and semester systems of agricultural education were found

guessing and the confidence intervals for each word were calculated and converted into percentages. These statistics were used for purposes of knowing the difficulty level of words used in the checklist.

The findings of the study were related to the production of two types of glossaries — glossary I and glossary II which were arranged in alphabetical order. In glossary I were words taken from the textbooks of lower classes (IV, V and VI) known to seventy percent of students and above of class VII. In glossary II were words taken from the class VII textbooks and writings and speech of students of this class in Haryana, as well as the words taken from the books of the lower classes (IV, V and VI) which were known to not less than seventy percent students of class VII.

*492. KOHLI, T. K., *Characteristic Behavioural and Environmental Correlates of Academic Achievement of Over and Under Achievers at Different Levels of Intelligence*, Ph.D. Edu., Pan. U., 1976.

The investigation intended: (i) to study the characteristic behavioural correlates of academic achievement of over and underachievers at different levels of intelligence; and (ii) to study the characteristic environmental correlates of academic achievement of over and underachievers at different levels of intelligence.

The study was conducted on a sample of 264 overachievers, 276 average achievers and 219 underachievers. The tools employed were the Raven's Standard Progressive Matrices, the Jalota's Group Test of General Mental Ability, the Mittal's Adjustment Inventory, the Cattell's Jr.-Sr. High School Personality Questionnaire, the Joshi and Pande's Test of Study Habits and Attitudes, a projective test of achievement motivation and the Socio-Economic Status Scale by Jalota, Pande, Kapoor and Singh. Data were analysed using correlation, t test and factor analysis.

The following were some of the major findings of the study: (i) Although the spectrum of some of the non-intellectual behaviour-environmental factors was differently related to academic achievement of over and underachievers, yet single factor, combination of factors and factor constellations were not capable in themselves of clearly separating overachievers and underachievers. (ii) Certain factors or factor combinations or configurations were common to those groups which differed widely in achievement. These could be named as correlates of academic achievement which operated for both.

493. KULWANT KAUR, *An Investigation of differences existing among Over-Achieving, Normal-Achieving and Under-Achieving, 10th Class Students in High and Higher Secondary Schools*, Ph.D. Edu., Pan. U., 1974.

The objectives of the study were: (i) to establish differences among overachievers, normal achievers and underachievers with regard to study habits, personality characteristics, and personal problems in Government Model High School and ordinary government basic high and higher secondary schools taken separately; (ii) to establish the differences between Model School and ordinary schools; and (iii) to assist the underachievers by organising a special educational programme of teaching-learning.

Populations of overachievers, normal achievers, and underachievers were chosen from students of all the sections of class X of two types of schools — Government Model School and ordinary government high and higher secondary schools of Chandigarh. The criterion for selection was the mean ratio between intelligence score derived from the Hundal's Mental Ability Test and percentage of marks earned in four house tests, representing achievement in English, mathematics, general science, social studies and Hindi. The various tools used were Hindi and Punjabi versions of the Brown Holtzman Survey of Study Habits and Attitudes, the California Test of Personality, and the Mooney Problem Checklist (H Form). The overachievers, normal achievers, and underachievers were compared on measures from the various tools. A special educational programme of teaching-learning was organised to assist underachievers in basic subjects.

Some of the major findings of the study were as follows: (i) The relationship between achievement and study habits was higher in Model School than in ordinary schools. (ii) Helping students to understand both the mechanics and methods of effective study was a necessary first step in helping students to develop positive attitudes towards study.

*494. KUMARIAH, V., *Intellectual, Personal and Social Factors related to High and Low Achievement of Various Stages in Medical Education*, Ph.D. Psy., Ban. U., 1976.

The present investigation was undertaken to study the intellectual, personal and social factors in relation to high and low achievement at pre-professional, pre-clinical, clinical, and para-clinical stages in undergraduate medical education.

A total of 101 high achievers (highest quarter) and 101 low achievers (lowest quarter) of various

to be more effective than the traditional system; (ii) all the categories of respondents except teachers of traditional system preferred semester system as compared to annual and trimester systems; (iii) the teaching learning situation was found to be comparatively satisfactory under the trimester system than under semester and traditional systems, and the evaluation system and cocurricular activities were found to be more satisfactory in working under semester system than under trimester and traditional systems; (iv) the semester system was found to have an edge over the trimester system with a narrow margin; (v) the semester system was highlighted through rating scale, to be comparatively effective to other education systems, in terms of (a) role of student, (b) physical facilities, and (c) games and sports; (vi) the salient features of semester system found were (a) role of a teacher, (b) curriculum, and (c) use of teaching aids and equipments; (vii) the grading under the trimester and semester systems was found to be less effective and grading required more improvement under new systems of education, whereas marking under traditional system was adjudged to be free from bias; (viii) the traditional system of education was pointed out to be poor, requiring more scope of improvement with respect to examinations, curriculum, and use of teaching aids; (ix) the admission criterion was higher under trimester system than the same under traditional system; (x) the instructional days were more under semester system as compared with the same under trimester and traditional systems; (xi) credit hours in the course contents covered were found to be more under trimester system than those under semester and traditional systems; and (xii) percentage of passes was more under traditional system.

490. GUPTE, P. S., *Health and its Effects on Academic Achievements and Temperamental Traits*, Ph.D. Edu., Bom. U., 1973.

The main purpose of the investigation was to study the health of secondary school students and its effect on their temperamental traits and academic achievement.

Out of 196 schools in Fort and Jogeswari areas of Bombay according to 1957 list of S.S.C.E. Board, equal proportions of schools of Marathi medium, Gujarati medium, English medium and combined were selected for the study. Maintaining the proportion for boys and girls, a total sample of 1,232 students studying in standards VIII through XI was drawn. The age range of the students varied from thirteen to seventeen years. The information collected about the students included — personal data, physical data, medi-

cal check-up data, scores on the Sohoni's tests for character and temperamental traits for children attending high schools in cities, scores on the Nafde's Nonverbal Test of Intelligence, and annual examination marks. Means and standard deviations were computed for comparisons.

The main findings of the study were: (i) the greatest variation in height was observed in standard VIII in the case of boys; (ii) in case of weight considerable variation was observed in different groups, namely, Marathi speaking, Gujarati speaking, and English speaking; (iii) sitting height formed fiftytwo to fiftythree percent of erect height in case of foreign boys but in case of Indian boys it formed only forty-nine to fifty percent; (iv) the ratio of trunk length/leg length seemed to remain constant for age of thirteen, fourteen, fifteen and sixteen years; (v) of all the physical measurements, chest expansion showed the least correlation to any of the other measurements considered in this study; (vi) there was a positive relationship between health and two temperamental traits, namely, ambition and dominance; (vii) there was no relationship between health of the students and their academic achievement; (viii) intelligence and academic achievement showed positive correlation of 0.5 to 0.6 in case of boys and 0.2 to 0.35 in case of girls; (ix) medical examination revealed that children in the sample did not show a very high standard of physical fitness.

491. KAUSHIK, J. N., *An Investigation into the Basic Hindi Vocabulary of Children of Seventh Class (usually of 12+) in the State of Haryana*, Ph.D. Edu., Kur. U., 1974.

The main aim of the study was to take stock of the basic comprehension vocabulary of children by finding out the percentage of children who knew the meanings of different words.

The study employed normative survey method. In the first phase of this survey 1,300 words from the books for classes IV, V and VI were collected. Based upon the empirical evidence collected from 300 children only 650 words were selected for consideration towards the preparation of final list. In the second phase 1,851 more words were collected from NCERT produced books prescribed in Haryana and Punjab. Thus, the total number of words tried on a representative sample was 2,501. The sample consisted of about one percent of the population of seventh class children in Haryana, stratified districtwise and sexwise. A total of 1,417 children were involved at first but ultimately checklists completed by 1,150 children were analysed. The proportion corrected for

stages in undergraduate medical education at St. John's Medical College, Bangalore, formed the sample. The Raven's Standard Progressive Matrices, the Cattell's Sixteen Personality Factor Questionnaire, the Edward's Personal Preference Schedule, the Kuder Preference Record, and the Bell's Adjustment Inventory were administered to the sample.

The following were the findings of the study : (i) Out of the fiftyone factors (intellectual and non-intellectual) studied, thirtyeight factors, thirtysix being non-intellectual, significantly differentiated the high and the low achievers at some stages. (ii) Four factors, namely, intelligence, health adjustment, emotional adjustment, and overall general adjustment consistently differentiated the high and the low achievers at all the stages in undergraduate medical education.

