Chapter V

DISCUSSION

A review of the preceding chapter, Analysis of Results, would reveal that over and under achievers in one subject are not necessary over and under achievers in all the other school subjects. The results clearly reveal intra-individual differences with reference to different knowledge areas, namely Hindi, English, Mathematics and Science.

Quite in line with this specificity of the over under achievement phenomenon, over achievers as well as well under achievers have been found to possess differential personality characteristics identifying the over and under achievers in specific school subject areas, as hypothesised in the present investigation.

As for the sex differences within the groups of over achievers and under achievers in the four school subject areas, still sharper and more frequent differences have been discovered along various personality dimensions on Cattell's H.S.P.Q.

The purpose of the present chapter is to give the possible logical as well as empirical interpretation of the results arrived at in the present investigation.
Personality Differences Between Male Over and Under Achievers in Different School Subjects

In Hindi, the male over achievers have been found to be less excitable (D), more enthusiastic (F) and less inclined to tough mindedness (I), while the male under achievers are more excitable, less enthusiastic and more inclined towards tough mindedness.

These results show that excitability and the accompanying characteristic of 'impatience' are in no way helpful in academic achievement and this may be more true of achievement over and above the expected level. Both these characteristics are very much akin to, rather 'packaged', under Cattell's broader heads of anxiety and neuroticism (Manual of HSPQ, 1973, p.12) which have quite frequently been found to be negatively correlated with academic achievement (Jensen, 1973; Rai, 1974; Vora, 1978). Impatience and excitability do not allow one to concentrate and persevere in the target tasks.

It is, conversely, quite reasonable to expect that those who stick and persist in the target tasks are more likely to exhibit over achievement and those who are easily distractable would fall below the expected level of academic performance. A confirming note is found in the results of Taylor (1964) and Gawronski (1965).

As for enthusiasm, which goes with the 'desire to excel', it is a very favourable characteristic for higher academic
performance (Ridding, 1966; Ruhland et al., 1978; Rai, 1980; Mathiasen, 1984). It is also our daily experience that students who are whether internally or externally enthused and motivated learn better and show better performance specifically in the subjects they feel more enthused and motivated about.

Enthusiasm among over achievers can be interpreted as a matter of defence mechanism also. Hurlock has pointed out 'they try to convince themselves and others of their adequacy by becoming "good" students', and for this they 'would seem to be motivated' for school activities. It is, therefore, not surprising that the over achieving boys in Hindi have been found to be more enthusiastic than the under achievers.

The male over achievers in Hindi have also been found to be less tough minded and the under achievers more tough minded. This difference looks to be quite reasonable with reference to literary subjects. Where higher sensitivity for the beauty of words, thoughts and feelings is needed, tough mindedness does not fit in. The lesser the tough mindedness the better. It is no wonder that in recent times languages and literature are becoming a feministic choice (McDonough, 1981; Pritchard, 1987). Hence boys with a feministic touch of lesser tough mindedness are more likely to emerge as better students in languages than those with higher tough mindedness as found in the case of male subjects in Hindi.
In English the male over achievers have been found to be more prone to be obedient (E) than the under achievers who are rather inclined to assertiveness. The interpretation of this result is self evident. The obedient students gain more from their instructors and instructional programmes than the aggressive and disobedient ones. That is our daily experience in the teaching learning situations. The results of Dhaliwal (1971) corroborate the present finding. He too found obedience going with over achievement. Morrison (1969) and Maria (1974) found aggression, the other extreme of factor E, associated with under achievement. It is, therefore, not surprising that male over achievers in English are more obedient than the male under achievers in English.

The male over achievers in Mathematics have been found to be more prone to be relaxed (Q₄) and the male under achievers tense. Since tenseness or being 'frustrated' and 'fretful' is the hallmark of high anxiety and neuroticism, as pointed out by the authors of the test themselves (Manual, H.S.P.Q., p.12) it is not compatible with high achievement and more inconsistent with achievement above the expected level. Both the characteristics have also been empirically demonstrated to be negatively correlated with academic achievement (Bhaduri, 1971; Jensen, 1973; Rai, 1974; Agrawal, 1976; Vora, 1978; Tandon, 1978). It is, therefore, quite convincing that over achievement in Mathematics goes with relaxed
temperament and under achievement with tense temperament.

In Science, the male over achievers do not differ significantly from the male under achievers. This result contradicts the hypothesis of the present investigation that there would be differences between the two groups. The causes of this lack of difference need further exploration in domains other than personal, as suggested by the results of other investigators. The causal factors of over and under achievement may possibly be study habits and interest in the subject (Taylor, 1964; Gawronski, 1965; Dhaliwal, 1971).

Personality Differences Between Female Over and Under Achievers.

As it was done with the male subjects, the over and under achieving girls were also compared on fourteen personality factors.

Among girls in Hindi, the over achievers do not differ from the under achievers on any of the fourteen dimensions of personality. A probable reason of this lack of difference on personality factors, as mentioned in the case of boys in Science, may be the intervention of other operatives like study habits and interest in the subject itself (Taylor, 1964; Gawronski, 1965; Dhaliwal, 1971).

In English, the female over achievers have been found to be more assertive (E), more enthusiastic (F), and more
prone to be tough minded (I) but less intelligent (B) and less prone to circumspect individualism (J) than the female under achievers. On factor (Q2) the over achieving girls in English are prone to self sufficiency and the under achieving girls to sociably group dependent temperament.

As for assertiveness, it has generally not been found associated with over achievement among the male subjects. It is quite possible that the female over achievers might be showing assertiveness for getting recognition of their extra attainment as a compensatory measure for their feeling of inadequacy, which girls may have in other fields. Following this line of argument the female under achievers are quite naturally expected to be less assertive. Ridding (1966) has also reported the female over achievers to be assertive and dominant.

