DISCUSSION

The present research aims at examining vocational maturity of ninth, tenth and eleventh class students of both sexes belonging to Armed Forces personnel and those of Civilians in relation to personality, abilities in terms of intelligence and aptitudes, and academic achievement variables. For identification of intergroup differences in vocational maturity and their corresponding psychological correlates, related hypotheses were framed in Chapter - IV and tested through various statistical techniques in Chapter - V. Results obtained are as follows :-

A. Development Trends

1. Educational Class Levels and Vocational Maturity

Vocational thoughts of a person develop with advancement in educational class levels. An individual's experience is varied and complex due to influences on his or her development of maturation and learning processes. Educational class levels are differentiated into stages of human and particularly vocational development. The following discussion gives a brief overview of these differences over the three class levels viz. IX, X and XI as under :-
It was found (Table - 3) that there were highly significant differences between IX and X, IX and XI, and X and XI classes in the measures of career choice attitudes, self-appraisal, occupational information, goal selection, planning, problem solving and career choice competencies total respectively. The highest mean scores were found for class XI followed by X and IX classes on all the above said vocational maturity measures (Table - 3). Scientifically, it can be said that vocational maturity is a developmental process. Findings of the present study were similar to the studies conducted by (Gribbons and Lohnes, 1968; Pendleton, 1976; Alexander, 1977; Kelso, 1977; Seik, 1978; Chand, 1979; Dillard and Perin, 1980; Mahy, 1980 and Josan, 1983). These studies showed that there was a progressive development in vocational maturity with advancement in educational class levels. Developmental theories of Ginzberg et al. (1951); Super (1957) and Crites (1973) also hold that vocational behaviour develops more rapidly during adolescence as compared to other developmental stages.

2. Educational Class Levels and Intelligence

Intellectual faculties of an individual develop quantitatively and qualitatively with his/her progression from lower educational class to upper classes. Different intellectual levels measured in terms of Raven's 'g' factor among IX, X and XI classes for present work are discussed briefly below :-
There were significant differences in intelligence over the three class levels viz. IX, X and XI (Table - 5). The highest mean scores in intelligence were obtained by XI class students followed by X and IX class students respectively (Table - 5). Findings of the present study supported the hypothesis that intelligence 'g' develops from one educational class to another. Findings of the present study showed similarity to those studies conducted by (Jalota, 1954 ; 1964 ; Nafde, 1961 ; Pandey, R.E., 1961 ; Premalatha, 1962 ; Singhal, 1965 ; Kaul, 1966 ; Tripathy, 1970 ; Sharma, 1971 ; Nair, 1972 ; Patel, J.Z., 1974 ; Shah, B., 1975 ; Duari, 1976 ; Nepal, 1977 ; Pillai, 1978 ; Chakraborty, 1979 ; Nagar, 1979 ; Saddiqui, 1979 ; Pandey, S.S., 1980 ; Sandhu, 1981 and Hansra & Randhawa, 1986). These investigations pertaining to intellectual growth indicated that as a person matures from preadolescence to adolescence (advancement in age or educational class levels) his or her intelligence develops.

It can be said that there would be more subtle changes in a child's inner world of thoughts as he or she moves from one class to another. These occur as a function of maturation and learning wrought by educational and environmental changes. The students of higher classes get more opportunities of assimilating cognitive elements.

Various researchers in other countries have confirmed this developmental hypothesis in intelligence. Intelligence as a developmental process was reported by
various investigators (Hart, 1924; Burks, Jensen and Terman, 1930; Dearborn and Cattell, 1930; Baldwin, 1933; Freeman, 1938; Stove and Barker, 1937b and 1939; Bradway, 1945; Jones and Conrad, 1944; Jones and Kaplan, 1945; Thorndike, 1948b; Schaie, Rosenthal and Pearlman, 1953; Sontag, Baker and Nelson, 1955; Schaie, 1958; Dearborn and Rothney, 1963; Bloom, 1964; Maganzini, 1975; Carroll and Maxwell, 1979). Bayley (1933) found that an infant's IQ scores were not constant. When an individual children's scores (IQ's) were plotted against age, they showed a variety of individual patterns of growth, clearly in accordance with the pattern of correlations. Further, analyses were made by Bayley (1940a; 1940b; 1949 and 1957). The importance of these findings in collaboration with other longitudinal studies (Honzik, 1938; Anderson, 1939; Ebert and Simmons, 1943; Honzik et al., 1948; Bayley, 1955; 1956b; 1963 and Schaefer and Bayley 1963) indicated that age produces changes in the stability of the IQ scores over the first 18 years. The cross sectional research demonstrated intellectual decline, wherein individuals at different age levels are tested at the same time. On the other side, longitudinal research indicated that intelligence continues to increase through maturity. In longitudinal research same individuals are tested repeatedly overtime.