495. *LALITHAMMA, K. N., Some Factors Affecting Achievement of Secondary School Pupils in Mathematics, Ph.D Edu., Ker. U., 1975.*

The main objectives of the study were : (i) to find out the general nature of pupils' interest, study habits and performance in mathematics; (ii) to carry out differential studies on interest, achievement and intelligence based on sex, locality, etc.; and (iii) to find out relationship of study habits, socio-economic factors, intelligence and interest with achievement in mathematics.

The study was conducted on 732 pupils of standard IX selected on a stratified random basis. The tools used were a standardised achievement test in mathematics, a study habit inventory, an interest inventory, a socio-economic status scale and the Raven's Standard Progressive Matrices.

The study revealed that (i) the average performance of pupils in mathematics was 23.14 with SD of 8.20 and the distribution was negatively skewed; (ii) there was significant difference in the performance of boys and girls in mathematics, the difference being in favour of boys; (iii) the urban pupils were superior to rural pupils in mathematics; (iv) intelligence and interest in mathematics were higher in boys and urban pupils than in their respective counterparts; (v) the achievement in mathematics was positively related to intelligence, interest in mathematics, study habits and socio-economic status; (vi) studying lessons daily, studying mathematics by writing, repetition in learning, spaced learning, over learning, etc., influenced the achievement in mathematics positively, (vii) private tuition, electric light facilities, radio, equipments for study, etc., influenced the achievement in mathematics; (viii) achievement of first borns was better than that

of the last borns; and (ix) achievement of scheduled caste and tribe students was lower than that of the total sample.

496. *MANKAD, S. D., A Comprehensive Plan of the Objectives of Teaching Gujarati as Mother Tongue in Secondary Schools of Gujarat State and Construction of Objective Centred Syllabus for Standard X for the Subject, Ph.D. Edu., Sau. U., 1974.*

The main objectives of the study were : (i) to specify comprehensive objectives of teaching Gujarati as mother tongue at the secondary school level; (ii) to construct the teaching units based on the specified objectives; and (iii) to construct an objective based syllabus for standard X based upon the specified objectives and teaching units.

Development of the objectives and construction of the objective based syllabus were carried out after collecting relevant data from teachers and experts and were also based on the analysis of several textbooks and syllabi in Gujarati, used in different areas of Gujarat State. The data were collected from teachers and experts from seventynine talukas belonging to seventeen districts. Data were collected through a questionnaire, a checklist and also through interviews. The questionnaire was of a fixed response type and consisted of fiftyfive questions. It was used to obtain the opinion of teachers teaching Gujarati in the secondary schools of Gujarat about the syllabi of Gujarati for standards VIII to X. The checklist and interview technique were employed for getting expert opinions. The data were analysed using simple statistical techniques.

The analysis revealed the following points : (i) nearly 47.6 percent of teachers did not possess the syllabus; (ii) about 18.7 percent of teachers did not possess the syllabus and also they did not read it; (iii) nearly 19.1 percent of schools did not have the syllabus; (iv) approximately 68.9 percent of teachers wanted the syllabus to be translated into Gujarati; (v) twenty percent of school teachers taught on the basis of textbook only and did not refer the syllabus; (vi) ninetytwo percent of teachers did not consider the syllabus constructed and suggested by the government as suitable; (vii) the teachers in general felt that the contribution of teachers to the construction of syllabus was important; (viii) nearly 90.7 percent of teachers opined that changing of content was unavoidable; (ix) about 58.7 percent of teachers believed that writing work was a useless burden; (x) fiftytwo percent teachers favoured a separate textbook of grammar though only 41.8 percent used them in the

classroom; (xi) seventyfive percent of teachers wanted to leave the responsibility of supplementary and extra reading to students.

On the basis of this analysis, a syllabus for Gujarati for standard X was developed.

*497. *MATHEW, T., Some Personality Factors Related to Underachievement in Science, Ph.D. Edu., Ker. U., 1976.*

The major objectives of the study were : (i) to identify a group of personality variables that could act as causal factors of underachievement in science at the secondary level, and (ii) to empirically verify which of the identified variables actually discriminate between the different levels — over, normal and underachievers in science.

The study was conducted on 1076 secondary students of standard IX in the district of Trivandrum in Kerala. A verbal and a nonverbal group test of intelligence and a standardised achievement test were used for classifying the sample into overachievers, normal achievers and underachievers by using regression method. Twenty selected personality variables, viz., self reliance, sense of personal worth, sense of personal freedom, feeling of belonging, freedom from withdrawing tendencies, freedom from nervous symptoms, social standards, social skills, freedom from anti-social tendencies, family relations, school relations, community relations, general anxiety, test anxiety, social activity, extraversion, tolerance, maladjustment, masculinity and attitude towards academic work had been tested for their ability to discriminate between the various levels of achievers. These variables were measured with standardised tests. The data were analysed by using correlation techniques and a two-tailed test was used for studying the significance of difference.

The study revealed that (i) the mean scores of normal achievers exceeded significantly the mean scores of underachievers for variables like sense of personal worth, sense of personal freedom, withdrawing tendencies, social standards, etc., and the mean scores of normal achievers were significantly less than the mean scores of underachievers in test anxiety and maladjustment; (ii) the mean scores of overachievers were significantly greater than those of the normal achievers in cases of sense of personal freedom, social standards and family relations; (iii) the mean scores of overachievers significantly exceeded the mean scores of underachievers in cases of self reliance, sense of personal freedom, freedom from withdrawing tendencies, freedom from nervous symptoms, social standards, social skills, freedom from

anti-social tendencies, family relations and community relations; (iv) a higher number of overachievers were in the high intelligence, low age group, amongst boys, and among the parents with higher education than their respective counterpart; (v) greater number of overachievers were found amongst high income urban subjects; and (vi) four factors—total adjustment, anxiety orientation, group adjustment and self-esteem — accounted for total variance of the overachieving group, and five factors — personal adjustment, social adjustment, social facilitation, leadership, and self acceptance — accounted for the total variance of the normal achieving group.

498. *MENON, S. K., A Comparative Study of the Personality Characteristics of Over-achievers and Under-achievers of High Ability, Ph.D. Psy., Ker. U., 1973.*

The present investigation aimed at finding out the relationship existing between underachievement and some of the personality characteristics like social activity, extraversion-introversion, tolerance, maladjustment and masculinity-femininity and some motivational traits like academic interest, general ambition, persistence, and endurance and areas of interest like outdoor, aesthetic, scientific, mechanical, persuasive, clerical and social service. The hypotheses tested were : (i) there are significant differences between the superior ability over- and under-achieving groups in personality characteristics, motivational traits and interest patterns; and (ii) there are significant differences between two groups in socio-economic status and other variables selected.

The sample consisted of 1900 students. Over- and under-achieving groups of students were selected through stratified random sampling, giving proportionate weight to rural and urban, and boys', girls' and coeducational schools. The tools used were : (i) the General Mental Ability Test — Verbal Form A and Form B; (ii) the Personality Inventory; (iii) the Motivational Inventory; (iv) the Interest Inventory; and (v) a General Data Questionnaire. The first three tools were developed by the Department of Psychology and last two by the investigator respectively. Besides these, S.S.L.C. public examination marks of final examination were taken as a measure of the academic achievement of the subjects.

The results revealed that (i) overachieving groups of boys and girls of superior ability as well as the general group were found to be less extravert and maladjusted while overachieving boys of the general group were found to be less socially active and masculine; (ii) overachieving groups of boys and girls

of superior ability as well as the general group were found to show greater academic interests and endurance; overachieving girls from general group and overachieving boys of both groups were also found to have greater general ambition; overachieving boys and girls from high ability as well as general groups showed that their persistence was greater; (iii) overachieving girls of the general group showed stronger interest than underachievers in aesthetic, social and mechanical activities and less interest in outdoor, persuasive and clerical activities; overachieving boys of the general group had more interest in aesthetic activity and less interest in outdoor work, while high ability overachievers among boys had an interest in mechanical activities; and (iv) overachievement and underachievement were found to be influenced by socio-economic and demographic characteristics.

499. MISRA, C. H. K., MISRA, J., and JAYARAM, B. D., *Survey of the Effect of Language Medium on School Achievement in Kendriya Vidyalayas, CIIL, Mysore, 1973.*

The objective was to test whether there was : (i) difference in achievement in social studies through Hindi medium between Hindi speakers and non-Hindi speakers; (ii) difference in achievement in Hindi between speakers of Dravidian languages and other languages deemed closer to Hindi; and (iii) difference in achievement in social studies through Hindi medium between the students of group 'A' consisting of students having mother tongues of Punjabi, Marathi, Sindhi and Urdu and that of group 'B' consisting of those having Kannada, Tamil, Telugu and Malayalam as their mother tongues.