That the female over achievers in English are more enthusiastic and the under achievers less enthusiastic is quite expected, since enthusiasm and motivation for excellence generally have been found to be associated with higher performance, as already discussed in connection with the Hindi male over and under achievers.

That over achieving girls in English are more inclined to tough mindedness and the under achieving are less inclined to tough mindedness can be understood with reference to other characteristics. As the over achieving girls in English have been found to be more assertive and more enthusiastic, it is
quite in agreement that they are also more inclined to be
tough minded. Besides, it may be remembered that for boys
as it was in Hindi, being less tough minded was quite
helpful to excel in the language area, but for girls, who are
by temperament generally very touchy, excellence requires
some boldness and tough mindedness also.

The female over achievers in English have also been
found to be less prone to circumspect individualism or inter­
nally restrained temperament than the under achieving girls
in English. It is worth mentioning here that, since the
female over achievers in English have been found to be more
enthusiastic and more assertive, as already discussed, it is
quite in line that they are also less restrained, as enthusiasm
and internal restraints seem to be opposed to each other.
The under achievers with their lower enthusiasm may, on the
other hand, quite understandably be more prone to internally
restrained temperament.

So far as self sufficiency of the female over achievers
in English is concerned, it is very helpful for higher
performance as this characteristic is bound up with resource­
fulness and independent decision. The more self sufficient
and resourceful one is, the more one is exposed to different
sources of knowledge and experience. The power of decision
making helps one in structuring one's plans and lines of
action, which eventually ensure concerted and goal oriented
activities, relatively free from distractions and wastage of energies. Taylor (1964) also found decision making and planning going with over achievement. Agrawal (1976) in his study on over and under achievement, too found self sufficiency associated with over achievement.

The under achievers, on the other hand, may reasonably be expected to stand on the other pole of this measure.

What looks to be unusual at the first glance is the female over achievers' lower level of intelligence as compared to the female under achievers' in English, but a little thought over the concept and pattern of occurrence of over and under achievement at different levels of intelligence would reveal that over achievement may occur at any level of intelligence. The same is true for under achievement. It is, therefore, not against probabilities that the over achieving girls in English have comparatively lower level of intelligence and the under achievers are higher than their counterparts in this characteristic.

Among the female over and under achievers in Mathematics higher enthusiasm \( F \) and higher self sufficiency \( Q_2 \) go with over achievement and low enthusiasm \( F \) and low self sufficiency \( Q_2 \) with under achievement. It has already been explained that greater enthusiasm and greater self sufficiency or resourcefulness help in achievement. They spur the level of achievement and can make a person achieve higher than he is
normally expected to do. Hence over achievement in English is quite understandable on the basis of these two boosting characteristics, the lack of which would render one unable to achieve up to the mark he is expected to do on the basis of his ability. Taylor (1964), Gawronski (1965), and Agrawal (1976) confirm the findings of the present study relating to self sufficiency and the accompanying characteristics like resourcefulness and independent decision.

In English, the over achieving girls have been found to differ on two factors, Reserved vs Warm hearted (A) and Sociably group dependent vs Self sufficient (Q2). In comparison to the under achievers, the female over achievers in Science are more reserved and more self sufficient. The under achieving girls in Science are, conversely, less reserved and less self sufficient than their over achieving counterparts.

The results stated above seem to be quite convincing as over achievement in Science requires more of concentration and concerted efforts which one can better perform by keeping oneself a bit more reserved and 'aloof', rather than becoming gregarious and warm hearted for others. Besides, the other characteristics which go with reservedness, like being "precise", "objective", "critical", are very much favourable for over achievement in Science. It is, therefore, not surprising that the over achieving girls in Science are more
reserved and the under achievers significantly lower on this measure. A confirming note is found in the results of Dhaliwal (1971) who found the over achievers to be more reserved in general. In the present work reservedness has been found to be a distinguishing characteristic specifically of the over achieving girls in Science. As reported by Blair et al., 'studies of school achievement agree that girls tend to make consistently better scores than boys' (Blair et al., 1975, p.139). This may be because they are more concentrative and involved and reserved and thus better set for over achievement in Science.

As for the superiority of over achieving girls in Science on the measure of self sufficiency, which goes with higher resourcefulness and self decision, it can be said, as discussed earlier also, that self sufficiency, resourcefulness and self decision are very helpful characteristics for over achievement. It may be more so in Science, as scientific subjects require these characteristics in a greater degree. Less resourcefulness and self sufficiency would, conversely, go with under achievement in Science.

It is, therefore, quite understandable that the over achieving girls in Science are more reserved and more self sufficient than the under achieving girls in Science.

It is thus borne out from the discussion of results on over and under achievers that over achievers in most cases
differ from under achievers on personality characteristics. Besides, the groups of over achievers as well as under achievers in different subjects areas emerge out with their own characteristic-combinations or personality patterns that are specific with specific subjects. The only exceptions are male over and under achievers in Science and female over and under achievers in Hindi where the differences on personality characteristics are insignificant.

**Personality Differences between Male and Female Over achievers in Different Subjects**

As for the sex differences within the groups of over achievers and under achievers, quite significant differences have emerged out revealing differential characteristic sets or personality patterns in each of the four school subject areas, as hypothesised in the present investigation.

In Hindi the over achieving boys have been found to be more intelligent (B), emotionally more stable (C), more inclined to be adventurous (H), more prone to circumspect individualism (J) and more self assured or secure (O) but less excitable (D) and less tense rather relaxed (Q) than the female over achievers.

