CHAPTER III

GENERAL BACKGROUND OF THE PROBLEM
In the present chapter, the approach to present the review of related literature has been followed in the light of the theoretical framework of correlates of academic achievement which frequently occur in the relevant research studies. Such correlates may have implications for over- and under-achievement as also for these discrepant academic achievement groups at different levels of intelligence. Attempts have been made to review variables on which relatively more emphasis has been laid down by research workers in this field. Outline of the theoretical correlates is being presented below:

Correlates of Academic Achievement

I

II

I-A

I-B

Intelective

Non-Intelective

Environmental

(Situational or Objective)

Behavioural

(Psychological or Subjective)

Intelligence

Pers n- Adj. Study n-Ach Inter- Cre- Self Sex

ality ment Habits tests ativity consent Aspir.

Socio- Medium Methods Evaluation Educational

economic of Inte- of tion facili-

tions of truction teaching System ties

Out of the above correlates review of only those correlates is made which have been included in the present study.
Voluminous research work in the past has established that grades in school depend to a great extent on intelligence. Studies by Terman and others (1925), Hollingworth and Cobb (1923), Carrell (1930), Sanford (1932), Hedgesey (1933), Gowan (1955), Ham mond and Cox (1967) and several others have reported that superior intelligence is associated with high academic achievement. High intelligence accounts for superior problem-solving abilities, affective work habits, independent thinking and desirable behavioural characteristics leading to high academic achievement.

As far back as in nineteen thirties, Pintner (1931) and Strong (1937) made detailed reviews of research literature confirming the significant role played by intelligence in educational attainment. Recently, scientific investigations in the related field, (for instance by Briggs, 1962; Mitchell, 1963; Keller and Rowley, 1964; Sheffield, 1966; Harris, 1968; Vernon, 1970) have all given considerable weight to intelligence as a major influencing factor in the domain of academic achievement. A few of the studies cited below will bear testimony to this effect.

Freeman (1942), on the basis of so many research findings reached the conclusion that correlation between IQ and academic achievement ranged between .40 to .60 with an approximate value of mean equal to .51. Crawford and Burnham (1946) reported the range of ‘rs’ between the two to be .60 to .65. Griffin and Flaherty (1964) obtained a ‘r’ of .63 between Scholastic Aptitude Test (SAT) and GPA. Lennon (1950) reported that at grade IV and above, the correlations between intelligence and achievement
were positive and ranged from .11 between IQ and Arithmetic fundamentals at second grade to .86 between IQ and vocabulary score at 8th grade.

Dibble (1967) observed zero order 'r' of .48 of intelligence with the criterion variable of academic achievement. Cuppens (1967) studied Dutch High School subjects with Dutch version of the DAT and CMA scale. Results showed a positive correlation between DAT intelligence and GPA (r = .28) and DAT intelligence and DAT achievement (r = .31). Lewis (1967), while making a multivariate analysis of variables associated with academic success within a college environment, found that mental ability was most significantly related to academic achievement. Garme (1968), in his studies, established the finding that one of the best predictors of academic achievement was the verbal version of the scholastic aptitude test. Rattan and MacArthur (1968) reported a highly significant 'r' of .57 between achievement and progressive matrices. Simpson (1970) revealed the fact that there was a 50.3 percent congruence between IQ and GPA ranking. Diwan (1970), obtained 'r' of .51 between Jalota's Test of Verbal Mental Ability and the annual marks of ninth grade. Pandey and Singh (1970) obtained an 'r' of .46 and Dhaliwal (1971) found an 'r' of .52 between intelligence and the criterion variable of achievement. Rao, however, found low 'r' of .23 between these two variables. The above studies undoubtedly show positive and significant relationship between academic achievement and intelligence. But, at the same time, these studies reveal lot of variation in 'r' between the two variables. Super (1949), on the basis of summary of review
of various studies, concluded that \( r \) between intelligence and achievement ranged from .30 to .80 at school level. At college level, however, this range lowered down from .20 to .70. Stephens (1960) pointed out even greater variations in the values of \( r \) ranging from .10 to .90.

In one of the studies conducted by Green and Farquhar (1965), the obtained exceptionally low and insignificant negative \( r \) of -.01 between verbal aptitude and achievement of Negro males was drastically discouraging and alarming. They, however, observed a highly significant \( r \) of .62 with white males, while making use of the same instruments.

Pelechano (1972) too, had rightly pointed out that intelligence was not systematically related to academic performance. That is why Thorndike (1963) has emphatically warned the investigators that there is no 'a priori' justification for expecting an exact, one-to-one correspondence of academic achievement with a scholastic aptitude measure. This justifies the fact that there are other significant determinants, for example, non-intellective and environmental determinants as studied by Green and Farquhar (1965), Taylor and Farquhar (1966), Cattell and Sealy (1965), Cattell and Sweeney (1966), Entwistle and Welsh (1969), Entwistle and Wilson (1970), Entwistle and Entwistle (1970), Entwistle and Brennan (1971), Cattell et al. (1972) and many others.

Besides, in a way, intelligence is just a 'promise' (Super, 1949) that shows possible prospects of success in academic field, but that is not the actual attainment. Even when intelligence is made constant at one or more levels, there are still wide variations in achievement. This fact has given origin to the concepts of
over- and under-achievement and the behavioural and environmental correlates of this phenomenon. Though, as cautioned by Strang (1937), none of these correlates, if taken singly is more valid than the score of a good intelligence test, yet they, along with intelligence yield a better prediction of achievement than intelligence alone. The review of non-intellective correlates of academic achievement is given in the following sections:

II-B. NON-INTELLECTIVE BEHAVIOURAL CORRELATES OF ACADEMIC ACHIEVEMENT

Ia. ACADEMIC ACHIEVEMENT AND ADJUSTMENT

Modern era in education is an era of challenges. One problem inevitably follows the solution to another and psychologists and educators have long been tantalized by challenges arising from solution of one problem, giving origin to the next. One of the trickiest dilemma challenging the educators and psychologists relates to the identification of correlates of academic achievement. The mushroom growth in research since half a century back, on intellective correlates of academic achievement solved the problem that they do play significant role, yet they do not explain the whole of the 'variance'. So investigators hopefully concerned themselves with testing a large pool of non-intellective variables, so as to devise a more comprehensive framework to explain and predict academic achievement. Pointing to the importance of non-intellective correlates, Fishman (1962), said that it is his "strong conviction that non-intellective predictors of intellective criteria will finally become both important and comprehensive variables only if we realized that they require alternative theoretical models and empirical designs depending on the specific nature of the individuals.
and of the institutional differences that are known or assumed to obtain between the high school and the college setting in a given study context.

One of the basic non-intellective variables that strikes the mind of the investigators, is the adjustment of the individual in different situations of life that can have possible effect on scholastic proficiency. As defined by Holman (1973), adjustment is "a harmonious relationship with the environment, involving the ability to satisfy most of one's needs and meet most of the demands, both physical and social that are put upon one." A child spending the most formative years of more than a quarter of his life in school, college and university education presupposes that for healthy educational growth of this period, he must have 'harmonious' relationship with the environment so as to meet most of his needs and demands involved therein.

Research literature reveals that differentiation between adjustment correlates and personality correlates of academic achievement has not been highlighted for the simple reason that adjustment is thought to be a dimension of personality and which it is. But in view of its importance, attempts have been made here to study adjustment and academic achievement under a separate caption.

First systematic attack on this challenging problem at school level, was made by Gough (1949), who studied about the factors relating to academic achievement of 6th grade students. He obtained low but consistently negative correlations between the Brown Personality Inventory and five achievement tests. The tendency was that more adjusted pupils secured lower achievement test scores.
Dana and Baker (1961) conducted a study on high school sample and found that three new scales of the Bell adjustment inventory were capable of predicting high, medium and low school achievement. They concluded that high achievement in high school was based on relative freedom from conflicts with parents and from personal problems coupled with social ease and extraversion. Briefly, as adjustment increased, grade-point average also increased. Besnick (1951) gave similar positive report. Januar (1961) found home, social and emotional adjustments to be positively related to academic achievement. Mittal (1962) constructed an adjustment inventory, which he found to be a highly valid instrument to predict scholastic achievement.

Watley (1965) used Guilford Zimmerman Temperament Survey and reached the conclusion that the adjustment was significantly related to academic achievement in high school as well as college level. Rao (1963b, 1965b, 1967) showed in his studies that adjustment problems at school and college level led to underachievement.

Ringness (1965), however did not obtain much encouraging results. He did not come across gross adjustment difference between the academically successful and non-successful students. Findings, anyhow, suggested that successful subjects felt slightly more sense of personal worth and believed that they had better family and school relations but possessed slightly more nervous symptoms.