The study was based on the statistical treatment of data received from central schools in and around Delhi. The raw data were converted into percentages to make them comparable. The percentages were classified into ten groups of equal intervals for which the frequencies were computed for each criterion group separately. The Kolmogrov-Smirnov two sample test was applied to the data thus obtained.

The findings revealed that (i) there was no difference in achievement in social studies through Hindi medium between Hindi speakers and non-Hindi speakers; (ii) there was no initial advantage in learning Hindi during the first year for the child whose mother tongue was nearer to Hindi over the child who spoke a Dravidian language; however, that child was found to have a little advantage during the next three years; and (iii) there was no difference between the students of group 'A' and those of group 'B' as far as their achievement in social studies through Hindi medium was concerned.

*500. NAGPAL, R. N. and WIG, N. N., *Non-Intellectual Factors Associated with Academic Achievement in University Students, Postgraduate Institute of Medical Education and Research, Chandigarh, 1975. (ICMR financed)*

The purpose of the study was to investigate into non-intellectual factors associated with academic achievement in university students.

The study consisted of two parts. In the first part, fortyone students who had earlier failed and had rejoined, and a comparable control group were administered the Maudsley Personality Inventory and the Cornell Medical Index Health Questionnaire followed by an interview on the model of psychiatric case taking. The nature of this part of the study was retrospective. The second part of the study was of a prospective nature using questionnaire technique. Two structured questionnaires, based on the findings of the first part, were administered to the cohort of students prior to their university examinations. The cohort group was divided into pass group (N=1017) and fail group (N=114) on the declaration of results and then was compared on the various non-intellectual factors covered in the structured questionnaires.

The following were the findings : (i) The scores of the two groups in the first part of the study were significantly different at 0.05 level only on the Physical Distress Scale of the Cornell Medical Index Questionnaire. (ii) The fail group was comparatively more represented in the older age group. (iii) Pass group on the whole had better achievement marks in high school and degree examinations in the past, while the fail group had more often history of failure or break in study during school or college. (iv) The pass group students had more often fathers who were better educated and who had professional, executive, or managerial occupations. The fathers of fail group students were comparatively more represented in business class. (v) Academic satisfaction seemed to be significant at both school as well as college levels. (vi) Relatively more students in the fail group reported unhappy relations with teachers at school. (vii) In their adjustment to the campus milieu, the fail group seemed to be rather satisfied and wished to rejoin the Panjab University, if given a chance again. (viii) Relatively more of the fail group reported that their financial arrangements were not satisfactory. (ix) Pass group felt better prepared for the examination while the fail group students were dissatisfied with their preparation. (x) More students in the fail group felt that they took decisions independently.

*501. PANDE, M. B., *Interest, Aptitude and Personality Factors as Predictors of Scholastic Achievement, Ph.D. Edu., Nag. U., 1978.*

The main objective of the study was to find out how far certain interest, aptitude and personality variables predict the scholastic achievement of students and to develop a battery of tests for the same purpose.

An interest inventory in which curricular activities from both humanities and science courses were grouped in twenty boxes of five items each, was constructed on the lines of the Devon's interest test. Neurotic tendency or emotional stability and 'confidence in oneself' were the two traits of personality selected from the six traits measured by the Bernreuter's personality test which was translated into Marathi. Only the N, V, IR and DR factor tests from the Varma's battery of differential scholastic aptitudes were selected to measure cognitive abilities. The eight tests of the battery were administered to 640 students of class IX in twelve secondary schools of Vidarbha. The eight variables were factorised by the centroid method and four factors were extracted. They were General Scholastic Temperament, a general power factor with a dichotomy of science and humanities interest, Personality (non-intellective) factor which contrasted the non-intellective dynamic side of mind with the intellective functions and formation of interests, Interest (acquired or curricular) factor and the 'weaker' factor. The four centroid factors were rotated by the varimax method of rotation. The first rotated factor was General Scholastic Ability with the highest positive loadings of cognitive abilities on it. The second and third rotated factors were respectively Personality (non-intellective) and Interest (curricular).

This battery of eight variables has offered a single classification battery which, by means of differential weighting procedures, enables one to measure differentially the scholastic developments and predict, from the scores on variables at the beginning of secondary schooling, the scholastic achievements at the end of class IX of students offering humanities and science courses in secondary schools.

502. PANDEY, R. P., *A Study of Academic Achievement of Adolescent Students of Rural and Industrial Areas in relation to their Introvert-Extrovert Attitudes and Certain Other Personality Characteristics, Ph.D. Psy., Bih. U., 1974.*

The present investigation attempted to examine the effects of mental ability, certain personality factors and rural and industrial backgrounds on the academic achievement of early and late adolescents in

both arts and science sections.

The sample consisted of 800 students between the age group of thirteen to fifteen (early adolescents) and of sixteen to eighteen (late adolescents). Performances in the middle school and high school examinations were used as indices of academic achievement of the early and late adolescents respectively. The tools administered were: (i) the Maudsley Personality Inventory; (ii) the Jalota Group Test of General Mental Ability; and (iii) the IPAT High School Personality Questionnaire. The symbols for the various personality factors as given in the Maudsley Personality Inventory are retained in the further presentation.

The findings revealed that (i) the upper achieving group of adolescent students differed significantly from the lower achieving group with regard to the personality factor F (Cheerfulness and sociability); (ii) the personality factors A-, B+, D-, G+, H+, O-, Q₃ and Q₄ were significantly related to academic achievement of early adolescent students; (iii) personality factors C+, I+ and introversion were found significantly related to academic achievement of late adolescent students; (iv) the personality factors E-, J+, Q₂+ and emotional stability in contrast to neuroticism were significantly related to academic achievement of both early and late adolescents; (v) the period of early adolescence was found to favour the development of A-, B-, G-, H-, I-, J-, O-, Q₃-, Q₄-, E, F and Q₂ and the period of late adolescence was found to favour the development of A+, B+, D+, G+, H+, I+, J+, O+, Q₃, Q₄, E-, F- and Q₂; (vi) the rural background was found to favour the development of G+, H+, J+, Q₂+ and neuroticism in early adolescence and industrial background was found to favour the development of the personality factors G-, H-, J-, Q₂- and emotional stability in early adolescence and C+, O+ and O₄- in late adolescence; (vii) the arts and science students were found to differ significantly on personality factors B, C, I, J, Q₃, Q₄ and neuroticism; (viii) the adolescents taking arts courses were found inferior to adolescents taking science courses in intelligence and emotional stability; (ix) academic achievement of adolescent students was found to be significantly related to rural and urban backgrounds; and (x) in the arts upper achieving group, industrial background was found to be more favourable for high academic achievement than rural background.

503. PATEL, S. T., *An Investigation to Study Identification Patterns, Motivation and School Achievement of Talented Students, Ph.D. Psy., MSU, 1975.*

The study attempted to assess (i) the degree of

identification of talented students with their mothers, fathers and teachers; (ii) the school achievement values attributed by the students to each of the identifying models; and (iii) the students' own achievement values, motivation to learn and behaviour orientation.

The sample consisted of 960 students — 480 boys and 480 girls — selected from twentyfour different high schools located in rural and urban areas of Gujarat State. These students were divided into three equal groups — talented, average and below average — in accordance with the degree of talentedness which was determined on the basis of teachers' ratings, IQ, performance on behaviour checklist and nonacademic performance. Academic achievement was measured in terms of examination marks which the students obtained in two tests conducted during the year. Separate tools were developed to assess the degree of identification with different models, to assess the school achievement values of self attributed to each model, to assess behaviour orientation on four dimensions — academic achievement, peer affiliation, nonconformity and independence orientation, and to assess motivation to learn based on the JIM scale. Means and standard deviations were computed for each subgroup. To find out the significance of difference between three groups of talentedness, two groups based on sex and two groups based on residential area, t tests were employed. Correlation coefficients of identification with models, motivation, behaviour orientations and achievement values of models with students' own achievement value and actual achievement were computed.

The following were the findings of the study : (i) academic achievement varied directly as a function of the degree of talent in both boys and girls; (ii) the talented, average, and below average boys as well as girls differed significantly from one another on self achievement value, father identification as well as father achievement value; (iii) peer affiliation orientation rather than peer identification varied directly as a function of the degree of talentedness among boys; (iv) talented boys differed significantly from average and below average boys in respect of motivation, mother identification, and peer achievement value, but the average boys did not differ significantly from below average boys in these respects; and (v) the talented, average, and below average girls differed significantly from one another in motivation, mother identification as well as mother achievement value and peer identification as well as peer achievement value, but they did not differ in teacher identification; the talented and average girls also differed significantly from below average girls in peer affiliation.