So far as the superiority of male over achievers on intelligence is concerned, it may be said that intelligence, as it is understood today, is not merely an innate ability
but also an outcome of environmental forces the individual is exposed to. The greater the exposure to different sources of experience the greater the ability to manipulate things and ideas; and there is no denying that boys are more exposed to various kinds of stimulation than the girls, specially in the Indian situation. It is, therefore, not at all surprising that the male over achievers in Hindi are also more intelligent than the female over achievers.

The male over achievers in Hindi are also superior to their female counterparts on emotional stability. Researches in the field of sex differences have been found to indicate that women are more neurotic, maladjusted and emotionally unstable than men, as reported by Tyler (1965) and Blair et al., (1975). The findings of Ridding (1966) also suggest that girls are emotionally less stable than the boys. As such, it would be quite reasonable to expect the over achieving girls in Hindi also to be emotionally less stable than the boys as has been borne out by the results of the present investigation.

That in Hindi male over achievers are more inclined to be adventurous than the female subjects is quite in line with the findings on sex differences as well as with life experiences. Ridding (1966) found the male subjects to be more adventurous than the girls both among the over and under achievers, thus clearly bringing out the superiority
of male subjects over the female on adventuresomeness. Tryon as well, as early as in 1943 found similar differences among the boys and girls, that boys displayed more fearlessness and vigorous behaviour than the girls. Our experiences in daily life situations also stand testimony to the male superiority on adventuresomeness.

As for circumspect individualism, the male overachievers in Hindi have been found to be more prone to circumspect individualism or reflective and internally restrained temperament and it is also quite compatible with emotional stability. It may be pointed out here that no single factor is responsible for generating any human behaviour — it is rather a pattern, a configuration or set of characteristics that exerts a sort of formulative influence on behaviour. As such, along with traits like adventuresomeness it is quite healthy that some moderating characteristic, like reflectiveness, restrains the subjects, exhuberant behaviour and disciplines it to work within the target task, let us say, academic achievement. Quite understandably less restraints are needed for the girls who are already less adventurous.

The results in Hindi also reveal that the overachievers are more self assured and secure than the girls. The result seems quite consistent with the difference found between the two sexes on intelligence, emotional stability and adventuresomeness. By the virtue of their greater understanding
of things and ideas as well as superiority on emotional stability the boys are, quite reasonably, more self assured and secure. Reverse is true of the girls also.

The greater excitability and tenseness of the girls is quite in agreement with their lack of emotional stability. Higher excitability and tenseness are the constituent factors of neuroticism according to Cattell (Manual, HSPQ, 1973, p.12) which is differentially a female problem (Tyler, op.cit.)

It may be pointed out that the more likelihood of female subjects to be excitable, less secure and tense in comparison to the boys may, to a great extent, be culturally biased. The biased bifurcation of responsibilities or their lurking burden for the adolescent girls quite naturally would make them less secure, and more tense and excitable than their male counterparts — specially so when some target of achievement is also there to be reached at.

In English the over achieving boys have been found to be more intelligent (B) and emotionally more stable but less self sufficient (Q₂) and less tense (Q₄) than the girls. On factor E, the male over achievers in English are prone to obedience and female over achievers are inclined to be assertive.

As for the superiority of the male over achievers in English on intelligence, emotional stability and their lower
tenseness is concerned, it is as much convincing here in English as it was in connection with the male over achievers in Hindi, and the same interpretation, in terms of established sex differences could apply here.

With reference to the over achieving boys in English being more obedient and the girls more assertive, as already discussed elsewhere, sometimes assertiveness appears as a compensatory measure, and this tendency is more probable with the girls because they demand recognition — which they are usually denied — more than the boys, specially during the period of adolescence.

Besides, their inadequacies in other areas provoke them harder to behave in a more identifiable aggressive and dominant manner to gain 'prestige' than the boys (Barker et al., 1947; Ridding, 1966). The boys, on the other hand, perhaps manage to attract greater care and attention of their parents and teachers by behaving in a more obedient way. Obedience too has been found to be associated with over achievement (Dhaliwal, 1971). What the girls earn by assertiveness perhaps the boys earn by obedience, i.e., over achievement.

That the male over achievers in English are less self sufficient or less resourceful than the girls, can, again, be interpreted with reference to the personality of girls, which makes up for the differential treatment meted out
to boys and girls in society. The girls would not survive in the male dominated competitive society if they were not assertive, self-sufficient and resourceful. These characteristics, when combined together would create a fighting spirit among girls, which would generate tension. Such characteristics are more probable among girls when they have to compete with the boys in a tough subject like English.

The over achieving boys in Mathematics are higher than the over achieving girls on intelligence (B), emotional stability (C), enthusiasm (F), adventurousness (H) and security or self assuredness (O), but lower on assertiveness (E), Circumspect individualism (J). On factor $Q_4$, the over achieving boys in Mathematics are comparatively relaxed and girls tense.

That the over achieving boys in Mathematics are more intelligent and emotionally more stable than the girls also signifies a differential trend with the boys and girls in other subject areas. It has already been pointed out that boys are found to be more intelligent than the girls probably because they are more exposed to multifarious fields of experience.

Being comparatively more intelligent than the girls the over achieving boys would quite naturally be more stable and self assured as also discussed earlier, than their female counterparts. They would also not need, or need
to a lesser degree, to be assertive or aggressive which is a mark of emotional instability and is seen to be prominent among girls.

Mathematics, being a difficult subject, also requires a lot of poise and persistence, and the boys with their culturally biased advantages may achieve in it with comparative ease, while the girls may have to make greater struggle in order to reach some level of achievement. Hence also the greater tenseness and lack of security among girls.