At college level, the history of related literature can be traced back to Griffiths (1945), who studied the relationship between scholastic achievement and personality adjustment of men college students. He compared HPR (honour point ratio) with the
Bell Adjustment Inventory scores. Adjustment scores of men with brilliant academic records were not significantly different from those of men on probation. Men with unsatisfactory 'Bell' scores had grade averages insignificantly different from those with good adjustment.

Hoyt and Norman (1954) concluded in their study that the normal group could be predicted more about their academic achievement with the help of the NAPI than the maladjusted group. This viewpoint, however, was not espoused by many other investigators. Anderson and Spencer (1963) replicated the studies on a larger sample of 1465 arts college freshmen and found conflicting results. For a sample of engineering freshmen only one predictor variable yielded statistically significant differences. It was concluded that the prediction of academic achievement was not influenced by personal adjustment.

Chawla (1970) adapted and validated Mittal Adjustment Inventory for college students and found out that adjustment was closely related to one's achievement. In a project sponsored by the Indian Council of Social Science Research (1972), several related studies in this field at different educational levels have been reported in 'A Survey of Research in Psychology' (for example, Bhatnagar, 1969a, Rao, 1963b, 1965b, George and Abraham, 1967).

In a study conducted by Sinha on a sample of University students, achievers and non-achievers (actually high and low achievers) differed significantly in intelligence as well as
overall and area wise adjustment. High achievers exhibited good home, health and emotional adjustment.

(TE).

OVER- AND UNDER-ACHIEVEMENT AND ADJUSTMENT

A few of the research studies have been conducted at school level to differentiate the adjustment correlates of over- and under-achievers. Frankel (1960), studied the personal problems of 50 matched pairs of achievers and under-achievers. The chief concern of the under-achievers appeared to be his present scholastic inadequacies. Achievers were primarily thinking about the future, college and vocational choices.

Special Services Staff (1941) of Champaign Community Unit School, while studying the intellectually gifted and educationally bright pupils in the elementary grades, found that they scored favourably on most of the instruments and were generally better adjusted socially and emotionally.

Pierce (1962) formulated a hypothesis in his study that the variability in achievement among equally able students could be explained in terms of differing degrees of ability and willingness to adjust to the demands of the school situation. The study was conducted on 222 bright high school students belonging to top one third of ability. They were, then, divided into high and low achieving groups. The results showed that the high achieving students were socially better adjusted and were less aggressively maladjusted.

Frank (1967) also stressed the fact that emotional relationships within a family play a very important role in determining the manner in which a child copes with his school problems. In
his study of 186, 9th grade under- and over-achievers, where
he showed that underachievement may be one of the ways a youngster reacted to an unhappy home situation. He observed significant differences in adjustment problems of overachievers and underachievers.

Delson (1970) studied the relationship between personal or social problems and underachievement in high school and attempted to determine whether underachievers and achievers differed in the number and kind of problems which concerned them. Findings revealed that a correlation coefficient of .518 existed between the GPA and the number of problems of 20 overachievers and 20 underachievers. Mean difference between the different problem areas was significant (P < .01). Results also showed that underachievers had significantly more adjustment problems than achievers. Though underachievers did not differ significantly from achievers in the problem areas that troubled them, yet they did differ, to some extent, in the specific kind of personality and school problems.

Froiland (1970) administered the Bell Adjustment Inventory to high school students and found that achievers had better home adjustment than underachievers.

Research studies conducted at college level and the level of higher education can be traced back to Drought (1938), and Altus (1947). Drought administered Adjustment Inventory by Hugh and Bell to freshmen entering college of letters and of science of the University of Wisconsin about four decades back in 1935. Scores on all the subdivisions of each of these measures were
correlated with the discrepancies of actual and predicted grades of those students. Uniformly low correlations were obtained.

About a quarter of a century back, Altus (1947) constructed an adjustment test and found some of its items to be significantly related to achievement, but either not related or negatively related to intelligence. Aptitude test yielded a correlation of .60 with semester grades. When tests of adjustment and study habit inventory were combined, multiple $R$ was boosted to .76. In another study, Altus (1948) studied college achievers and non-achievers and found that eight of the nine clinical scales of the NAPI exhibited a trend of greater maladjustment among non-achieving group than the achieving group.

Garme (1968) showed that college achievers concentrated and remembered more because of less emotional problems of adjustment.

Buck (1969) did an elaborate study of oversachievers, average-achievers and undersachievers with regard to the types of problem areas. Discrepant academic achievers identified their problems as being of educational, vocational and emotional nature. Nonetheless, for the males the findings were equivocal. Still undersachievers had greater number of concerns than those who were achieving beyond expectancy. Besides, a higher proportion of achievers classified their problems as usually emotional in nature.

Smith (1965) collected data of 32 achievers and 31 non-achievers of high academic potential with the help of depth interview. Findings showed that achievers, on the whole, were more
satisfied with their choice of subjects, mere satisfied with departmental staff and felt that they were academically adjusted as compared to the group of nonachievers.

The above review of the related literature shows that research findings in this field are not very many, hence a more detailed scrutiny of the same is required. Besides, though adjustment contributes in most of the cases, yet combined with intelligence, it does not explain the perfect prediction of academic success or failure.

(2) ACADEMIC ACHIEVEMENT AND PERSONALITY

When Psychologists, educators and others concerned with explanation and prediction of academic behaviour, failed to explain the variations in scholastic achievement on the basis of intellectual factors alone, they turned their attention to non-intellectual factors. Cattell (1950) has rightly pointed out that "Personality study is the natural hub upon which all more specialized sectors of psychology turn". The psychologists and educators started making an attempt to unravel the personological determinants involved, for obtaining and forecasting behaviour in the form of equations. The extraordinary bulky and flourishing literature in this field bears testimony to this fact. This responsibility-ridden endeavour is based on the assumption that different constellations of personality variables are the components of success or failure in academic domain and also that under- and over-achievers in academic field can be distinctly discriminated on the basis of certain personality syndromes.
Commonly chosen instruments of personality for finding out correlates of, or predicting academic achievement have been the Edwards Personal Preference Schedule (EPPS), the Bernreuter Personality Inventory (BPI), the Minnesota Multiphasic Personality Inventory (MMPI), California Personality Inventory (CPI), the Maudsley Personality Inventory (MPI), and Cattell's Children Personality Questionnaire (CPQ), or High School Personality Questionnaire (HSPQ) or Sixteen Personality Factor Questionnaire (16 PF).

Related research review in this field, at school level, can be traced back to Finch (1932) and Seppenfield (1938), who found no relationship between academic achievement and adjustment as measured by the BPI.

Gough (1946), while studying 6th grade students, obtained low but consistently negative correlations between the Brown Personality Inventory and five achievement tests.

Klett (1960) used the EPPS on a large unselected high school sample and obtained equivocal results. However, recently Dixon and Fukuda (1971) secured more promising results with EPPS. They found that introverted, socially controlled and mathematically apt students did not compete successfully with verbal, high ego strength students in high school academic work.

Many of the studies have been done to find out the relationship of extraversion and neuroticism to school attainment. Astington (1960) reached the conclusion that more successful boys in Secondary grammar school were less extraverted than the average.
Lynn and Gordon (1961) observed a curvilinear relationship between emotional stability and academic achievement, that is, those who had high or low instability scores, did worse than those who had scores in the middle range. Entwistle and Cunningham (1968), however, obtained linearity in their findings with regard to neuroticism. They administered Junior Eysenck Personality Inventory (JEPI) to 2,595 children of schools. High attainers were stable ones. But sex complicated the results. Extravert girls and stable introvert boys formed the superior groups.

As above, in most of the studies, high emotionality (neuroticism) had adverse effects on achievement of school children (for example, Callard and Goodfellow, 1962; Savage, 1962; Eysenck and Cookson, 1969; Butcher, 1969; Entwistle and Welsh, 1969). Morrison (1968), anyhow, observed that to some extent, emotional disturbance of children add drive force to learning.

Many of the investigators have obtained promising results by using Cattell's HSPO as a predictor of academic achievement. Bucha et al. (1963), Cattell et al. (1961, 1966, 1972), Cattell and Sealy (1965), Crary (1962), Barton et al. (1971, 1972a, 1972b), all have expressed the hope that personality estimates can significantly add to the prediction weights made by variables of intelligence alone.

Child (1964), however, obtained conflicting results as compared to the previous researches and found that after 11+ examinations, the promoted children were less extraverted and were stable than the demoted children.

Taylor and Farquhar (1965) identified different male and female factors that go with academic achievement, by employing
Finlaysen (1970) studied boys at the age of 12, 13 and 14 years in a grammar school. He observed no systematic differences in extraversion and neuroticism in 11+ tests. But in secondary schools, introverts obtained progressively higher marks. In introverts, low neuroticism was consistently associated with better achievement, while in extraverts high neuroticism steadily depressed academic performance from one year to the next and so on. Introverts tended to improve with age whereas extraverts deteriorated.