504. *PRAKASH CHANDRA, A Study of the Problems of High School Students in the Varanasi Educational Region of U.P. and their Relative Effect on Achievement, Ph.D. Edu., Gor. U., 1975.*

The objectives of the investigation were : (i) to study the extent of the various problems of high school students; (ii) to make a comparative study of the problems of rural and urban students; and (iii) to study the effect of these problems on the academic achievement of the students.

The sample consisted of 1107 high school students appearing at the high school examination of 1972 conducted by the Board of High School and Intermediate Education, U.P. The sample was drawn from twentyseven randomly selected institutions. The effects of intelligence, study habits and socio-economic and cultural levels of the students were controlled. The tools administered were : (i) a questionnaire on the problems; (ii) a questionnaire on the study habits and socio-economic and cultural levels of the students; (iii) Hindi Version of the Johsi's Intelligence Test, and (iv) an achievement test. Percentages and correlation were calculated to analyse the data.

The following were the findings of the study : (i) (a) In the economic area, the acute problems were nonavailability of standard dress, lack of furniture for study; the moderate problems were inadequate clothing, inadequate facility of light for study, lack of text books; the negligible problems were nonavailability of sufficient food, and self working. (b) In the home area, the acute problems were forced participation in household activities, lack of means of recreation and strict discipline imposed; the moderate problems were tense relationships among the members of the family; the negligible problems were the unsatisfactory dealing and behaviour of the parents and lack of guidance from the guardians. (c) In the school area, the acute problems were lack of reading — learning facilities; the moderate problems were improper selection of subjects for studies and heavy home assignments; and the negligible problems were lack of good rapport between the teachers and the students and bad physical construction of the classrooms. (d) In the social area, only some moderate problems like disturbances due to friends, relatives, radios and unadaptability to modern ways were found. (e) In the personal/physical and psychological area, the acute problem was the development and health; some moderate problems were physical defect, lack of self confidence and wastage of time in useless thinking. Reading novels, magazines and other books were considered to be negligible problems. (ii) Eleven out of fortytwo items ex-

hibited significant difference between percentages of urban and rural students. (iii) (a) The correlations between the variables, namely, problems and intelligence, intelligence and academic achievement, study habits and academic achievement, socio-economic and cultural level and academic achievement, intelligence and socio-economic and cultural level, and study habit and socio-economic and cultural level were positive and ranged from 0.13 to 0.46. (b) The correlation between the variables, namely, problems and academic achievement, problems and study habits, problems and socio-economic and cultural level, and intelligence and study habits, were negative and ranged from - 0.03 to - 0.48. (iv) Problems and academic achievement were negatively related.

*505. PRASAD, B., *A Study of the Impact of Social Reinforcement on Academic Achievement*, Ph.D. Edu., Pat. U., 1977.

The prime objective of the investigation was to study the impact of social reinforcement on academic achievement. The hypotheses formulated were: (i) those working under the influence of social reinforcement would exhibit significantly higher achievement than those working without it; and (ii) the students of the experimental group receiving social reinforcement would exhibit progressive improvement in weekly tests systematically.

The sample consisted of 120 children of class VI with a mean age of 9.31 years. This sample was randomly divided into two groups, one experimental and the other control group. Lesson plans based on the prescribed course were developed. The Mohsin's Test of General Intelligence, academic record of performance, and weekly class tests were used to collect the data. Social reinforcement was given by praising the children publicly for their good performance. Statistical techniques like mean, standard deviation, t tests and two-way analysis of variance were used to analyse the data.

The important findings of the study were: (i) Experimental group was significantly higher in academic achievement than control group, which showed that social reinforcement was favourable to academic achievement. (ii) Experimental group was always superior to control group in individual tests also. (iii) Socially reinforced group was also superior significantly in comparison to non-reinforced group in week to week progress.

*506. PUSHPITA JOHN, *Some Socio-Personal Attitudes related to High and Low Academic Performance of Secondary School Leavers*, Ph.D. Edu., Ker. U., 1977.

The objective of the study was to identify cer-

tain attitudinal variables that would discriminate between high and low achievers in secondary schools. Eleven attitudinal variables were isolated for the study. They were: (i) risk taking, (ii) self-effort vs. fatalism, (iii) self-acceptance, (iv) other-acceptance, (v) competition, (vi) independence vs. conformity, (vii) authority, (viii) radicalism, (ix) future, (x) present, and (xi) past. The hypothesis that the eleven attitudinal variables selected will discriminate between high and low achievers was tested.

The study used a sample of 1660 subjects attending standard X of representative secondary schools of the Trivandrum District of the Kerala State. The sample was selected using proportionate stratified sampling technique. Eleven Likert-type attitude scales developed by the investigator, the Raven's Progressive Matrices (Standard Form) for measuring intelligence, a general data sheet for obtaining general and personal information regarding the respondent were used to obtain the data. School marks and marks in the S.S.L.C. Examination were noted. Four types of extreme groups based on achievement were worked out for comparison. They were: (i) general groups of high and low achievers, (ii) general groups of extremely high and extremely low achievers, (iii) general groups of high and low achievers with total marks in all subjects as criteria, and (iv) general groups of high and low achievers with marks in each of the separate school subjects as the criteria. Tests of significance for differences between means and the centroid method of factor analysis were used for analysis of data.

The major findings were: (i) the attitudinal variables which seemed to have the highest potency in discriminating high and low achievers were self-effort vs. fatalism, other-acceptance, independence vs. conformity, future, present, and past; (ii) the attitudes which seemed to have least effectiveness were risk taking, authority and radicalism; (iii) all the variables were found to be useful in discriminating between at least one or other of the subgroups of extreme achievers compared; (iv) three factors, namely, Realistic - futurism, Deterministic radicalism and Realistic - independence accounted for the total variance of the correlation matrix for the high achievers; and (v) four factors, namely, Unrealistic - independence, Self-oriented radicalism, Unrealistic - futurism, and Irrational acceptance were needed for explaining the variance of the low achieving group.

507. RAI, P. N., *A Comparative Study of a few Differential Personality Correlates of Low and High Achievers*, Ph.D. Edu., Agra U., 1974.

This study proposed to examine which of the

chosen personality characteristics differentiated between the low and high achievers. The chosen characteristics were achievement, anxiety, level of aspiration, need achievement, and intelligence. The specific objectives of the study were to find out (i) relationship between scholastic achievement and adjustment, scholastic achievement and anxiety, scholastic achievement and level of aspiration, scholastic achievement and n-achievement, and scholastic achievement and intelligence; and (ii) to establish regression equation between achievement as criterion and adjustment, anxiety, level of aspiration, n-achievement and intelligence as predictors.

The sample of this study consisted of 1000 students of science (biology) group of twelve higher secondary schools of Agra. Out of these students, three achievement groups were formed and matched on the basis of socio-economic status scores. The data were collected using the tools: (i) the Sinha's Adjustment Inventory, the Sinha's Anxiety Scale, the Shah's Level of Aspiration Test, the Mehta's n Ach. Test (Projective Test), the Jalota's Group Test of General Mental Ability, and the Kuppuswami's Socio-Economic Status Scale. The data were analysed with the help of frequency distribution, ogives, mean, SD, correlation, t test, regression equation and multiple R.

The findings of the study were as follows: Anxiety as a personality trait had a changing role in scholastic achievement. Low level of anxiety helped in achieving high, whereas very high level of anxiety was detrimental to achievement. Level of aspiration was not a significant correlate of achievement but it was desirable that students fixed up high goals commensurate with their ability and tried to achieve it. Low goal setting was in no way a desirable characteristic for better achievement. The n-achievement is a prerequisite for better achievement. It drove the students into academic activities. Intelligence was *sine qua non* for better achievement and adjustment; anxiety, n-achievement and intelligence were differential personality correlates.

508. REDDY, I. K. S., *The Role of Family, Locality and Other Factors in Determining the Nature of some of the Scientific Ideas among Elementary School Children in Grades I to V — a Cross-Sectional Study*, Ph.D. Psy., SVU, 1971.