A tough and provocative and challenging subject like Mathematics would also call for some degree of adventesomeness and enthusiasm on the part of students, the characteristics which the over achieving boys and girls have been found to possess, but in a greater and lesser degree respectively. The lack of zeal and adventesomeness in girls is perhaps compensated by their greater assertiveness and tenseness.

As for less circumspect individualism of the over achieving boys in Mathematics, it may be said that it is a characteristic which, signifying less shackled and restrained temperament, quite fits in with the greater zeal, enthusiasm and adventesomeness and is helpful for achieving in a difficult subject. Girls being more assertive and tense perhaps need a little more of circumspect individualism to contain themselves for achievement.

In Science also the sex differences are quite pronounced.
The male over achievers have been found to possess higher intelligence (B) than the female over achievers. Besides, the male subjects are emotionally more stable (C), more adventurous (H), more prone to circumspect individualism (J), and more self assured (O), but less assertive (E), less self sufficient (Q2) than their female counterparts. On factor Q4, the male over achievers in Science are prone to be relaxed and the female over achievers are tense and 'over wrought'.

Science, also being one of the difficult subjects like Mathematics, quite understandably reveals wide similarities in characteristics on the part of over achievers with those in Mathematics. As such on several personality dimensions the differences between the male and female over achievers in Mathematics and Science are very much alike, i.e., on intelligence, emotional stability, adventuresomeness and assertiveness.

The same interpretations given under Mathematics for these traits may also be applied in the case of over achievers in Science. To reiterate briefly the boys meet the challenge of the subject, through being more intelligent, more stable and more adventurous, while the girls do so by virtue of being more assertive, more resourceful or self sufficient and hence more tense and over wrought. They obviously have to make greater effort than boys due to their culturally biased
inadequacies in intelligence, emotionally stability and adventuresomeness.

What makes the difference between the over achievers of the two subjects, and renders uniqueness to their characteristic — sets is that the over achieving boys in Science are more prone to circumspect individualism and reflectiveness and are less self sufficient than the girls, along with being more self assured and relaxed, while the over achieving girls are less prone to circumspect individualism and more self sufficient, along with being less self assured and more tense.

These differences might probably be emanating from the nature of the subject itself — may be Science is a bit less demanding than Mathematics. Thus the boys who are more intelligent, reflective, stable and relaxed feel more self assured and secure than the girls. The girls, on the other hand, perhaps hurry up, do harder effort and get 'driven' and hence 'over-wrought' and 'tense.

It appears from the results discussed so far that the girls must be tense whether the target appears to be beyond their abilities or accessible. They are driven to work hard on one because it is too difficult and for the other because it can be competed upon and success in it is more probable. In one situation it is the fear of failure that motivates them and in the other situation it is the hope of success
that makes them highly alert and 'over wrought' and tense. Thus tense they must be whether it is Hindi, English, Mathematics, or Science.

For becoming more set, rather over set, for achievement, the girls due to their known inadequacies have to be more resourceful, self sufficient and assertive than the boys, who are rather more confident of their success and feel relaxed.

**Personality Differences Between Male and Female Under Achievers.**

Sex differences were also found among under achievers in the four knowledge areas, Hindi, English, Mathematics and Science on fourteen personality factors of HSPQ.

In Hindi, the male under achievers have been found to be comparatively more reserved (A), more intelligent (B), emotionally more stable (C), more adventurous (H), and more prone to circumspect individualism or internally restrained temperament (J), more tough minded (I) and more self assured and secure (O) than their female counterparts. On factor E, the male subjects are prone to be obedient and the female subjects are prone to be assertive. Factor Q4 differentiates the male and female subjects as relaxed and tense respectively.

A perusal of the results discussed in relation to the over achieving boys and girls reveal certain personality
characteristics emerging as male or female traits. The male subjects so far have invariably been found to be more intelligent and emotionally more stable. In three out of four subject areas they are also more adventurous than the girls. The girls, on the other hand, have been found to be consistently more tense, and in three out of four subject areas more assertive and less self assured or less secure.

It is quite expected, therefore, that these characteristics are also carried over by male and female under achievers in different subjects. The exclusion or inclusion of certain other characteristics, however, gives newness to the personality patterns of under achievers in different subject areas.

In Hindi, the male under achievers, carry over these common characteristics of higher intelligence (B), emotional stability (C) and adventuresomeness (H). These, as discussed earlier, are attributable to their culturally biased advantages. The girls on the other hand are more prone to be assertive (E), and tense (Q₄) as they have to work harder for their identity, again for cultural reasons, in the male dominated society. As compared to the girls, boys are prone to be obedient and mild (E), again more or less sex related characteristics.

That the under achieving boys in Hindi are more internally restrained and girls less restrained is quite
understandable with reference to their positions on emotional stability. The boys being emotionally more stable are also internally more restrained and the girls with their emotional instability are less restrained. Quite consistent with this pattern, the boys are more secure, relaxed and more tough minded than the girls. With their lesser emotional stability the girls are, conversely, less secure, less tough minded and therefore more tense.

The under achieving boys and girls in Hindi have also been found to be reserved, boys being more reserved and girls less reserved. It is, perhaps, the realisation of their inadequate achievement due to their poor study habits etc (Dhaliwal, 1971) as already explained in the case of Science male and Hindi female over and under achievers that leaves the boys and girls brooding in aloofness. The girls, perhaps, being more talkative tend to be less reserved than the boys.

So far as the sex differences among the under achievers in English are concerned, the male under achievers are emotionally more stable (C), more excitable (D), more assertive (E), more sober (F), more prone to circumspect individualism (J), and sociably more group dependent ($Q_2$), but less secure (O) and less tense ($Q_4$) than the under achieving girls in English.