Jensen (1973) found that JEPI scales showed quite low but significant and systematic correlation with school achievement. Extraversion correlated positively and neuroticism and the Lie Scale correlated negatively with achievement.

Barton et al. (1972), concluded that personality factor 'conscientiousness' and I predicted achievement in major areas of school subjects. They also observed 'grade specific' and subject specific personality factors affecting academic performance.

Entwistle (1972) has given an excellent review of the research literature of personality correlates at school and college levels. On the basis of the results in the present paper, he reached the conclusion that academic success at school level was linked with stable extraversion as contrasted to success at university level where it was linked with introversion. However, sex accounted for the variations in the results. He also mentioned that interaction of other factors like intellectual level, type of institution and choice of subjects may complicate the results further.
Elliot (1972) has confirmed these findings. Eysenck and Cookson (1969) have given the plausible explanation for it, that introverts are late developers. Similar to other findings, Elliott found neuroticism to be negatively related to scholastic attainment at school level.

Fink (1962), Koul (1969), Joyce (1970), and Johnson (1971), and many others studied personality correlates of high and low achievement. Fink (1962) found that forty eight and seventy two items of the CPI had discriminative value to differentiate high and low achieving girls and boys respectively. Koul (1969) found that factors 'B', 'C', 'E', 'G' and 'Og' of Cattell's HSPO were significantly higher for high achievers scoring more than 60 per cent marks in mathematics in 9th class, whereas factors 'D', 'I' and 'J' were components of low achievers obtaining less than 40 per cent marks in mathematics.

Joyce (1970) performed multiple discriminant analysis to determine whether seven different personality variables taken together or separately would differentiate among high, average and low achieving high school students belonging to low socio-economic environment. Results showed that self-concept of ability was positively related while alienation was negatively related to academic achievement.

Johnson (1971) found that the low achievers as opposed to the high achievers were described by their mothers as significantly more excitable, aggressive, asocial, showed more signs of reality distortion, had fewer social skills and had a less satisfactory physical and intellectual development.
Smith et al. (1967), however, expressed his hopelessness in personality correlates of academic achievement at school level. Palechano (1972) obtained similar findings and concluded that personality was not systematically related to academic performance of female school students.

As has already been warned by Entwistle (1972) and many others before him, non-intellective correlates in the form of personological variables of academic achievement vary from school level to college and university levels. A detailed historical survey of research literature in this field supports this fact.

About four decades back, Stagner (1933), while reviewing a number of related studies found only negligible relationship between personality traits and grade averages. He reached the conclusion that grades were not directly determined by personality. However, particularly at higher level of education, slight trend of high scores on self-sufficiency and dominance and low scores on neuroticism, as measured by the BPI helped the students to obtain better achievement scores. Namzek (1938) also found the BPI of negligible use for direct and differential prediction of teachers marks at higher level.

Eckert (1933), while analysing the superior college students, discovered that better students were more of introverts and held more liberal social attitudes.

Harris (1940), reviewed the literature from 1930 to 1937 for surveying factors affecting college grades. He found motivation to be the single most important non-intellective factor in his study of college achievement, whereas personal, social
and economic characteristics contributed very little. He reviewed that Taylor (1933) found that the ratings on the American Council of Education (ACE, Personality Report correlated to the extent of .40 with scholarship and this raised the multiple R of intelligence and high school grades from .67 to .71.

Griffith (1945), while comparing college students' honour point ratios with Bell Adjustment Inventory, found no significant results. Eysenck (1937) predicted that good educational attainers should score moderately high on neuroticism and low on extraversion as compared to the average group. Excessively high score on neuroticism, however, may have deleterious effect on achievement. Studies on older groups of college and university students confirmed these predictions made by Eysenck (Furneaux, 1957, 1962; Broadbent, 1958; Bending, 1960; Savage, 1962; Kelvin et al., 1963; Child, 1969).

Harburton (1968b), on reviewing the available relevant literature said that upto the age of 18 years, anxiety or neuroticism is not of much advantage but at later ages, it is beneficial in majority of the cases. Similarly, before 18 years introversion is advantageous in only very few of the cases, but after that, it is of benefit in almost all the cases. Kline (1966) has reported a similar pattern among Ghanaian students.

Bau (1970) confirmed these findings as far as extraversion and academic performance was concerned. He, however,
obtained positive association between neuroticism and academic failure. Lynn (1959), on the basis of findings of first year university students, by applying the MPI, added another weight-age to the findings of Furneaux (1957) and Broadbent (1958). Of course, these findings were in conflict with the findings of Terman (1925) that highly talented young Americans were better adjusted than others. Results also showed sex differences in personality and attainment. Thus, if intelligence and extraversion were held constant, women by nature being more neurotic, were better academic attainers than men.

Griffin and Flaherty (1964), while studying 170 female college students observed Rs ranging from .03 to .26 between eighteen CPI scales and GPA. In another study, Flaherty and Reutzel (1965) administered the CPI to college women and found personological differences between high and low achievers. Earlier, Holland (1959) reported similar results by the use of the CPI for predicting scholastic success at the college level. In his later study Holland (1960) used 16 PF as predictor of college grades and found that the most effective non-intellectual factors were super-ego and persistence. These findings were consistent with his earlier findings (1959).

Hackett (1955, 1956) and Paul Centi (1962), concluded that some of the MWPI items were related to high achievement and some to low achievement at college level.

Sanders (1970) studied graduating seniors with the help of the EPFS. The results provided additional evidence that certain personality traits were related to academic achievement. But the data did not permit a meaningful interpretation due to
other intervening variables obscuring the relationships.

Utility of the EPPS in prediction of academic attainment has also been confirmed by recently conducted study by Cohen (1973).

Entwistle and Entwistle (1970), while studying 39 university students and 118 students at a college of Education found superiority of introverts in scholastic attainment. No significant relationship was found between neuroticism and attainment. Similar results were obtained by Entwistle and Wilson (1970) in another study at the college level.

Rasheed's (1970) study of college students showed that personality factors A and B of Cattell's 16 PF were the best and the second best predictors of academic success respectively. Personality factors A, E, M, O and C were the best quintuple combination for predicting academic success. Gupta (1971) obtained conflicting results and found that neuroticism scores at higher level were negatively correlated with educational attainment. Correlation coefficient between extraversion and educational attainment was not significant.

Romine (1970) concluded that a dependent student of a particular level of ability tended to earn higher freshman average grade than an independent student of comparable ability. Entwistle and Brennan (1971) in their study of university students showed the possibility of developing typological theories of grouping the individuals into clusters by cluster analysis technique. Mehryar and Khajavi (1973) reported little correlation between neuroticism and measures of intelligence or
achievement among 18-19 years old university students taking entrance examination. On the whole, considering the joint efforts of extraversion and psychoticism, stable extraverts seemed to perform best on tests of ability and attainment. Psychotic introverted girls, however, seemed to be superior to their extraverted counterparts. Considering overall results, the personality patterns of more intelligent and academically successful Iranian students appeared to be more like those of younger British pupils below 15 years of age.

work (1968), Cozelle (1971), Kline and Gale (1971), however, concluded that non-intellectual personality factors were not significant correlates of academic achievement at higher level of education.

(2b). OVER- AND UNDER-ACHIEVEMENT AND PERSONALITY

Scientific attempt to explain academic over- and under-achievement at school level in personological context has only a recent past. Gough (1946) studied two criterion samples of high school students. Both groups were matched on IQ and sex with significant difference in honour point ratio (HPR). The study was primarily an item analysis of the MMPI. None of the MMPI scales significantly discriminated between the achieving and non-achieving groups. He (1953) obtained similar results on the MMPI in another study of high school students. He, however, suggested that the reason for such insignificant results might be that the investigator used scales devised for use in other prediction problems, often of a clinical or psychotic nature.
with no intended relationship to those variables relevant to academic achievement.

On the basis of a brief review of related studies, he, anyhow, concluded that introversion, dominance, self-sufficiency, good motivation and liberal social attitudes formed the characteristic personality syndrome of achievers.

Fierce (1961) was more hopeful and obtained results similar to those of Adler's, that achievers and underachievers had their typical lifestyle, exhibiting favorable personality characteristics and greater independence.

Taylor and Farquhar (1966) established the validity and reliability of the Human Trait Inventory (HTI) devised and designed by them for measuring over- and under-achievement.

Williams (1967) differentiated subjects by sex, classified into three ability ranges and each ability range was further divided into three achievement levels. It was concluded that, on the whole, personality traits as measured by the CPI did not significantly differentiate among the different achievement levels of the separate ability categories to the extent of using them for prediction purposes.

Ridding (1967) conducted an investigation on 600 school children of 12+. Cattell's HSPQ and children questionnaire adapted from the MPX was administered. No significant relationship was exhibited between anxiety and over- and under-achievers. Extraversion correlated with overachievement. Similar results about extraversion were obtained by Rushton (1966) and Savage (1962).
Cuppens (1967) also tried to study intelligence, motivation and anxiety as determinants of school achievement in first year class of secondary education. Results indicated that overachievers were more highly motivated and less anxious than underachievers.