The aim of the study was to relate sex, locality, age, general mental ability and children's family background to the nature of concepts acquired by the children. The objectives of the study were: (i) to find

out the relationship between family background to the nature of concepts acquired with special reference to the educational background of the family; and (ii) to find out the relationship between general mental ability and the nature of concepts acquired. The hypotheses tested in the study were: (i) sex difference will not be significantly related to the nature of concepts acquired; (ii) difference in locality and age of children will not be significantly related to the nature of concepts; (iii) mentally superior children will not significantly differ from those with lower mental ability with regard to the nature of concepts acquired; and (iv) difference in socio-economic and educational backgrounds of the family will not be significantly related to the nature of concepts acquired by the children.

The sample consisted of 2,250 subjects selected from the primary school going children in grades I to V (ages 5+ through 9+) in Chittur district of Andhra Pradesh from three different localities, viz., urban, semi-urban and rural areas. Subjects from the Telugu medium schools excluding those using other language media were chosen. The interview technique was adopted for collecting the responses.

The findings revealed that (i) age was significantly related to the nature of concepts acquired by them; (ii) urban children were significantly superior to rural children in respect of nature of concepts; (iii) the difference between boys and girls with regard to the nature of concepts acquired at all age levels (5+ through 9+) was not significant; (iv) higher mental ability was found to have no relationship with the nature of concepts acquired; (v) educational background of the family was found to have significant relationship with the nature of concepts of causal relation acquired by the children, while socio-economic background of the family was found to be not significantly related to the nature of concept; (vi) the number of years of schooling with age held constant, was found to be significantly related to the nature of concept acquired; (vii) the concept of life was better developed in comparison to the concept of causal relation in the children; (viii) a significant number of children at each age level exhibited more than one type of causal thinking; the level of the concepts acquired by children was found largely dependent on the exposure to rich and varied stimulation provided to them; children at even 5+ level were found to exhibit types of causal thinking and stages of concept of life normally reported to appear beyond 9 to 11 years of age; children exhibited different levels of thinking which had close relationship with the nature of concepts acquired.

509. REDDY, V. L. N., *A Study of Certain Factors Associated with Academic Achievement at the First Year Degree Examination, Ph.D. Edu., MSU, 1973.*

The main objectives of the study were to find out: (i) relationship between academic achievement in a subject or groups of subjects at the first year degree examination and (a) intelligence, (b) need for achievement, (c) personality, and (d) home environment of the students; (ii) the extent of relationship with academic achievement and their variation and contribution to academic achievement; and (iii) (a) extent of prediction of academic achievement by four variables together, (b) relative contribution of each variable when acting along with others, (c) variation in contribution by four variables from subject to subject, and (d) whether these variables contribute differently to the prediction of achievement in the same subject.

The sample consisted of 396 students of the government arts and science colleges affiliated to Sri Venkateswara University, Tirupati. The students were selected from three optional groups, namely, (i) mathematics, physics and chemistry (N = 110); (ii) chemistry, botany and zoology (N = 182); and (iii) history, economics and political science (N = 104). These students appeared at the first year degree examination in 1968 and were in the second year course in 1969. The tools used on the above sample were: (i) the questionnaire-cum-rating scale developed by the investigator based on the Kuppaswami's SES scale; (ii) the Mukerjee Sentence Completion Test; (iii) Cattell Culture Fair Test of Intelligence, Scale 3, Form A and Form B; (iv) the Cattell 16 PF Test, Form A (1962) and Form B (1961). The predictor variables were home environment, n Ach., intelligence, and personality, and criterion variables were first year university marks in English, Telugu, mathematics, physics, chemistry, botany, zoology, history, economics and politics.

The findings revealed that (i) socio-economic status and personality factors E, F, O and Q2 were not significantly related to achievement in any subject or group of subjects; (ii) the variables of parental value on education, emotional climate in the home, parental encouragement, educational facilities in the home, n Ach., intelligence, and personality factors of the 16 PF, namely, A, C, G, H, F, L, M, N, Q1, Q3 and Q4 were found significantly associated with achievement in one subject or the other; (iii) out of twenty variables studied, not even a single variable was significantly related to achievement in all the in-

dividual or group of subjects; (iv) variables significantly related to achievement appeared to differ from subject to subject or groups of subjects; (v) the extent of relationship varied from subject to subject in the case of achievement of those subjects with which a particular variable was significantly related; (vi) need for achievement, intelligence, personality factors such as Q4, G, I, M and H were found to be significantly related to different achievement criteria more often than the other variables; and (vii) home environment appeared to be more prominent as potential predictor of academic achievement after intelligence.

*510. SEETHA B. C., *An Inquiry into the Psychological and Social Factors Affecting Academic Achievement, Ph.D. Psy., Ban. U., 1975.*

The aims of the study were: (i) to examine the psychological and social factors affecting academic achievement; and (ii) to examine whether nonachievers as a group differ from the achievers on these factors.

The criterion adopted to select high, average, low and inconsistent achievers was: (i) high achievers were those passing the Bachelor's degree examination in the first attempt, obtaining first class in optional courses; (ii) average achievers were those passing the Bachelor's degree examination in the first attempt, obtaining second class in optional courses; (iii) low achievers were those passing the Bachelor's degree examination in the first attempt, obtaining third class in optional courses; and (iv) inconsistent achievers were those passing the Bachelor's degree examination in the first attempt with mixed classes in optional courses with respect to minor and major optional subjects. Out of 566 students, belonging to both arts and science courses, 126 students who passed their degree examination in the first attempt formed the achievers group. A group test of general mental ability, a study-habits inventory, the Thematic Apperception Test, the Washburne's Social Adjustment Inventory, a cancellation and letter-digit substitution test, a picture frustration test, an interest inventory, the 16 PF test, and a personal data sheet were used to collect the data. Chi-square test, t test, and factor analysis were used to analyse the data.

The following were some of the findings of the study: (i) High achievers possessed superior intelligence when compared with low and non-achievers. (ii) Study habits had a positive relationship with academic achievement in that high achievers possessed good study habits while low achievers had poor study habits. But in case of achievers and non-achievers,

there was no significant relationship between academic achievement and study habits. (iii) Greater need-achievement was found in case of high achievers than low and non-achievers. (iv) No significant relationship existed between interest and academic achievement. (v) No significant relationship existed between social adjustment and academic achievement. (vi) Out of sixteen personality factors, three factors, namely, A, B, and L, had significant relationship with academic achievement.

511. *SHAHI, S. L., Sex Differences in Factorial Structure of Cognitive Area at School Level, Ph.D. Edu., Gor. U., 1973.*

The major objective of the study was to examine two hypotheses, namely, there are no sex differences in the organisation of mental abilities of boys and girls, and the operation of mental functions cannot be separated from content.

The sample was drawn from four districts of eastern U.P. using the technique of random cluster sampling. As many as 400 boys and girls reading in class X were the respondents. The tools consisted of nine tests of different functions and contents and a test of general intelligence (B.P.T. seven). The statistics used were the descriptive statistics, critical ratio, Pearson's r , factor analysis, etc.

The major findings were : (i) spatial content as an independent factor was demonstrated among boys but not among girls; (ii) 'g' was represented among boys by a combination of reasoning and memory function along with verbal content, while among girls it was represented by a combination of reasoning function along with verbal and spatial content; (iii) verbal reasoning in girls was the most complex factor which included all functions and all content moderately related to 'g'; (iv) spatial reasoning in boys represented only verbal content in a low measure and in girls this factor represented reasoning and memory function unrelated to 'g'; (v) in case of boys high 'g' saturation went with even higher loadings in numerical reasoning and in girls high 'g' saturation went with even higher loading in verbal reasoning; (vi) factors common to boys and girls were spatial content, verbal content with reasoning and memory function; (vii) the study demonstrated only the spatial content as an independent factor; speed could not emerge as an independent function; (viii) the hypothesis of independence of functions and content was not supported except in case of spatial content and memory function; (ix) the hypothesis of no sex difference in mental structure of boys and girls was also not supported.

*512. *SHARMA, G. S., Attributes of Underachieving Undergraduate Students, Ph.D. Edu., Mee. U., 1978.*

The objective of the study was to find out the personality attributes of the undergraduates who failed to make academic achievement to their expected level of academic achievement. The variables under study were academic achievement, intelligence, socio-economic status, needs, adjustment, self-concept, interests, traits, study habits, level of aspiration, and motivation.

A sample of 1000 students was drawn by stratified random sampling procedure. The application of regression equation of academic achievement on intelligence resulted in 177 underachievers (146 males and 31 females; 112 urban and 65 rural). The variables were measured using (i) the Cattell's Intelligence Test Scale 3 Form A, (ii) the Sharma's Socio-Economic Status Scale, (iii) the Bhatnagar's adapted version of Edward Personal Preference Schedule, (iv) the Chatterjee's Nonlanguage Preference Record, (v) the Cattell's 16 PF Questionnaire, (vi) the Rastogi's Study Habits Inventory, (vii) the Ansari's Level of Aspiration Test, and (viii) the Dole Achievement Motivation Scale. Statistical techniques of product-moment correlation and analysis of variation were used to analyse the data.