That boys are emotionally more stable and less tense than the girls is further confirmed by these results to be a male
What strikes the mind is the peculiar combination of personality characteristics of the male and female under achievers in English. The characteristics both for the boys and girls are very much inconsistent and conflicting. On one hand the male under achievers in English are emotionally more stable, more sober, more restrained and less tense and on the other hand, they are more excitable, more aggressive, and sociably more group dependent, and less secure. The former being favourable and the latter infavourable characteristics for achievement. The reverse is true of girls. Both are, therefore, torn between the forces of two opposite currents. Both the types of personality characteristics are exerting their influence only to bring about a 'plateau' in the process of learning, resulting in under-achievement, a situation which puts even 'Hamlet' in a fix of 'to be or not to be' and leaves him as an under achiever.

The results dealing with under achievers in English also reveal certain important evidences, of sex differences on different personality dimensions. Besides, the pattern of characteristics wears quite a new look for each of the two viz., male and female under achieving groups.

In Mathematics also the male under achievers are comparatively more reserved (A) than under achieving girls. They are, also, higher on intelligence (B) and emotional stability (C).
The male under achievers are also more adventurous (H), more tough minded (I), more secure and self assured (O), and more self controlled (Q3), but less assertive (E) and less tense (Q4) than the female under achievers in Mathematics.

Thus, the results on under achievers in Mathematics also help bring out certain male and female tendencies. The male subjects here too, as in other situations, are more intelligent, emotionally more stable, more adventurous, less assertive and less tense than the girls.

That the girls are less tough minded and less secure can be explained, as it has already been done earlier, in terms of lower emotional stability of girls and the resulting tenseness in them as compared to the boys. With this combination of characteristics it is quite understandable that the under achieving girls in Mathematics are also less self controlled than the boys.

The greater reservedness of the under achieving boys and lesser of the girls, may again be the consequence of their inadequacy, as it was explained under Mathematics.

The male under achievers in Science have been found to be more reserved (A), more intelligent (B), emotionally more stable (C), more prone to circumspect individualism (J), more secure or self assured (O) and more tough minded (I) but less tense (Q4) than the female under achievers.
The findings about the male and female under achievers in Science also confirm the tendency of male subjects to be emotionally more stable and less tense and of the female subjects to be emotionally less stable and more tense. There is a confirming note in the result on intelligence also.

That the girls are less tough minded and less secure and boys more tough minded and more secure can be explained, as it has already been done earlier in terms of less emotional stability of girls and the resulting tenseness in them as compared to the boys.

It may be concluded from the above discussion of sex differences that there are certain characteristics which emerge as specifically male or female traits. Higher intelligence, greater emotional stability, higher sense of security or assuredness invariably go with the male subjects, and higher tenseness comes out to be the hallmark of female subjects. Besides, in three out of four subject areas, the male over achievers have also been found to be more adventurous than the female subjects. Among the under achievers the characteristics which further distinguish boys from girls are circumspect individualism and tough mindedness in which the former are higher than the latter. Further additional characteristics found with each group give a distinctive pattern to the whole characteristic-set of male and female over achievers as well as male and female under achievers in different
Generality/Specificity of Over and Under Achievement.

One of the main objectives of the present investigation was to find out whether over and under achievement was a general phenomenon or a specific one with reference to different school subjects, i.e., whether over and under achievers in one subject were also over and under achievers in the other subjects or not.

It has been found in this regard that the overlap of over achievers as well as under achievers along the four school subjects, Hindi, English, Mathematics and Science, is very small. The results thus reveal that over and under achievers in one subject area are not necessarily over and under achievers in all the other subject areas.

It can be said in this regard that the results are quite in agreement with our teaching and evaluating experiences in school situations. Students quite frequently exhibit different levels of performance in different knowledge areas. Such intra-individual differences of the students with reference to their achievement in different school subjects have also been reported by research studies and psychological literature (Blair, 1956; Anastasi, 1958; Blair, Jones and Simpson, 1975).

It may be pointed out that such intra-individual differences
might also been emanating from the 'intrinsic' interest of the students themselves as well as motivational forces differentially available for specific school subjects (Taylor, 1964; Gawronski, 1965; Atkinson and Raynor, 1978).

In the light of experimental as well as empirical evidences, the results of present investigation in this regard quite convincingly suggest the specificity of over and under achievement with reference to different areas of knowledge.

It may be inferred from the foregoing discussion of results that over achievers differ from under achievers in their personality characteristics. It has also been borne out that the differential characteristics or combinations of characteristics of over achievers as well as under achievers vary with different knowledge areas. Thus the results on personality characteristics of over and under achievers confirm the first hypothesis of the present investigation that "Over and under achievers in different subjects would possess different combinations of personality characteristics".

As for sex differences within the groups of over and under achievers, it emerges from the above discussion that male over achievers differ from female over achievers and male under achievers from female under achievers in each of the four subject areas on different personality characteristics. Besides, the combination of characteristics emerging within the context of each school subject also differ from subject to subject.
There are certain common male as well as female characteristics, no doubt, but the addition of certain other characteristics gives a unique pattern to each of these combinations within a subject area. Thus the results on sex differences in the personality characteristics of the two sexes confirm the second hypothesis of the present investigation that: "Boys and girls would reveal differences along personality characteristics within the groups of over and under achievers in each of the four selected knowledge areas, Hindi, English, Mathematics and Science."