Oakland (1968) observed that addition of EPI improved the prediction of grade point average (GPA) than Differential Aptitude Tests (DAT) alone. It improved more for male high school students than for female high school students. O'Shea (1968) found EPPS of some use in differentiating certain non-intellectual factors between academically bright junior high school male high and low achievers. Morrison (1969) conducted a study on fifth grade boys and found that underachievers showed more hostility towards authority, were more passive aggressive, that is, stubborn and uncooperative. They however, obtained scores higher on achievement tests, showing that actually they were learning but were not able to give evidence of the same in tests conducted by teachers.

Johnson (1969) developed an objectively scoreable inventory of which 28 per cent of the items, that is, 145 out of 510 pooled items, differentiated over- and under-achievers in item analysis, 27 per cent of the items distinguished high from low ability par achievers. Analysis of the differentiating items revealed different personological framework of over- and under-achievers at school level. Sex differences observed, however, were not significant.)
Almeida (1969) studied third grade pupils who were classified into three achievement groups, that is, over, average and underachievers. Different personality traits were obtained by use of children personality questionnaire. Bachtold (1969) studied the personality characteristics of 227 achieving and underachieving bright 5th grade students with the help of children's personality questionnaire. Successful female achievers pretented higher score on credulity, self-confidence and self-control as compared to underachievers. Successful male achievers scored higher on emotional stability, seriousness and sensitivity in comparison to underachievers.

Edwards (1969), however, accepted null hypothesis for High School Personality Questionnaire (HSPO) as it showed no discriminatory value among the three categories of over, average and underachievers.

Study of personality components of over- and under-achievement at college and university level have a longer history and can be traced back to Neel and Mathews (1935), who studied two hundred superior college students, all of whom ranked at or above the 75th percentile on the Ohio State University Psychological Test. The group was divided into 'achievers' and 'non-achievers'. Scores on the BPI did not differentiate between these two groups on the basis of mean scores alone. Achievers as a group, however, were more introverted, non-social, easily embarrassed and self-conscious whereas nonachievers were more extraverted, individualistic, felt homesick, made friends quickly, were more in a state of excitement and felt more miserable and showed tendencies to complain, argue and bluff.
Drought (1938) made an effort to account for the personal, social and emotional factors operative in scholastic achievement. Inventory by Bell and Wisconsin Scale of Personality Traits by Ross Stagner were administered to 750 freshmen entering college. Correlations on each of the four subdivisions of these two measures were uniformly low and insignificant for the two groups, that is, those whose grades were markedly above prediction.

Two groups equated on intelligence and belonging to Psychology class and significantly differing on Psychology scores were given group form of the MMPI by Altus (1948). Non-achievers showed a trend towards maladjustment on eight out of the nine clinical scales but the only scale showing significant difference at .01 level between the means of the 2 groups was Hypomania. Achievers exhibited introverse tendencies whereas non-achievers showed social extraversion. The usefulness of such a non-intellectual scale, however, in conjunction with a valid intelligence test in predicting academic achievement needs no elaboration.

Burgess (1956) and Merrill and Murphy (1959) have also attempted to differentiate college achievers from underachievers on the basis of personality characteristics as measured by tests and inventories.

Gebhart and Hoyt (1958) and Krug (1959) studied over- and under-achievement among college students and found that the EPPS had quite satisfactory predictive value as well as it is a useful instrument in understanding the special problems of underachievers in a college. Goodstein and Heilbrun (1962)
obtained similar results with a sample of 206 male and 151 female undergraduates on EPPS scale. They studied the two groups of differing sex as well as by dividing them further into three levels of intelligence. For two total groups, the results were negligible. While the results were more promising when sample was studied at three different ability levels, sex differences were also observed.

Todd et al. (1962) took college students who were at the eightieth centile or above in academic aptitude test and divided them into normal and underachievers. The sample differed with regard to all the four hypothesis, that is, goals, needs, expectancy for success and expectancy that certain activities will lead to certain desired goals. Major findings of Rao's (1963b) study showed that oversachievers tended to differ significantly from both normal achievers and underachievers and were better adjusted to academic situations.

Kisch (1968) made a comparative study of patterns of underachievement among male college students by administering an omnibus personality inventory. On the whole, underachievers recognized their underachievement and expressed discontent with their grades. It was concluded that groups could be distinguished among underachievers that pointed to different constellations of personality dimensions.

Norfleet (1968) reached the conclusion that several scales of the CPI differentiated achieving from underachieving gifted university women. Garms (1968) observed that college achievers were self-assertive and manifested democratic attitudes.
while underachievers were self-debasing, rebellious, and hostile individuals who found it difficult to relate to others, especially authority figures.

Trent (1969) found significant personality differences between groups of college freshmen of the same ability level but differing in achievement levels, while making use of Cattell's 16 PF. He observed sex differences as well. A similar study was conducted by Mohan and Nehru (1972) to differentiate, under- and over-achievers of different colleges on 16 PF. Results showed that underachievers were characterized by high scores on emotional stability, dominance, and pramia whereas superego strength, shrewdness, radicalism, self-sentiment and, ergic tensions were the significant components of overachievers.

Riggs (1970) also observed personality differences among groups of under- and over-achieving freshmen university students of differential levels of academic potential. Sex differences were also seen.

Schwab (1969), on comparing the personality profiles of over- and under-achieving high and low ability students at South Dakota State University, however, failed to yield any discernible results.

A number of research studies done in India with regard to personality correlates of over- and under-achievement at all levels of education have been reviewed in a project sponsored by 'the Indian Council of Social Science Research' (1972).
Kao (1964), George and Abraham (1967) and Bhatnagar (1969b) are among the few significant investigators. Bhatnagar (1966), reviewed some of the research literature relevant to this field. But he (1967) has rightly warned us that these studies give rise to a state of confusion due to so many technical problems, for example, heterogeneous samples, inadequate control of variables, ill-defined personality traits, use of diverse criteria for identifying over- and under-achievers and weakness in the test instruments.

Besides, as pointed out by Entwistle (1972), "age, ability, sex, geographical area, class-room organisation, class-size, teaching methods and teacher's personality" add to the confusion in finding out the clear-cut correlates of academic achievement. Still he (1972) is hopeful of "some overall pattern in this confused research area." Entwistle (1972) and Eysenck (1972) are among a few of the investigators who are endeavouring to disentangle these confusions to get a more neat picture in this field.

ACADEMIC ACHIEVEMENT AND STUDY HABITS AND ATTITUDES

The term 'habit' in words of Eysenck and Arnold (1972), refers to "a customary pattern of behavioural, cognitive or emotional response, predictable according to the conditions operating at the time of response and acquired by a process of learning or the underlying 'set' or tendency towards that pattern of response", whereas an attitude, in view of the same writers, is a "learned predisposition to react consistently in a given manner (either positively or negatively) to
certain persons, objects or concepts. Attitudes have cognitive, effective and behavioural components.

Both habits and attitudes are acquired dispositions and can be distinguished as being of various types because of the role they play in different areas of life. Habits, for example, can be study habits, play habits, and so on. Likewise attitudes towards study, towards play or towards any other psychological object can also be distinguished.

In the academic field, study habits and attitudes are of particular theoretical and practical importance. Healthy study habits and attitudes help the individual to surpass the limits circumscribed by his intelligence bringing him to the category of an overachiever. Unhealthy study habits and attitudes become a hurdle in the way of achievement of the individual and do not let him make the best use of his potentialities, dragging him for poor performance in academic domain and thus making him an underachiever. Hence study habits and attitudes are of immense importance in the acquisition of satisfactory level of achievement.

Study habits and attitudes have been clubbed together by numerous investigators (Brown and Holtzman, 1956; Ahman, 1958; Dwivedi and Sharma, 1968) to explain their relationship with academic achievement. This study too follows the same pattern, more so, in the light of the fact that the single scale has been used to measure study habits and attitudes.

A number of research studies have been undertaken to explore the study habits and attitudes of school and college
students and the way the educational attainment is affected by those. Their history can be traced back to Wrenn (1941) who constructed his first study habits inventory. After that so many psychologists have devised similar tools. A few of the noteworthy of them are Esther (1945), Carter (1950), Holtzman Brown and Farquhar (1954), Krishnan (1956), Mitra (1959), Palsane (1963), Jamuar (1965), Farooqi and Vyas (1968) and Joshi and Pandey (1973). Almost all of them have, in one way or the other, touched the crucial issue of academic attainment as it is affected by study habits and attitudes.

A few of the studies conducted at school level are cited below:

Carter (1948) studied methods of learning as they contributed to the prediction of school success and obtained a correlation of .45 between study methods and achievement.