The findings of the study were as follows : (i) The more the personality needs, viz., exhibition, autonomy, affiliation, succorance, nurturance, endurance and order, were frustrated, the more were the chances of an undergraduate becoming an underachiever. (ii) Withdrawal, inferiority and emotional instability were the three behavioural characteristics which were found to contribute significantly to academic underachievement. (iii) Three interest areas, namely, agriculture, crafts and outdoor sports contributed significantly to academic underachievement. (iv) Personality traits, namely, sizothymic, threclia, acetia, guilt proneness, low integration, high ergic tension, contributed significantly to academic underachievement. (v) Study habits and socio-economic status were found to be associated with underachievement. (vi) Unrealistic level of aspiration adversely affected the academic achievement.

513. *SHIRUR, R. R., Assessing the Impact of Nutrition Education Program on Pupils and Teachers of Elementary Schools, Ph.D. Edu., Poona U., 1972.*

The major objectives were : (i) to make the teachers realise the value and importance of nutrition education and services; (ii) to improve the knowledge

and understanding of teachers and pupils in food and health; (iii) to formulate the concepts for teachers; (iv) to evolve teaching techniques and materials; (v) to experiment with the different techniques and materials evolved and evaluate them; (vi) to correlate and integrate nutrition education and services with other learning areas and activities of the school; (vii) to measure the impact of techniques and materials on the teachers' and the pupils' knowledge and application of nutritional principles; and (viii) to prepare a teachers' handbook on nutrition.

The sample represented the two developmental blocks—Wada and Indapur of western Maharashtra. Wada represented a backward community while Indapur a forward one. All the schools in both the blocks within a radius of twenty kilometres from the town (fifty-nine and forty-one) were covered. The schools were stratified into types as single-teacher, double-teacher and multi-teacher schools and these were randomly allotted to the control and experimental groups. The school, treated as a unit was allotted to one of the groups. A detailed examination of the existing syllabi in general science, health and hygiene, and of various visual aids for elementary schools was made. Textbooks in general science were scrutinised in order to find out the content areas on 'food and health'. Teachers from a large number of schools in both blocks were interviewed individually and in groups to appraise and discuss the food grown locally, seasonal and scarce food, and regarding feeding programme whenever it was in operation. Nutrition tests of objective type for pupils of grades I, III, IV and VI and for teachers were constructed to assess their nutritional knowledge and application. These tests were tried out on small samples and item analysis was conducted to compute the discrimination and difficulty indices before accepting the items for final administration. After revision these tests were administered to pupils and teachers before starting the experiment in order to know the initial level of knowledge of teachers and pupils in nutrition. A nutrition guide book was prepared for teachers based on syllabi for grades I to IV and VI. For experimental group an orientation course was conducted. The education programme was conducted in both the blocks for seven months. At the end of the programme, same tests were repeated on the pupils of grades I to IV and VI and the teachers in both experimental and control groups. A gap of forty-five days was given before administering the post-treatment test. An opinionnaire was administered at the end of the programme to collect information on several aspects of

the guidebook and on education programme. Prior to and after the experiment the teachers from experimental group were asked to collect information regarding: (i) week's menu (qualitative) of each child in grade IV and VI; and (ii) a record (qualitative) of eatables purchased by each pupil in grades I to IV. Teachers were informed to maintain records of the pupils' progress in learning reading and writing as the study involved teaching nutrition through language. For analysis of data t tests were computed between the scores of controlled and experimental groups.

The findings revealed: (i) the concepts or the topics included in the syllabi for different grades were not clear cut and specific; they did not suggest content areas of teaching; (ii) textbooks in general science used by teachers were inadequate for the purpose of teaching; (iii) ten major nutrition concepts were found useful for teachers; (iv) as a result of experiment, there was an improvement from eighteen percent to fifty-five percent of pupils who could read well and seventeen percent to fifty-five percent who could write well (grade II); (v) consequent to the education programme, pupils developed better habits and attitudes towards food; (vi) there was positive impact of education programme on the teachers; (vii) the feeding programme in the school had no influence on the knowledge of the pupils on nutrition; and (viii) the education programme increased the nutrition knowledge of the pupils and teachers.

514. SINGH, B. B., *Analysis of Scholastic Aptitude for Learning Geography at Higher Secondary Stage, Ph.D. Edu., Gor. U., 1974.*

The specific aims of the study were: (i) to prepare an aptitude test battery in geography for the higher secondary stage of education (i.e., for classes XI and XII); (ii) to find out inter-correlations between different subtests of the aptitude test battery and to determine the amount of contribution made by different subtests to the criterion score; (iii) to find out the factors responsible for functional relationship between different subjects; (iv) to prepare an achievement test in geography for the higher secondary students appearing in the final examination of intermediate classes in order to obtain criterion score; and (v) to find out predictive validity of the prepared battery of aptitude tests and to establish norms.

A list of fifteen abilities (functions) relevant to the study of geography was prepared. These listed attributes were weighted on the basis of considered opinions and judgments of forty teachers recognised for competence and experience in the teaching of geography. Out of these abilities, only five on the

basis of maximum weightage were selected finally for the preparation of aptitude test battery. They were : ability to understand physical phenomenon, ability to recognise and recall facts and figures, ability to comprehend descriptive matter, ability to read, recognise and place symbols in map, and finger dexterity and drawing ability. An achievement test in geography was prepared for the criterion scores. The usual methodology for standardisation was used. The sample consisted of thirtyone higher secondary schools located in eastern districts of Uttar Pradesh selected using random sampling technique.

The investigation led to the following conclusions : (i) correlational study revealed that the understanding of physical phenomenon, recall of facts and figures and comprehension of descriptive matter were the main abilities in case of boys, whereas finger dexterity, drawing ability, recall of facts and comprehension of descriptive matter were the main abilities in case of girls; these factors appeared to be playing important role in the total achievement; these abilities had influenced their scores in the criterion test also; (ii) factor loadings revealed that in case of boys, the first factor 'Concrete-principle' was more important, whereas in case of girls the factor 'Abstractive-principle' was found to be more important; the ability to understand physical phenomenon, to recall facts and findings and to comprehend descriptive matters appeared to be playing important role in the achievement of boys while in case of girls, ability to recognise symbol and finger dexterity appeared to play major role in their achievement; (iii) the multiple R values of 0.71 in case of boys and 0.62 in case of girls were fairly high; and (iv) the predictive validity of the prepared aptitude test battery was fairly high being 0.65 in case of boys and 0.56 in case of girls and it indicated its forecasting efficiency on the criterion test.

515. *SINHA, N. C. P., A Study of Intelligence and Some Personality Factors in relation to Academic Achievement of School Students, Ph.D. Psy., Magadh U., 1967.*

The study aimed at investigating into the relationship of intelligence, achievement motivation, manifest anxiety, extraversion-introversion and neuroticism or emotionality with the academic achievement of students. The following hypotheses were tested : (i) science students would score higher on the intelligence test than students of arts; and (ii) the high and low achievers would differ significantly in respect of their intelligence, n Ach, manifest anxiety, extra-

version-introversion, neuroticism and emotionality scores.

The sample consisted of 400 male students studying in classes X and matric in schools recognised by Bihar School Examination Board in the towns of Patna and Gaya. In all 200 were high achievers and 200 were low achievers. The criterion for the academic achievement was the aggregate of marks of two consecutive final examinations. The tools used in the study were : (i) the Nafde's Non-Verbal Test of Intelligence (NVTI); (ii) the Taylor's Manifest Anxiety Scale (TMAS); (iii) the McClelland's TAT Picture Cards; and (iv) the Eysenck's Personality Inventory (EPI). The TMAS, the EPI and instructions in n Ach test were translated into Hindi.

It was found that (i) the two groups were significantly discriminated (beyond 0.01 level) on all the variables, namely, intelligence, achievement motivation, manifest anxiety, extraversion-introversion and neuroticism or emotionality; (ii) science students scored significantly higher on the intelligence test than the students of arts; (iii) intelligence and academic achievement were significantly related (beyond 0.01 level); (iv) academic achievement was found to be positively and significantly related to achievement motivation and manifest anxiety at 0.01 level, and with extraversion-introversion and neuroticism at .05 level; and (v) by partialling out the effect of intelligence, the relationship between achievement motivation, manifest anxiety, extraversion and neuroticism remained the same, except the relationship between extraversion and academic achievement and also that between neuroticism and academic achievement lost their statistical significance.