So far as the generality and specificity of over and under achievement is concerned, it clearly emerges from the discussion in this regard that there is little overlap of over and under achievers in different school subjects. As such the results of the present investigation confirm the third hypothesis that: "Over and under achievers in one subject will not necessarily be over and under achievers in all other subjects, and there will be very small 'common proportion' along different school subjects. Over and under achievement is, therefore, expected to be specific with specific subjects".

**Educational Implications**

Keeping in mind the results of the present investigation it is hoped that the findings would be of some educational worth. To begin with certain differential personality
characteristics which have been identified as going with over and under achievement in different school subjects might help in improving prediction of academic achievement along with intelligence which has so far been recognised as the single most important, but at the same time, an imperfect predictor of scholastic attainment. These personal factors would, thus, serve as moderators to prediction of achievement through intelligence and prevent the workers in the field from over prediction in the case of under achievers and from under estimation in the case of over achievers (Thorndike, 1963, p.5).

There are indications in empirical findings that the tendency of over and under achievement sets in quite early, at about elementary school level (Shaw and McCuen, 1960; Asbury, 1974) and therefore, needs an early identification. It is expected that the knowledge of differential personality factors characterising over and under achievement in specific subjects might help in controlling over under achievement at an early stage. Precautionary and remedial measures as suggested by Writh (1977), Gerler et al. (1985), Limbrick et al. (1985) and Pigott et al.(1986), could be applied to deal with the problem of under achievement and suitable guidance and counselling programmes could be conducted accordingly.

Association of certain personal characteristics to over and under achievement in specific knowledge areas might also
help in the selection of suitable candidates for their respective educational and professional streams. As such, much of human resource would be saved from wastage and people would be able to pursue rather than drop out from their educational and professional lines of operation.

It is also worth mentioning that to the parents and teachers it is under achievement alone that matters and keeps them worried and concerned, while to the psychologist even over achievement sometimes appears to be a psychological problem, when it occurs as a result of defence mechanism or a compensatory endeavour on the part of the over achievers to prove himself 'good' and 'adequate'. Thus the under achievers need the help and guidance of their teacher to reach upto the expected level and the cases of defensive over achievement to accept themselves at a 'more comfortable level.'

The personality differences between the male and female subjects in the groups of over achievers as well as under achievers, that the results of the present investigation have brought out, might further be of some help in understanding the two sexes in the context of their characteristics, and, what is highly important, treating them accordingly for guidance as well as remedial measures.
Suggestions for Further Research

At the end it appears not out of place to mention that the present research, as any individual piece of research, raises many more questions than it has been able to answer. It is, however, expected that the present work would at least serve as a threshold in the area of over and under achievement in specific school subjects, and certain issues that were either outside the perview of the present investigation or might not have been adequately dealt with, would possibly become provocative and stimulating to the interested workers in the field for further explorations.

By way of suggestion emanating from the findings of the present research, it may be submitted at the outset that the researchers in this field would better avoid determining over and under achievement from the students' total achievement scores, and carry out their investigations with reference to specific areas of knowledge.

It would also be better if the achievement scores are derived from measures constructed and standardised by the researchers themselves or obtained from standard achievement tests suited to the grades involved. As such, the workers would not have to depend on teachers' evaluation only, as the present investigator had to, due to the lack of time and resources.
As mentioned earlier, there still lie certain unresolved issues about the over and under achievement phenomenon which might be quite profitably explored by the future investigators. One such issue may be the temperamental and attitudinal difference between the normal over achievers and the defensive over achievers in specific school subjects.

A study on the differences of personality characteristics of over achievers as well as under achievers, in different knowledge areas might also yield quite interesting results.

A follow up study of over and under achievers to gain insight into the development of over and under achievement in the context of personality and environmental variables may also be worthwhile. For example, the relationship between parents and teachers' attitudes and over and under achievement in different school subjects may also be an interesting field of enquiry for intending investigators.

Lastly it appears imperative to caution the future researchers in the field against the conceptual and methodological pitfalls of confusing over and under achievement with high and low achievement, as many researchers in the field have done even after the publication of Thorndike's monumental book on the topic in 1963.
Chapter VI

SUMMARY AND CONCLUSIONS

The present investigation was carried out with the purpose of exploring certain non-cognitive personality factors possibly associated with over and under achievement in different school subjects. Over achievement in this context refers to actual achievement falling above and under achievement falling below the level predicted through intelligence.

A review of relevant researches showed that the early workers in the field of achievement prediction like Franzen (1920), Pinter (1922), Peters (1926), and Burt (1937) believed intelligence to be the inborn capacity to learn and therefore the most reliable and perfect predictor of school achievement. As such, any incongruencies between intelligence and achievement scores were taken to be the consequence of faulty measure of either ability or achievement or of both. Later research works revealed intelligence to be the most important single predictor of academic achievement yet not a perfect one (Dhaliwal, 1971; McCandless et al., 1972; Glossop et al., 1979; Crano et al., 1979; Roberge and Flexer, 1981; Yule et al., 1982).

Intelligence, thus, being an imperfect, though most important, predictor of academic achievement failed to predict the achievement
of students beyond a certain extent. As such, a proportion of data on achievement remained unexplained purely on the basis of intelligence. There were cases achieving higher and lower than the level predicted by the level of intelligence. These cases exhibiting positive and negative discrepancies from the predicted norms were respectively termed as over achievers and under achievers by as early an investigator as Burt. However, none of the early workers, including Burt, could explain adequately why people achieved higher or lower than predicted through intelligence, as the discrepant achievement was not compatible with their 'capacity' theory of intelligence.