Rao (1963) in India, observed a positive but low 'r' of .01 in case of girls and .16 in case of boys. However, the multiple R between intelligence, study habits and socio-economic status was raised to .37 in case of girls and it was significant at .01 level.

Joshi and Chaudhari (1966) studied 300 school going students and found that industrious students who achieved better than expected from their IQ, did so due to their typical study habits.

Srivastava (1968) and Joshi (1970) also studied the important role played by study habits. Joshi, in his study of a sample of 10th and 11th class in Jodhpur schools, concluded that faculty study habits lead to poor results and failures.
He reached at similar conclusions while studying the pre-university students also.

Quite a number of studies can be enumerated at college or university level as well.

Harris (1940) made a comprehensive review of the literature from 1930 to 1937 about the factors that affect college grades. He concluded that in most of the studies, good students could be differentiated from poor achievers on the basis of specific study habits and attitudes.

Altus (1947) studied 138 students of elementary psychology. Results showed that the aptitude test yielded a correlation of .60 with semester grades but when multiple R of aptitude, adjustment and study habits was calculated, it increased to .76.

Krathwohl (1949), while studying the college students, found that good study habits and industriousness of students added to success in examinations.

Carter (1950) conducted his study on college students as well and obtained significantly high correlations between study methods and achievement (.47 on form A and .51 on form B of his study habits questionnaire).

Krishnan (1956) conducted a different type of study in India and the findings indicated that senior B.A. students had better study habits than junior B.A. students. Jamuar (1956) came across a correlation of .51 while studying the sample of 200 college students. Aiken (1961), while studying about the relationship between achievement and attitudes, found
that attitudes contributed to the prediction of achievement in mathematics for females but not for males. Hafeez and Quraishi (1968) probed into the typical pattern of study habits among engineering students. Jain and Robson (1969) developed a new study habits inventory in Hindi language and studied, 90 high, 164 middle and 111 low attaining under and postgraduate males of eight main universities of India. High attainers were superior in their study habits.

Entwistle (1970) studied 139 university and 118 college of education students with the help of correlational technique. Results confirmed that better study methods have positive correlations with better attainment. However, the correlations were not very high. In another study where Entwistle and Brennan (1971) made an alternate use of cluster analysis technique while studying University students, reached the conclusion that high attainment type of students exhibited a cluster of intellectual advantages, high motivation, study methods coupled with a few other factors.

Cazzelle (1971), while studying non-intellective variables related to the academic success and adjustment of college freshmen from low socio-economic status, found that study habits and attitudes scale appeared to be one of the useful instruments in differentiating between academically successful and unsuccessful students.

Besides the above studies, a few other studies can be cited where positive relationship between study habits alone or study habits and attitudes scores and achievement were observed.
for example, Locke (1940, r = .35), Mitra (1959, r = .28) and Manocha (1961, r = .47). Besides Bird and Bird (1945), Pierce (1962) and Helfenbein (1970) also observed promising results. Gordon (1941), Daftuar (1967) and Daniel (1971), however, found quite discouraging relationship.

(3b). OVER- & UNDER-ACHIEVEMENT AND STUDY HABITS AND ATTITUDES

There are very few studies that have been conducted at school level to differentiate between the study habits of over- and under-achievers.

A study was conducted by Carter (1962) about the junior high school overachievers and underachievers belonging to 7th and 8th grades. He found that overachievers, as compared to underachievers, were happier in schools, had more of self-confidence, were curious intellectually and above all, had better study habits.

Perkins (1966) compared bright 5th grade achievers and underachievers belonging to higher socio-economic status and found faulty working in the class-room as one of the causes of underachievement. Whereas achievers were more serious to what was being taught, underachievers spent their time on tasks which were unrelated to what was being taught.

Carwise (1968), while studying about the attitudes of over- and under-achieving negro junior high school students reported that "significant differences were found between the attitude scores of low ability, average ability and high ability students with gains in ability being followed by gains in attitude scores, overachievers earned higher scores than underachievers."
A few of the studies are conducted at college and University levels as well.

Menn (1933) evolved a self-rating study habits inventory which sharply distinguished students of high and low scholarship when intelligence was kept constant (that is, over- and under-achievement). Anderson (1954) is prone to believe that colleges are accepting some applicants who possess solidified negative attitudes which become a hindrance in the way of their success in educational attainments. If these students could be prevented from admissions, the incidence of underachievement could be reduced.

Gems (1969), while predicting scholastic achievement with non-intellective variables, stressed that college achievers were conformists having good study habits. Palcovitz (1971), too, observed that achievers and non-achievers could be differentiated so far as their study habits and attitudes were concerned.

Ahman et al. (1958) obtained results which were at odd with the above findings. The survey of study habits and attitudes (SSHA) did not add significantly to the multiple regression equation. Similar results were found in the study conducted by Lum (1960). She compared three groups of over, average and underachievers and administered the Brown-Holtzman's SSHA. There were no significant differences between the professed study habits of three groups.

Realising the importance of study habits and attitudes, on the whole, in the academic field, Jackson (1949), Joshi (1970)
and Gourley (1971) have expressed great hopes of improvement in study habits and attitudes of the students.

Effective study habits will, undoubtedly enable the students to work to their full capacity. But the conflicting results provided a stimulant to the investigator of the present study to probe more deeply in this area of research.

(4a) ACADEMIC ACHIEVEMENT AND ACHIEVEMENT MOTIVATION

The excellence of success in life depends upon the potential endowments in the form of intelligence and also the urge to succeed or 'motivation' as it is popularly known. Allen (1964) rightly remarked that success equals intelligence plus motivation. This truism is supported by Terman's (1925) nation wide study of gifted children, some of whom failed to achieve their maximum after twenty years, despite their fine intellectual potentials because they lacked that 'power' of motivation. Stressing the importance of motivation, Farquhar (1963) wrote that "motivation is an evasive octopus which as an ever expanding spiral envelops the whole field of learning."

Kohli (1964, 1971 & 1974), the investigator of the present study herself stressed the fact that motivation is a great source of inspiration to learn or achieve better and quickly.

Motivation has a trio-functioning (Gates et al., 1953) of energizing the behaviour, selecting or determining the behaviour and tendency to react to different situations as well as direct the behaviour.
Realiising its immense importance, Murray (1938) seems to be justified in pointing out that no one "who has to deal in a practical way with human beings can get along without some notion of motivational force." Motivation is a propelling force of behaviour.

Motivation plays its significant role in all fields of life. In the area of learning it is 'not something 'added' to an otherwise apathetic attempt at learning, in order to speed up and sustain learning" (Gates et al., 1963), rather it is a 'sine-quo-none' of learning.

Motivation is expressed through various motives. In the domain of learning or scholastic attainments, achievement or academic motive can be singled out as the most prominent. To Farquhar (1963), it is "a combination of forces which initiate, direct and sustain behaviour towards a scholarly goal."

Achievement motivation or 'self-actualization' (Maslow, 1954) or 'need for achievement' or 'n-Ach' (Murray, 1938) or 'fantasized achievement' as Reiter (1965) envisaged it, has been the subject of great deal of interest of educators and psychologists in recent years. Every student is expected to possess or develop it so as to strive for success and, thus, actualize his potentialities. In view of the tremendous wastage and stagnation, the feeling has gaining ground that 'n-Ach' may, after all, be the key to it.

Significant attempts to initiate the study of achievement motivation were made by Narziss Ach (1910), Levin (1926), Murray (1930), and Lowell (1952). Besides, about two decades back, McClelland (1953, 1958, 1961) and his workers have made valuable theoretical and experimental contributions in this field.
asndt (1955), Atkinson (1958), Weiss et al. (1959), Atkinson and Litwin (1960), Shaw (1961), Frederick et al. (1962), Muthayya (1965), Mukherjee (1965), Atkinson and Feather (1966), Heckhausen (1967), Farley (1967), McAvoy (1967), Mehta (1968), Quigley (1970), and Flosser (1972), are a few among many other investigators who have done notable work in this area and have found that excellence of performance is affected by achievement motivation.

At school level, Gough (1968) found that the achievement motive scales, that is, achievement via conformance and achievement via independence of the CPI correlated +.32 and +.35 with grades for high school males and +.33 and +.29 for high school females. These added to the predictive value of the criterion.

Finger and Schlesser (1963) studied the non-intellective predictors of academic success in school and college and observed that at junior high school level, this cannot be studied properly because parental expectations may interact with 'embryonic academic motivation', so as to raise it. They found age differences in the development of achievement motivation. Green and Farquhar (1965) studied 233 Negro and 515 Caucasian high school students of both sexes. The negro males showed no relationship between intelligence and achievement, yet academic motivation tests exhibited significantly high positive correlation with achievement for all groups, that is, negro as well as white males and females.

Lakshmi (1967) highlighted the relationship that exists between the rate of learning and achievement motivation of high school boys.
Entwistle and Welch (1969), while studying high and low ability 2538 school children, reached the conclusion that academic motivation was positively related with achievement. It was significantly higher for the high ability groups of both sexes.