- *516. *SRIVASTAVA, G. P., A Study of Personality Factors as Predictors of Academic Achievement of High School Students, Ph.D. Edu., BHU, 1976.*

The study was undertaken with the following objectives : (i) to adapt and standardise Jr.-Sr. High School Personality Questionnaire (HSPQ); (ii) to establish new norms for the Hindi version of the HSPQ thus developed; (iii) to find out that relationships between the personality traits and (a) achievement in optional subjects, (b) achievement in compulsory subjects, and (c) total achievement, among science and arts students; (iv) to develop HSPQ personality profiles of students passing in first, second and third divisions in science and arts groups; and (v) to develop specification equations for the prediction of school achievement, academic groupwise as well as compulsory, optional and total achievement scorewise.

The HSPQ Form A prepared by Cattell and Bell was standardised on 440 science and 380 arts students. For the purposes of differential, correlational and predictive study, the sample consisted of 250 science and 94 arts students whose academic achievement records could be procured.

The important results of the study were as follows : (i) Reserved, intelligent, submissive, adventurous, zestful, tender minded and high strength of self-sentiment were the typical personality characteristics of high achievers (first divisioners) in the arts group. (ii) Intelligence, adventurous, tender minded, zestful and high strength of sentiment remained to be the distinctive features of second divisioners in the arts group. (iii) Sizothymia and submissiveness were the factors which discriminated first divisioners from second divisioners in the arts group. (iv) The profiles of third divisioners were strikingly similar to the normal standardisation group. (v) Affectothymic, intelligent, emotionally stable, adventurous and self-sufficient students were high achievers (first divisioners) in the science group. (vi) The second and third divisioners in the science group were more or less similar to normal standardised group, though the second divisioners were high on intelligence significantly. (vii) High achieving arts students were distinctly sizothymic, whereas high achieving science students were affectothymic. (viii) It was not possible to differentiate third divisioners in the arts group, second and third divisioners in the science group on the basis of their personality scores from the general population. (ix) Out of the fourteen personality factors only seven factors, namely, A, B, E, H, I, J, and Q₃ differentiated high achievers in arts group from general population. (x) Second divisioners in the arts group could be differentiated from the general population on the basis of their scores on the factors B, H, I, J and Q₃. (xi) Five factors, viz., A, B, C, H, and Q₂ differentiated science high achievers from the general population.

517. SRIVASTAVA, J. P., *A Study of the Effect of Academic and Personality Characteristics on the Academic Achievement of Boys Reading in Class X, Ph.D. Edu., Raj. U., 1974.*

The main objectives of the study were : (i) to find out the extent to which personality traits are related to academic achievement; (ii) to find out how far academic motivation affects scholastic achievement; (iii) to find out how far these variables (each personality trait and academic motivation) contribute to the prediction of academic achievement; (iv) to find out the best combination of personality traits and

academic motivation, intelligence, and socio-economic status (SES) which contribute to the prediction of academic achievement.

The sample included 1,131 male students studying in class X drawn from twelve secondary and higher secondary schools of six districts from Rajasthan. The following tools were used for data collection : (i) the HSPQ (High School Personality Questionnaire); (ii) the Test of Academic Motivation; (iii) the Socio-Economic Status Scale Questionnaire (SESQ, Urban form); (iv) the Culture Fair Test of Intelligence; and (v) achievement tests in (a) elementary mathematics, (b) general science, (c) social studies, and (d) Hindi, constructed by R. P. Bhatnagar. The statistical techniques used were simple correlation, partial correlation, multiple correlation, multiple regression, forecasting efficiency, coefficient of alienation, coefficient of determination, and test of fiducial limits.

The major findings of the study were as follows : (i) Personality traits of reserve – outgoing and less intelligent – more intelligent were significantly correlated with academic achievement at 0.01 level of significance. (ii) Personality traits of shy-venturesome, expedient-conscientious and undisciplined-controlled were significantly correlated with academic achievement at 0.05 level of significance. (iii) Traits of tough minded – tender minded, phlegmatic – excitable, relaxed – tense were negatively and significantly correlated with academic achievement. (iv) Reserve – outgoing and less intelligent – more intelligent traits of personality significantly influenced the academic achievement at 0.01 level of significance when SES was held constant. (v) When SES was held constant, personality trait of vigorous – doubting influenced the academic achievement at 0.05 level. Personality trait of tough minded – tender minded was found to influence significantly but negatively the academic achievement at 0.05 level. Relaxed – tense trait of personality was found to influence the academic performance in the negative direction at 0.01 level of significance. (vi) When intelligence was held constant personality trait of relaxed – tense was negatively correlated with the academic achievement. Personality characteristics of vigorous – doubting was found to influence the academic achievement in the negative direction when SES and intelligence were held constant. Relaxed – tense trait of personality was found to influence the academic achievement in the negative direction when intelligence and SES were held constant. (vii) Academic motivation was found to influence the academic achievement even if SES and intelligence were held constant. (viii) Each personality trait contributed to the academic achievement

along with academic motivation. (ix) High and low achievers differed significantly on the traits of reserve – outgoing, less intelligent – more intelligent, phlegmatic – excitable, expedient – conscientious, shy – venturesome, tough minded – tender minded, undisciplined – controlled and relaxed – tense. (x) High and low academic achievers were found to differ significantly in their academic motivation.

518. *SUDAME, G. R., A Study of the Effect of Library Use on Academic Achievement of Postgraduate Students in the M. S. University of Baroda, Ph.D. Edu., MSU, 1973.*

The study aimed at finding out the effect of use of library on academic achievement of postgraduate students in the M. S. University of Baroda.

The sample of the study consisted of 341 postgraduate students of which fiftysix were in M.A., 104 in M.Sc., and 141 were in B.Ed. The dependent and independent variables were academic achievement and library use respectively. The control variables were the socio-economic status and level of intelligence. The tools administered to the above sample were : (i) the Raven's Progressive Matrices for measuring intelligence and (ii) the Kuppaswami's Socio-Economic Status Scale (urban) to measure the SES of the students. The statistical techniques used were : multiple regression analysis and t test. The final examination marks were considered as dependent variable in the regression equation.

The study revealed the following : (i) There was no significant effect of socio-economic status on academic achievement of the students. (ii) The level of intelligence had a significant effect on the academic achievement of B.Ed. students but not that of M.A. and M.Sc. students. (iii) The M.A., M.Sc. and B.Ed. students on an average borrowed about 18.59, 11.76 and 6.38 books per student per year respectively. (iv) In addition to books for home reading the M.A., M.Sc. and B.Ed. students had reported reading 2.5, 2.3 and 1.5 books and journals per week in the library. (v) A test of familiarity with the rules and regulations of the Hansa Mehta Library was given to each student in the sample. The maximum score was twentyfive. The means of the scores obtained by M.Sc., M.A. and B.Ed. students were 11.3, 10.9 and 8.2 respectively. (vi) The effect of library use on academic achievement was most pronounced in the case of B.Ed. students.

519. *SUTHAR, B. P., A Study of the Teaching of Mother Tongue (Gujarati) in the Secondary Schools of Gujarat State, Ph.D. Edu., SPU, 1974.*

The study aimed at bringing out a comprehen-

sive picture of the existing programme of teaching Gujarati in the secondary schools of Gujarat. The objectives of the study were : (i) to collect and interpret the data regarding the personnel of the secondary schools connected with the teaching of the mother tongue and to offer suggestions for the betterment of the personnel; (ii) to collect and interpret the data regarding the teaching work being done by the teachers in the mother tongue, their academic and professional qualifications, equipment, available facilities and encouragement; and (iii) to prepare and suggest a broad developmental programme of instruction in the mother tongue for standards VIII, IX and X.

The sample consisted of 390 secondary schools of Gujarat out of which 357 secondary schools were of mixed type and thirtythree were girls' schools. Observation, questionnaire and interview were used for data collection. Data were also collected from the records, documents and other published materials. The data pertaining to qualification of teachers, their methods of imparting instruction, their utilisation of audiovisual materials, the systems of examinations and remedial work were collected. Descriptive statistics was used for the analysis of the data.

The findings of the study revealed that (i) majority of teachers were not found qualified to impart instruction efficiently in Gujarati; (ii) The teachers' methods of imparting instructions were found to be mostly hackneyed; (iii) teachers were making very little use of audiovisual materials to make their programmes interesting and living; (iv) systems of examination seemed to be crippled in testing the pupils' academic attainments in all their details; and (v) remedial work was found to be traditional and unscientific.