It is seen that the early workers were also baffled with a stranger phenomenon of inverse movement of the high and low achievers towards the group mean. Later empirical evidences proved it to be a common characteristic of human behaviour identified as 'regression'. Thorndike (1963) formulated a detailed methodology of controlling the effect of regression while predicting achievement on the basis of intelligence. The technique is known as 'regression equation' or 'prediction equation'. Any research work in the field of achievement prediction is now hardly regarded as reliable if the investigation does not take into consideration the effect of regression or fails to control it with the application of regression equation. Over and under achievement would, thus, be defined as the positive and negative 'discrepancy of actual achievement
from the predicted value, predicted upon the basis of the regression equation between aptitude and achievement' (Thorn-dike, 1963, p.13).

While studying the probable non-intellective factors operating on scholastic performance many investigators in the field have satisfied themselves with exploring personality and environmental factors going with academic achievement, without taking into account the effect of intelligence as well as the influence of regression. Such studies at best have yielded results indicating the relationship of certain non-cognitive factors with high and low achievement without specifically identifying the extent of operation of these variable on achievement when the effect of intelligence is accounted for (Eysenck and Cookson, 1969; Entwistle and Welsh, 1969; Jenson, 1973; Rai, 1974; Vora, 1978; Reddy, 1978; Maqsud, 1980; Tramb, 1984).

There is, however, some research work which has been carried out with a clearer understanding of the concept of over and under achievement and where the personal concomitants of over and under achievement have been explored (Rao, 1963; Gawronski, 1965; Morrison, 1969; Vanarase, 1970; Bhaduri, 1971; Dhaliwal, 1971; Sharma, 1972; Passi and Lalithamma, 1973; Maria, 1974; Agrawal, 1976; Stockhard and Wood, 1984). Though there is little agreement among the investigators on the personality characteristics associated with over and
under achievement yet a few personality factors emerge out as differential features. Personal and social adjustment, emotional stability and good study habits have been found to be going with over achievement, and poor study habits and low personal and social adjustment and emotional instability going with under achievement.

These studies of over and under achievement have yielded quite valuable data concerning the differential personality characteristics of over and under achievers, but have derived over and under achievement from the total achievement scores of the subjects with the implied assumption that an individual's total achievement score represented his achievement levels in different individual subjects.

Thus, the review of previous studies has revealed that the field of over and under achievement has yet not been sufficiently explored and certain aspects of the over under achievement phenomenon have hardly been touched upon. The intra-individual differences generally found in academic achievement and quite probable in over and under achievement have yet not been explored by the workers in the field. Besides, the sex differences in over under achievement and their relationship with personality factors have scarcely been empirically studied so far.

Hoping to gather some empirical evidence to fill in these gaps in knowledge the present work has been carried out with
the following objectives:

(1) To identify the differential personality factors going with over and under achievement in each of the four school subjects, selected for the study, Hindi, English, Mathematics and Science.

(2) To investigate sex differences within the groups of over achievers and under achievers in individual subject areas along different personality dimensions.

(3) To determine whether over under achievement is a general phenomenon or a specific one with reference to different school subjects.

The working hypotheses formulated for the study were as under:

(1) Over and under achievers in different school subjects would possess different combinations of personality characteristics.

(2) Boys and girls would reveal differences along personality characteristics within the groups of over and under achievers in each of the four selected knowledge areas: Hindi, English, Mathematics and Science.

(3) Over and under achievers in one subject will not necessarily be over and under achievers in all the other subjects and there will be very small 'common proportion' along different school subjects. Over and under achievement is, therefore, expected to be specific with specific subjects.

The present investigation was conducted on a sample of 437 students from VIII and IX classes of boys' and girls' high
schools under Aligarh Muslim University, Aligarh.

For the collection of data, the present investigation employed Cattell and Cattell's Test of 'g': Culture Fair, Scale 2, Form A for obtaining intelligence scores; Cattell and Beloff's H.S.P.Q. for obtaining scores on fourteen personality factors; and marks in Hindi, English, Mathematics and Science from the school records of two full fledged examinations, one annual and one half yearly, and four tests as achievement measures.

For facilitating comparisons and further statistical treatment, the intelligence and achievement scores were converted into Z-scores.

Over and under achievers in each of the four school subjects were identified with the help of regression equation as suggested by Thorndike (1963). After obtaining the intelligence predicted achievement scores, discrepancies between the actual and predicted scores were calculated to demarcate cases falling above and below the predicted scores in each of the four subject areas. For defining the discrepant achievers in both the positive and negative directions more clearly, cases lying one SDe above the predicted score were designated as over achievers and those lying one SDe below as under achievers in each of the four subject areas among the boys and girls separately.
Following the above procedure, sixteen pairs of groups were constituted for comparisons of fourteen personality dimensions. The groups compared were as follows:

AMONG BOYS

(1) Over achievers in Hindi vs under achievers in Hindi.
(2) Over achievers in English vs under achievers in English.
(3) Over achievers in Mathematics vs under achievers in Mathematics.
(4) Over achievers in Science vs under achievers in Science.

AMONG GIRLS

(5) Over achievers in Hindi vs under achievers in Hindi.
(6) Over achievers in English vs under achievers in English.
(7) Over achievers in Mathematics vs under achievers in Mathematics.
(8) Over achievers in Science vs under achievers in Science.

SEX DIFFERENCES AMONG OVER ACHIEVERS

(9) Male over achievers in Hindi vs Female over achievers in Hindi.
(10) Male over achievers in English vs Female over achievers in English.
(11) Male over achievers in Mathematics vs Female over achievers in Mathematics.
(12) Male over achievers in Science vs Female over achievers in Science.
SEX DIFFERENCES AMONG UNDER ACHIEVERS

(13) Male under achievers in Hindi vs Female under achievers in Hindi.

(14) Male under achievers in English vs Female under achievers in English.