De B. and Khan (1969) in their findings, reached the conclusion that the two groups of science and arts students differed in n-Ach, former to be more achievement motivated.

Cattell, Barton and Dielman (1972) studied fourth and sixth grade students. Culture fair intelligence test, HSPO and motivational analysis tests were administered to them. Results reached at were, that motivation contributed independently and significantly in the prediction of school achievement.

In another study of 169 sixth and seventh grade students conducted by the above investigators in the same year (1972a) similar results were obtained.

Dutt end Sabhrawa (1973) conducted a study on adolescent group by administering Mukherjee's Sentence Completion Test. The magnitude of the product moment correlation between academic achievement in the form of composite scores based on tenth class marks and n-Ach was .45 which shows highly significant positive 'r' between the two. No sex differences were observed.

Waterman et al. (1967), while studying the relationship between motivation and achievement in elementary school, showed that group motivation proved to be better than individual motivation.
At college level, Lowell (1952) found that the correlation between previous grades and n-Ach scores obtained under Achievement Oriented Condition was .33. Litting and Yercaresis (1963), while studying 190 men and 206 women belonging to a small New York Community, found that need achievement was positively related to academic achievement among men but not among women.

Vernon (1970), on making quantitative assessment of non-cognitive parameters in university students examinations, established the fact that motivational variables have significant relationship with performance in examinations.

Sinha (1970) observed no significant group differences between achievers and non-achievers. On persistence, however, the former were superior. Also they usually set their aspirations and goals in commensurate with their abilities, as contrasted to non-achievers.

Pelechano (1972) studied 82 female students and concluded that though intelligence and personality variables were not systematically related to academic performance, yet some motivational variables were significantly related.

De B. and Priya (1972) administered Mukherjee's Sentence Completion Test to 140 male students. Besides, other observable differences, they obtained significant relationship between achievement motivation scores and educational level.

Carrell (1971), nonetheless, espoused the view which was at odd with the above findings. He found that
neither the scores on measures of personality and occupational aspirations, nor the scores on achievement motivation appeared to be favourably related to grade point average.

In a study by Entwistle and Entwistle (1970), the investigators administered an academic motivation questionnaire to 139 university students and 118 students at a college of education. Results showed positive correlation between academic motivation and academic performance, yet the correlations were not consistently significant.

In another study by Entwistle and Brennan (1971), a large sample of university students was studied with the help of cluster analysis technique for finding out the relationship between 23 psychological variables and academic achievement. Results revealed that high attainment types were characterized by high motivation.

(4b) OVER- & UNDER-ACHIEVEMENT AND ACHIEVEMENT MOTIVATION

Differences in 'n-Ach' among over- and under-achievers at school level were explored by a few psychologists and educators. Sutton (1961) studied the poor performance of children and concluded that this may be due to lack of ability or lack of motivation and positive emotional involvement.

Muthayya (1965) made a comprehensive study of high and low achievement (actually over- and under-achievement). He found no differences in their intelligence yet they differed a lot in their 'n-Ach'.
Cuppens (1961) administered Skager's achievement motivation test to a sample of first class students of secondary education. The results showed a positive correlation between motivation and GPA, oversachievers were more highly motivated than underachievers.

Short (1968), while making a comparative analysis of non-intellective factors affecting performance in two school related tasks, found that high and low achievement (so called over- and under-achievement) at the high level of ability differed significantly in 'n-Ach'.

Haywood (1963) studied about the motivational orientation of oversachieving and undersachieving elementary school children. Oversachievers were more intrinsically motivated as compared to undersachievers. The differences between the two groups were largest in the educable mentally retarded range (IQ = 63 to 80) and smallest in the superior range.

Muthayya and Rajeshwari (1968) found differences among normal and backward children.

Tamagini (1969) compared 30 achieving and 30 underachieving subjects. Both groups were equated in socio-economic status, intelligence, age and grade. McClelland's achievement motivation cards were used. Results established significant differences between achievers and underachievers.

Simmon and Bibb (1974) studied the relationship between underachievement and the need to achieve among 400 elementary school children. Later was measured by the modified TAT format of McClelland's test (1953). Results showed that lack of
need to achieve was not associated with underachievement.

A few of the studies conducted at the college or university level are cited below:

McArthur (1953) conducted a research on Harvard University freshmen academic over- and under-achievers. Over-achievers were high in \( n-Ach \); particularly, the overachievers belonging to the public schools "who are most frequently and fiercely driven by ambition".

Some investigators are prone to believe that under-achievers have a common problem of deficient motivation that explains their poor academic performance, so much so that Ferguson (1956) calls over- and under-achievers as 'high' and 'low' motivated students.

Lum (1960) made a comparison of under- and over-achieving female college students. She administered a portion of Dole Vocational Sentence Completion Blank. Results showed that overachievers possessed stronger motivation for studying, were self-confident and had greater capacity of work under pressure than underachievers who showed a marked tendency to procrastinate and rely upon external pressures for completing assignments. Similar results were reached at by Garms (1968).

Uhlinger and Stephens (1960) studied students of superior ability with regard to this problem. 72 honorary scholarship freshmen students were studied. The hypothesis that high achievers (in fact, overachievers) differed from low achievers (in fact, underachievers) was supported by only one out of four measures used for this purpose.
Todd et al. (1962) observed differences between normal and underachievers of superior ability with regard to ‘n-Ach’. Sex differences were also seen.

Riggs (1970), besides bringing to light other differential characteristics of over- and under-achieving freshmen who entered Memphis State University in the fall semester of 1969, found that overachievers had higher motivation for grades. Besides, the high academic potential males and females were observed to have statistically higher level of motivation for grades than other groups of overachievers. Moreover female overachievers were observed to have significantly greater motivation for grades.

Hall (1972), with the help of McClelland’s TAT Test of ‘n-Ach’, found that it distinguished between achieving and non-achieving. Mexican Americans and other community college freshmen belonging to middle and lower socio-economic status.

There are, however, a few studies in which the investigators have observed a little or insignificant relationship between academic achievement and ‘n-Ach’. Pierce (1962) found that achieving or overachieving boys scored, higher on ‘n-Ach’ but it failed to differentiate among female over- and under-achievers.

On the whole, the importance of the role of ‘n-Ach’ in boosting the academic achievement cannot be denied. McClelland (1955), Palkovitz (1971), Kolb (1965) and Mehta (1968) are a few among many investigators who have suggested programmes
and have expressed their hopes of developing 'n-Ach' among underachievers.

Recently, early training programme (ETP) developed and supervised by Gray and Klaus, as quoted by Lindgren (1972) proved very useful particularly in the enhancement of 'n-Ach'.

(5a) ACADEMIC ACHIEVEMENT AND INTERESTS

Since Scholastic aptitude tests, combined with personality and other psychological tests, yielded imperfect predictions of academic success, the researchers turned their attention to other factors such as motivation. And as Super (1949, p.218) has espoused the viewpoint that "one possible definition of motivation was interest. Presumably if a person were interested in an object or in a type of activity, he would be motivated to do something about it, to take part in it." Hence, interests as related to academic achievement and over- and under-achievement have been studied here.

Interests, or likes and dislikes or preferences are usually not directly related to academic achievement in the sense that they are not as useful in prediction of academic achievement as they help in reducing drop outs and sustain the efforts of those engaged in taking different academic fields. They don't improve upon the grades much as they help the individual in 'happily engaging' (Chatterji and Mukherjee, 1963) in the field of choice. Super and Dunlap (1950) have rightly commented that in fact scores in interests "are not generally related to grades in schools and colleges.... Continuation in a particular field is, however, influenced by interests".
At another place, Super (1949, p.224) said that they are "important largely in determining direction and persistence of effort but not apparently, the amount of effort". They are, in fact, not a guarantee of success, yet they are a source of inspiration, direction, persistence and better adjustment in the field to be pursued, for example, academic field. A few of the research findings explaining the role of interests in scholastic success are cited below.

Related to academic achievement and interest, only a limited number of studies are available at the school level. Segel (1934) found that at school level, the correlations between scientific scale and scientific subjects ranged from .28 to .49.

Jacobson (1942), while studying interest patterns and achievement in medical schools found that those who were characterized by scientific interests, were more successful students.

Townsend (1945) ascertained the relationships between Strong's scales and scores on objective tests of school achievement made by 50 to 100 boys in private secondary schools and reported that they were few and significant only in the case of mathematics and science.

O'Shea (1968) in a study, found that high achievers obtained significantly higher means than low achievers on the School Interest Inventory (SII).

Katz and Norris (1972) observed significant contribution of academic interest measures to the differential prediction of marks, particularly at high school level.
At the college and university level, however, many studies can be cited.