*520. *TANDON, S., A Psychological and Ecological Study of Underachievers, Ph.D. Edu., BHU, 1978.*

The important objectives of the study were : (i) to study the personality characteristics of the underachievers; (ii) to study the anxiety level of the underachievers; (iii) to study the home environment of the underachievers; (iv) to study the nature of relationship between personality traits and scholastic achievement among the underachievers; and (v) to study the nature of relationship between home environment and scholastic achievement of the underachievers.

The sample consisted of 200 students of class X who had failed at the high school examination of the Board of High School and Intermediate Education, Uttar Pradesh and had an IQ of 110 or above.

They belonged to the intermediate colleges of Varanasi City. For the purpose of comparison, 200 students who had an IQ of 110 or above and had secured first division at the above examination were selected from the respective intermediate colleges. The tools used were : (i) the Joshi's Test of General Mental Ability, (ii) the Hindi version (by Kapoor) of the Cattell and Eber's Sixteen Personality Factor Questionnaire (Form A), (iii) the Sinha's Anxiety Scale, (iv) the Jain's Home Environment Scale, (v) a general information blank for class teachers to give their opinion about students' attendance, interest in studies, health, friends circle, leisure time activities, etc., and (vi) a data sheet for collecting information about the parents' academic qualifications, profession, income, caste, number of siblings and the ordinal position of the subjects.

The important conclusions of the study psychological factorwise were as follows : (i) The male group of underachievers displayed the following personality characteristics — easy-going and outgoing, emotionally less stable, low in frustration, shy, apt to inferiority feeling, diffident, pessimistic, moody, depressed and highly anxious. (ii) The male underachievers were not diligent, were gossip monging, took less interest in studies, spent time in roaming, were not obedient and not regular in attendance, and did not have sophisticated friends circle. (iii) The female group of underachievers were found to be pessimistic, harsh, assertive and highly anxious. They were not diligent, took less interest in studies, spent more time in roaming about and had less sophisticated friends. The ecologicalwise conclusions were as follows : (i) The physical, emotional and socio-economic conditions of the male group of underachievers were not wholesome. Their parents were academically less qualified, had professions which were less remunerative and had large families. (ii) The home environment was not found to be a relevant factor in the underachievement of female underachievers.

521. THAKUR, R. S., *A Study of the Scholastic Achievement of Secondary School Pupils in Bihar*, D.Litt. Edu., Bih. U., 1972.

The main purpose of the study was to investigate into the scholastic achievements of secondary school pupils of Bihar in the age group of thirteen and a half to twentyone years. The main aims were : (i) to investigate whether scholastic achievement in different subjects of the secondary school pupils was upto a standard level, and if not, to trace back to the previous performance so as to establish a single or a group of subjects significantly responsible for the

retarded growth in achievement level; (ii) to investigate whether academic and nonacademic correlates such as intelligence, aptitude, interests, achievement motivation, sex, socio-economic status, and age were significantly related to the scholastic achievement levels.

A sample of 780 science reading students of class XI during the academic session of January 1966 – December 1966, were selected from different schools of Bihar State. Tools used for data collection were : (i) the Bihar Verbal Intelligence Test; (ii) the Mehta Achievement Motivation Test; (iii) the Science Aptitude Tests in Physics and Chemistry; (v) the Combined Socio-economic Status Scale; and (v) a questionnaire prepared by the investigator.

The major findings were : (i) the group performance in all the branches of scholastic achievement did not differ significantly; (ii) physics was found to be responsible for lowering the standard of scientific achievement; (iii) for classes VIII to XI it was observed that there was stagnation in the most probable performance in the field of language; (iv) the level of most probable performance in social sciences improved from classes VIII to IX; (v) the group performance of boys was superior to that of girls in all branches; (vi) the best group performance of upper middle class was found to be followed by middle class, upper class, lower middle class and lower class; (vii) scholastic achievement and intelligence were significantly associated; and (viii) the correlation between achievement motivation and science aptitude was significant for boys only.

522. VORA, I. A., *Critical Study of the Present Position of Teaching English in Secondary Schools of Gujarat State*, Ph.D. Edu., SPU, 1973.

The present study aimed at providing a broad picture of the various dimensions pertaining to the teaching of English as a second language in Gujarat.

The sample consisted of a group of 618 teachers from standards VIII to XI of secondary schools, selected randomly. For the purpose of personal interviews, secondary schools and teacher colleges were selected randomly. From amongst the course planners and textbook writers, six of the framers' category and four of the writers' category were interviewed on the basis of the items of the questionnaire. Three tools were prepared to evaluate the syllabus in English for standards VIII, IX and X and textbooks prescribed by the state government. The tools administered were : (i) tool of inquiry in question form; (ii) the spot check syllabus evaluation scale; and (iii) the

spot check textbook evaluation scale. The data were collected pertaining to training of teachers in English, syllabus committee, framing of the textbooks, handbook for the teachers, instructional material, use of structural approach in teaching English and composition work by using the above tools and interviewing the school principals, course framers and textbook writers.

The major findings of the study were as follows :

- (i) In respect to training, only thirty percent of the teachers had their training in English and the rest had their training in subjects other than English.
- (ii) The syllabus revised in 1962 by the committee, appointed by the board, was found to be unscientific.
- (iii) While framing the textbooks, the sociological background of the students and the psychological factor of the particular age group did not seem to be taken into consideration.
- (iv) Teachers in Gujarat were provided with a handbook for the textbook to be used in the classroom.
- (v) Teachers had no choice of the instructional material as the only material available in the market were some workbooks and copybooks.
- (vi) Forty percent of the teachers had favoured structural approach to teach English.
- (vii) Composition work was the weakest link in the teaching programme which was not associated with the textbooks.

523. *WALAYTIRAM, Effect of Some Non-Cognitive Factors on the High School Examination Results of Candidates at Upper and Lower Intelligence Levels, Ph.D. Edu., Kur. U., 1974.*

The present investigation aimed at investigating the effects of the different levels of three independent noncognitive variables, viz., neuroticism-stability, extroversion-introversion and achievement motivation and of their interactions upon the achievement in mathematics, English, science, Hindi and social studies in the matriculation examination of Haryana board among the boys of lower and upper levels of intelligence.

For obtaining two levels of intelligence, three levels of neuroticism-stability (N), three levels of extroversion-introversion (E) and three levels of achievement motivation (A), the following tests were used : (i) the Jalota Group Test of General Mental Ability, (ii) the Maudsley Personality Inventory (Hindi version) adapted by Jalota and Kapoor, and (iii) the De's Sentence Completion Test (Hindi version). The marks of the candidates were obtained in the subjects of English, mathematics, social studies,

Hindi and science in matriculation examination held in 1972 from the office of the Board of School Education, Haryana. The three way analysis of variance of factorial design was used in the present study using three noncognitive independent variables with three levels of each. Twenty replications were made for each of the twentyseven treatments. The sample consisted of 2,676 candidates from the four districts of Haryana State selected randomly. The schools were sorted out in these districts, the result percentages of which fell in the range of about forty to sixty. The data were analysed by finding statistical measures like mean, SD, percentage, etc., and the main effects and interactions were tested for their significance.

The conclusions of the study were as follows : Achievement motivation had significant influence on all the subjects at the lower level of intelligence but at the higher level in science only. Motivation did not show any effect unless it was of a sufficiently high order. In the case of neuroticism-stability, in the lower intelligence group, the main effects of this factor were significant in all subjects except social studies where there was significant interaction with (A). In the higher intelligence group, the main effect of the neuroticism-stability was significant only in social studies and it had significant interaction in Hindi alone. The main effect of 'N' was significant in the lower intelligence group and the mean achievement was the highest at the neuroticism level (N+). In no subject, besides social studies, did neuroticism-stability show a significant main effect; in social studies the highest mean was at the stability level. In case of extroversion-introversion, the dimension of personality did not play a significant role in any subject in the lower intelligence group either in its main effect or in its interaction with 'A' or 'N'. In the higher intelligence group, it appeared as a significant factor in different subjects except social studies either in its main effect or in its interaction with other factors. In English and mathematics, the upper intelligence group of the boys at the lower level of extroversion, that is, at the introversion level (E—) fared the worst. In science the mean of introverts (E—) was the lowest. The level of this trait of personality dimension did not cause any significant difference in the academic achievement of the boys with less than average intelligence. The extroverts, ambiverts and introverts fared almost alike. The introverts did the worst in most of the subjects.