(15) Male under achievers in Mathematics vs Female under achievers in Mathematics.

(16) Male under achievers in Science vs Female under achievers in Science.

For finding out the significance of differences between the sixteen pairs of groups shown above, the 't' test was employed. In order to determine the significance of common proportion of over and under achievers in different school subjects, the Normal Deviate Test was employed.

The results of the 't' test have been presented in Tables 1 to 16 and on Normal Deviate Tests in Tables 18 and 19.

The findings may be summarised as under:

(1) The male over achievers in Hindi were found to be more prone to be enthusiastic (F) but less excitable (D) and less tough minded than the male under achievers in Hindi.

(2) The male over achievers in English were more prone to obedience, submissiveness and accommodating temperament, while the under achievers in the same subject were more inclined to be assertive, competitive and aggressive (E).
(3) The male over achievers in Mathematics differed from the under achievers only on one personality measure. The over achievers were found to be relaxed ($Q_4$) and the under achievers tense. On the other thirteen factors of HSPQ the differences were insignificant.

(4) In Science, the male over achievers exhibited no significant difference from the under achievers on any of the fourteen personality factors.

(5) The difference between the female over and under achievers in Hindi was found to be insignificant on each of the fourteen dimensions of personality.

(6) In English the over and under achieving girls differed significantly on several personality factors. The over achieving girls were found to be more assertive ($E$), more enthusiastic ($F$), more inclined to tough mindedness ($I$), and more prone to be self sufficient ($Q_2$), but less intelligent ($B$), and less prone to circumspect individualism ($J$). The under achieving girls in English, on the other hand, were comparatively less assertive, less enthusiastic and less tough minded, but more intelligent, more prone to circumspect individualism and more sociably group dependent.

(7) The female over achievers in Mathematics exhibited significant differences on two out of fourteen personality factors. The over achieving girls were found to be more enthusiastic ($F$) and more self sufficient ($Q_2$) than the under achieving girls.

(8) Among the girls, over achievers in Science were more inclined to be reserved ($A$) and more self sufficient ($Q_2$) than the under achievers.
(9) As regards sex differences, the over achieving boys in Hindi exhibited higher scores than the over achieving girls on intelligence (B), emotional stability (C), adventurousness (H) and circumspect individualism (J). The over achieving girls, on the other hand, were more excitable (D), more apprehensive (O) and far more tense (O₄) than the male over achievers.

(10) In English the over achieving boys were found to be more intelligent (B) and emotionally more stable (C) and prone to be obedient (E) than the over achieving girls, while the female over achievers in English, on the other hand, were more assertive (E), more self sufficient (O₂) and more tense (O₄) than the male over achievers in English.

(11) In Mathematics the over achieving boys were found to be higher than the over achieving girls on intelligence (B), emotional stability (C), surgency or enthusiasm (F) and adventuresomeness (H), while the female over achievers were more apprehensive (O) and more self sufficient (O₂). On factor E, the boys were prone to be obedient and the girls assertive. Results on O₄ showed that the male over achievers in Mathematics were relaxed and the female subjects tense.

(12) The over achieving boys in Science also showed higher intelligence (B), greater emotional stability (C), more of adventuresomeness (H), and greater circumspect individualism (J) than the over achieving girls. The female subjects, on the other hand, were more assertive (E), more apprehensive (O), more self sufficient (O₂) and far more tense (O₄) than the male over achievers in Science.
(13) The under achieving boys in Hindi were found to be more reserved (A), more intelligent (B), emotionally more stable (C), more adventurous (H) and more prone to toughmindedness (I), circumspect individualism (J) and self assured temperament (O) than the under achieving girls. The male subjects were also more inclined to be obedient (E) and relaxed temperament ($Q_4$), while the female subjects were assertive (E) and tense ($Q_4$).

(14) In English the under achieving boys were emotionally more stable (C), more excitable (D), more assertive (E), more sober (F), more tough minded (I), more prone to circumspect individualism (J), more appre­hensive (O) and sociably more dependent ($Q_2$) but less tense ($Q_4$) than the under achieving girls.

(15) In Mathematics, the male under achievers were higher than the female under achievers on reservedness (A), intelligence (B), emotional stability (C), adventurousness (H), tough mindedness (I), security (O), and self control ($Q_3$). The male under achievers were also prone to be obedient (E) and relaxed ($Q_4$), while the female subjects were prone to be assertive (E) and tense ($Q_4$).

(16) In Science the male under achievers were more reserved (A), emotionally more stable (C), more tough minded (I), and more prone to circumspect individualism (J), and more self assured (O). On factor $Q_4$, the male subjects were found to be relaxed and female subjects tense.

The results of the sixteen analyses by means of 't' test reveal that:
(1) Over achievers in different school subjects differ from the under achievers in their personality characteristics or combination of differential characteristics with only two exceptions — the over and under achieving boys in Hindi, and girls in Science do not show any significant differences.

(2) The male over and under achievers differ from the female over and under achievers in each of the four knowledge areas. Besides, every individual group is marked for its own personality pattern, quite different from others. The results on sex differences also reveal some personality characteristics as male characteristics and some other as female characteristics.

So far as the problem of generality and specificity of the over and under achievement in different school subjects is concerned, the results clearly showed that the common proportion of over achievers as well as under achievers along different school subjects was significantly less than .5 or 50 per cent. As such it was proved empirically that over and under achievers in one subject were not necessarily over and under achievers in all the other subjects, thus showing clearly the intra individual differences both among over and under achievers along different school subjects.

As is evident from the above summary, the three hypotheses advanced at the start of the investigation are confirmed. The results have been discussed in terms of theoretical considerations and empirical findings relevant to the field of study.