Grades in achievement were correlated with Strong's Engineering scale by Holcomb and Laslett (1932) as well as Berdie (1944). Former reported a correlation of .32, whereas the latter obtained a lower correlation of .13.

Goodfellow (1932) found that successful prediction of teacher college students' grades could be made with the help of measurement of interests.

Grades in college were related to scores on Strong's scales by Altsneder (1940) who worked with freshmen at New York University. The relationships ranged from -.26 to .30. Robinson and Bellows (1941) obtained low positive correlation between dentist scale and dental grades.

Yum (1942), while studying the preferences of students, found that significant correlation of .33 existed between literary interests and grades of men, and of .29 between computational interests and average grades of women.

Jacobson (1942) and many others have been cited by Super (1949) while making an elaborate review of the research literature in this field. Jacobson found that students with more of scientific and such like interests, secured better grades in the first year of the college.

Crosby (1943) reported significant interest differences between students achieving high or low in Chemistry and Biology (not over- and under-achievers). Triggs (1945) ascertained significant correlations between scholastic subjects and achievement.
Detten (1946) developed a scale to differentiate superior students of A and B grading from inferior students of D and E grading. Similar results were obtained by Barrett (1946) for liberal arts students, in the field of typewriting and stenography. Frandsen (1947) also obtained significantly encouraging results.

Thompson (1944), however, obtained results which were at odd with these findings except for scientific interests which showed significant correlation of .28 with academic success.

Crazier (1960) viewed the situation the other way round and said that variance in levels of education or degree of education might be an influencing factor in development of different interest patterns.

Chatterji and Mukherjee (1963) in India, studied college students by using (i) biographical questionnaire (BQ) as well as (ii) non-verbal interest inventory (NVII). They found out two sets of correlations with academic achievement. The correlations obtained on the basis of arts group showed some significant relationships between interests and examination marks. In Science group, not even a single correlation was significant. As the investigators have suggested themselves, the reason for the same may be that science group did not answer the inventories seriously. The correlation coefficient between the weighted sum of the scores on seven fields of interest, as measures by NVII and the total of the examination marks was +.46. The correlation coefficient between the linear combination of the
seven fields of manifest interest of BC and total examination marks was +.32.

Chen et al. (1967) analysed the interests to determine their factor pattern in relation to the criterion variable of dental GPA and obtained encouraging results.

However, Douglas (1943), Wendt (1967) and Sinha (1970), all have reported negligible utility of interests in predicting success at higher level of education. Lewis (1967), while making a multivariate analysis of variables associated with academic success, reported that the results do not appear to be significantly related to academic achievement.

Very few studies can be enumerated with regard to predictive value of interests to discriminate between over- and under-achievers. One such attempt was made by Frenkel (1960), who, while using Kuder Preference Record on high school students of high ability, made a comparison of interest patterns of 50 matched pairs of achievers and underachievers. He found that the interest patterns of both the groups were distinctly and appreciably different. The interests of achievers were greater in mathematics, and science whereas those of underachievers were in the mechanical and artistic areas.

Another attempt was made by Hummel and Spintall (1965). They studied a sample of intelligent high school boys, held
social status constant and divided the groups according to grade average into underachievers, par achievers and superior attainers. Mean scores were compared on scales used. Significant differences were observed.

A few of the significant distinctions were also reported by Diwan (1970) while he made use of Chaterji's Non-language Preference Record to differentiate over, normal and under-achievers.

Forrest (1966) conducted a comparative study of male secondary school under-achievers matriculating at the university of South Dakota, and showed negligible importance of interests to achievement and persistence of high school students to college.

Garma (1968) reported that college achievers showed preference for verbal tasks.

Seiden (1969), while studying some variables predictive of low achievement by high ability students, reached the conclusion that low achievers and high achievers (so called UAs and OAs) differed in their pattern of hobbies and interests.

Review of the literature, thus suggests, diametrically opposed results. This points to so many defects and inadequacies in measuring devices and interpretation of results.

II. ENVIRONMENTAL CORRELATE OF ACADEMIC ACHIEVEMENT

IIa. ACADEMIC ACHIEVEMENT AND SOCIO-ECONOMIC STATUS (SES)

An individual is not a static entity. He is a dynamic organism who is continuously being affected by the objects, factors and conditions around him. Whatever he does or attains
In life, it is the result of the interaction of his biological inheritance (or his internal) and external, that is, social and physical environment. In the dictionary of behavioural sciences, Wolman (1973) has defined the environment as the "sum total of external conditions, which have the potential to influence an organism". And the most pressurising stimulations come from interfamily factors, that is, differences of home environment from family to family, due to social status, family income and educational level of the members of the family. In brief, these are known as socio-economic status (SES) of the family and they affect the accomplishments of the child in all fields of life, particularly educational accomplishments.

There is tremendous research literature which gives evidence to the fact that superior socio-economic status leads to better school attainment (Burt, 1937; Jamuar, 1963; Rao, 1963; Curry, 1964; Rao, 1965; Fox, 1966; Lunneborg and Lunneborg, 1968).

The research literature, in many of the cases, emphasizes that the educational attainment of children from middle class homes is better than the attainment of those children who belong to manual working classes (Burt, 1937; Douglas, 1964).

Siller (1957), in a study of the 6th grade white children, found that children belonging to high socio-economic level did better than those belonging to low level on all tests of conceptual ability, particularly those involving verbal material. Montague (1964) found similar results for Arithmetic Concept Test.
Curry (1962), while studying 360, 6th grade pupils reached the conclusion that "as the intellectual ability decreases from high to low, the effect of social and economic conditions on scholastic achievement increases greatly". Performance was more prominent in the field of language whereas achievement in arithmetic was hardly affected by it.

Vane (1966) observed fairly high positive correlation between the achievement and socio-economic status of 272 negro and white children in an integrated high school district. Wendt (1967) gave the finding that high percentage of the low achieving school students was from the families where the father's occupation ranked low.

Dibble (1967), while studying public high school students, minimised the importance of socio-economic status by finding out that though income of the family influences achievement but factors such as residence, status of the parents, family size, mother's education, all contribute very little to variance in achievement.

Tulkins (1968) studied race, class, family and school achievement of 389, 5th and 6th grade students. When social class was controlled, racial differences were obtained on achievement as well as family measures. However, when family differences were statistically controlled, there were no significant racial differences in achievement of the upper socio-economic group. Conclusion was made that economic differences account for achievement test scores.

Hammond and Cox (1968) found that ability, social class and interpersonal competence factors were the most important
factors for educational achievement. They also contributed to school leaving at an early age. Similar conclusions were reached by Reyes (1970).

Entwistle and Welsh (1969), while studying a large sample of 2538 Aberdeen School Children, derived a tentative conclusion that the correlation between socio-economic status and academic attainment was higher among the bright students of both sexes. This result was, however, reversed after correcting for attenuation.

The zero order correlation between level of father's occupation and academic achievement showed a high level of significance which, however, lowered down when the factor of self-esteem of children was controlled.

Kennedy (1971), Mathur and Hundal (1972) and Gupta (1973) have all stressed socio-economic status as a significant factor, affecting the academic achievement of school going children.

IIb. OVER- & UNDER-ACHIEVEMENT AND SOCIO-ECONOMIC STATUS

(Some investigators have studied the difference of socio-economic status among over- and under-achievers at school level. Frankel (1960) matched 50 pairs of high school achievers and underachievers. As expected, the families of the achievers were rated higher on the Hamburger Socio-Economic Scale.

McGillivray (1964) observed differences in home background between high and low achieving gifted children (actually OAs and UAs). However, they did not find any significant differences in respect of size of the family, education, and occupation of the parents.
Chopra (1967) studied 76 matched pairs of achieving and underachieving students of high intellectual ability. In this study, father of the achievers had comparatively higher occupational status, higher level of education, greater income, better residential provisions and smaller families. A great portion of achievers planned to carry on their studies and had more definite educational and vocational plans.

Partially coinciding results were obtained by Joshi and Sharma (1969) when they studied one hundred IX grade underachievers. They found that poor economic condition of the family was a significant causal factor of underachievement. Besides, the families of underachievers had less educational qualifications. This led to lack of motivation and absence of help from their family members. Parents' occupational status did not have to say much. Guzman (1969) after reviewing related research in the counselling of underachievers, studied high school sophomores and suggested that family plays a significant role in underachievement of the students.

Donald (1970) found that the parents of the achieving male and female high school students tended to have more of formal education.

At university level, a study was conducted by Riggs (1970). Freshmen at a selected state university were identified as over- and under-achievers. Overachievers were marked by higher family social status than underachievers.

However, there are a few studies which have presented contradictory results.
McDonald (1964) confirmed that socio-economic status in combination with aptitude and motivational scale scores did not increase the precision of prediction of GPA of 11th grade high school students, particularly for the low achieving students.

Gordon (1970) suggested that less importance should be given to socio-economic status. It is a crude variable of limited direct importance in the performance of academic achievement. Likewise, Cattell et al. (1955), Singh (1967), Entwistle (1968), and Cazzelle (1971), all have reached the conclusion that very little of variance in achievement can be accounted for by socio-economic status.

Simpson (1970) obtained no evidence of a significant relationship between deviant academic progress and level of education reached by either parent, occupation of the father, employment of the mother and such like factors.

Chatterji et al. (1972) showed no effect of economic condition, family size and number and effects of parental condition on school achievement.

On the whole, low economic status, impoverished home conditions, and unresponsive parents are the main environmental contributors to the disadvantage of the students' achievement at school or college or university level. All these work in a kind of vicious interrelationship, perpetuating the conditions of underachievement. But the above, and at places quite contradictory, results, do not make the picture very clear.
The problem of the present investigation, as stated earlier in the Chapter of 'Introduction', specifically reads as "Characteristic Behavioural and Environmental Correlates of Academic Achievement of Over- and Under-Achievers at Different Levels of Intelligence". To elaborate it further, the meaning and operational definitions of the key concepts have been given below:

Characteristic Behavioural and Environmental Correlates

The term 'characteristic' has been used to denote 'typical' or 'distinctive' correlates. Here this term delimits the scope of 'behavioural' and 'environmental' correlates as only those prominent correlates have been studied which have the possibility of some bearing on academic achievement or over- and under-achievement.

A correlate is "a variable which is in someway related to another variable" (Holman, 1973, p.80). Here the term 'correlates' is used as a 'noun' representing different variables which affect or may possibly affect academic achievement. The two main types that can possibly affect academic achievement or over- and under-achievement are those of behavioural and environmental correlates.

Those determinants or variables that are psychological in nature have been defined as 'behavioural' correlates. These can be intellective as well as non-intellective. In this study, intellective correlates have been kept under control, except for
the intellective correlate (Factor 'B' of Cattell's High School Personality Questionnaire) which has been taken as a trait of personality. Five main non-intellective correlates, namely, (i) adjustment, (ii) personality, (iii) study habits and attitudes, (iv) achievement motivation and (v) interests have been studied to see their relationship with academic achievement and over- and under-achievement.

'Adjustment' refers to four broad areas of home adjustment, social adjustment, health and emotional adjustment and school adjustment as measured by Mittal's (1965) Adjustment Inventory.

'Personality' includes fourteen primary personality factors such as factors A, B, C, D, E, F, G, H, I, J, O, Q, O_2, O_3 and O_4 (details are given in Chapter IV) as measured by Cattell's High School Personality Questionnaire.

As regards 'study habits and attitudes', it includes information about place of study, comprehension, taking down of notes, method of answering question papers, amount of time for study, selection of subjects and preparedness as measured by Hindi adaptation of Brown-Holtzman's (1956) Survey of Study Habits and Attitudes by Joshi and Pandey (1965).

'Achievement motivation' refers to 'n-Ach' as measured by certain fictional stories written for a few vague pictures and thus the subject reveals or projects his or her basic needs, drives or strivings. The rationale provided to this test is similar to that of Murray's TAT (1943). An Indian adaptation of McClelland's (1953) achievement motivation test by Kureshi (1971) has been used here.
Ten 'interest' areas, as encroached upon in this study are those of fine arts, literary, scientific, agricultural, technical, mechanical, crafts, outdoor, sports and household activities as measured by Chatterji's Non-Language Preference Record.

Besides the above described five broad areas of non-intellective behavioural correlates, environmental correlates of academic achievement has also been studied. All sorts of external stimulations which can possibly affect the academic achievement or over- and under-achievement are called environmental correlates of academic achievement. The most potential environmental factor pertains to the socio-economic status. For the present investigation, socio-economic status includes parental occupation, parental education and education of sisters and brothers, economic index, cultural level of the family and psychological indicators of conservatism and progressivism as measured by Socio-Economic Status Scale Questionnaire (urban) by Jalota, Panday, Kapoor and Singh.

Academic Achievement

In the present context, academic achievement refers to the formal acquired knowledge in the school subjects. This is represented by the percentage of marks obtained by the students in the final examinations of VIII class, prior to their joining of the delta class (IX).
Over- and Under-Achievers

Over- and under-achievers are those who exhibit discrepancies between their actual academic achievement and predicted academic achievement, "predicted upon the basis of the regression equation between aptitude and achievement" (Thorndike, 1963; p.13).

Here 'overachievers' are operationally defined as those individuals whose actual achievement scores are one standard error of estimate above their predicted scores (positive discrepancy scores). And 'underachievers' are those individuals whose actual achievement scores are one standard error of estimate less than their predicted scores (negative discrepancy scores). Details of the same are given in Chapter-V.

Levels of Intelligence

While considering intelligence and its levels, both verbal and non-verbal intelligence have been taken into account. Scores on both verbal test of general mental ability (Jalota, 1971) as well as non-verbal test of Standard Progressive Matrices (Raven, 1960) were converted into DIS (deviation IQs) and the average of the composite DIS score was found out for each student included in the sample. Then, the whole sample was divided into three levels, that is, high, average and low levels (details are given in Chapter IV). This was done with the aim of studying behavioural and environmental correlates of (1) academic achievement on the whole,

- Two levels of discrepant academic achievement.
Delimiting the Scope of the Problem

After defining and elaborating the research problem, next crucial step is that of deciding upon 'what', 'who', 'where' and 'how many' in the investigation.

The attention in the present study has been focussed on finding out behavioural and environmental correlates of (i) academic achievement (ii) of over- and under-achievement and (iii) over- and under-achievement at three different levels of intelligence. But the term 'characteristic' in the problem, delimits the scope of these variables. All the possible behavioural and environmental correlates cannot possibly be studied. So here only five main types of behavioural correlates have been studied. These have been mentioned earlier in this chapter. Alongwith, for the environmental correlates just one composite score of socio-economic status has been taken into account. The rest of the behavioural and environmental variables that have been referred to in the beginning of Chapter II have not been studied.

The answer to 'who' and 'where' of the problem can be obtained by having a look at the sub-title of the main problem. 'who' denotes the sample to be studied and here the sample of the problem is limited to IX class pupils. 'Where' of the problem delimits the scope of the problem all the more. Here it was decided that the research will be conducted only on the IX grade pupils in the urban areas of the Panjab.
'Urban area', in the present context, has been defined according to the definition of it given in the manual of Educational Statistics of India (1964). It states that the areas declared as 'urban areas' in the census of 1961 may be adopted as such. It further clarifies it that "according to the 1961 census, all habitations located within the limits of Municipalities, Cantonment Boards, Navied Area Committees and other places enjoying recognized local administration like the Civil Lines are regarded urban areas. "Besides according to the same manual, those places which satisfy the following triple criteria are also to be treated as urban areas. Firstly, the population should not be less than 5,000. Secondly, the density of the population should not be less than 1,000 per square mile. Thirdly at least 3/4th of the adult male population should be employed in pursuits other than agriculture.

Now, in the present study, not all the urban areas of the Panjab have been studied. Rather, out of the eleven districts (in 1971) of the Panjab, only three districts were selected and the urban areas of these districts were randomly sampled and the study was confined to the high and higher secondary schools of the Panjab.

Answer to 'how many' further delimits the sample of the study, which mainly depends upon the design of the study. The details of sample taken in the present study are given in subsequent chapter (Chapter IV).
On the basis of coming of the related research literature and intuitive understanding of the problem of correlates of academic achievement, academic over- and under-achievement and over- and under-achievement at different levels of intelligence, the following hypotheses were formulated:

1. Certain behavioural and environmental correlates of academic achievement are common to (i) the total group (TFS), overachievers (OAs) and Underachievers (UAs) or (ii) at least two of the three groups.

2. Certain behavioural correlates of academic achievement are specific to the total group or overachievers or underachievers.

3. Significant variance towards academic achievement is contributed by major behavioural and environmental measures, that is, adjustment, personality, study habits and attitudes, achievement motivation, interests and socio-economic status for the total group, overachievers and underachievers.

4. Behavioural and environmental measures contribute differentially to the prediction of academic achievement of the total group, overachievers and underachievers within the group and from group to group.

5. Certain behavioural traits and environmental conditions combine in specific constellations to yield common factor or factors with academic achievement of the total group.

6. The constellation of behavioural traits and environmental conditions of two contrasting groups of discrepant academic achievement, that is, overachievement and underachievement, differ from each other as well as from the total group.
7. Significant mean differences exist between over- and under-achievers when compared at the same level of intelligence in respect of certain behavioural and environmental measures.

8. Significant mean differences exist among over-or under-achievers at different levels of intelligence in respect of behavioural and environmental measures.

9. Significant mean differences exist among the total group, total groups of over-and under-achievers and over-and under-achievers at different levels of intelligence in respect of certain behavioural and environmental correlates of academic achievement.