In conclusion, above said evidences suggest that there are maturational changes in intelligence. A child's intelligence does not necessarily remain constant with age,
but it improves from age to age in accordance with maturation and learning.

3. Educational Class Levels and Aptitudes

In the present study, seven aptitudes viz. verbal reasoning, numerical ability, abstract reasoning, mechanical reasoning, space relations, language usage (spelling and sentences) and clerical speed & accuracy were studied and discussed briefly for IX, X and XI classes as under:

It was clear from the Table - 4 that there were significant class to class differences in verbal reasoning, numerical ability, abstract reasoning, mechanical reasoning, space relations, language usage I - spelling, language usage II - sentences and clerical speed & accuracy. The highest mean scores were found for the XI class followed by X and IX classes on all above said abilities (Table - 4). It can be said that differential aptitudes in terms of abilities develop significantly from IX through X to XI classes. Similar developmental findings were reported by various researchers. Rao (1962) reported that differentiation of abilities (numerical ability, numerical reasoning ability, space relations ability, linguistic ability, verbal reasoning ability, non-verbal reasoning ability and perceptual speed) was clearly evident in the profiles. Sharma, A., (1967) investigated developmental changes in the magnitude of six mental abilities viz. verbal, reasoning, numerical, spatial, perceptual and mechanical. It was found that grade and age exert a differential affect on the
ability scores. Measureable differences in abilities increase with age and educational experience and measureable differences in abilities decrease with decrease in the level of brightness (VIII to XI). In a longitudinal study of the dynamic organization of mental traits, Sharma, B.C., (1967) found increasing independence amongst the abilities with advance in age. This study also revealed that the mental traits (spatial, verbal, numerical, reasoning, clerical and mechanical abilities) tend to become independent after the age of twelve and half year. Sharma, N. (1980) investigated verbal reasoning, abstract reasoning, numerical ability, space relations, speed accuracy and mechanical reasoning of children belonging to 10 + to 13 + years from classes VII to X. Investigations showed, (i) with increase in age, three abilities verbal, abstract and mechanical reasoning grew rapidly in groups of boys and girls; (ii) there was a steep rise in abilities in the first year, which slow down in the second year and in the third year there was again a steep rise in growth of all abilities; (iii) the phenomena of differentiation and stabilization of mental abilities were noted with increase in age; (iv) crystallization of the amorphous type of ability in young children into specific ability with increase in age was noticed; (v) disparity among the abilities increased with the advance in age; increasing disparity confirmed the phenomena of differentiation and stabilization of the abilities with advancing age. Bhavsar (1971) found that
the scores in numerical ability increased from IX through X to XI classes. Vega and Prieto (1980) found significant increases in spatial, perceptual and fluid intelligence from ten to fourteen years. Chattopadhyay (1971) reported that the nine aspects of language skill included in the study had a close relationship with grade levels as the scores on language development items increased consistently with increase in grade. Saddiqui (1979) reported that the verbal ability scores increased significantly from childhood to adolescence. Banker (1981) found that there were significant grade (VIII and IX) differences in abstract reasoning. Bhatt (1981) found that the means of boys and girls of grade IX were higher than those of grade VIII in verbal reasoning ability.

In conclusion, it can be said that different mental functions exhibit differences in the rate, peak and total magnitude of growth and in the pattern of decline of differential abilities. Different organs and different parts of the body grow and develop at different rates of speed. The growth takes different forms and directions with considerable variations occurring from person to person.

4. Educational Class Levels and Academic Achievement

It is generally assumed that academic achievement is learned. However, all the necessary skills required for success at school have to do with much more than sheer intellectual ability. A child's performance in terms of general mental development depends upon both chronological growth and experience. Age differentiation hypothesis is
reflected in our school curricula. Performance of a child incrementally increases with advancement in the educational class levels. The following gives a brief insight into this relationship:

Findings of the present research regarding developmental trend of academic performance showed that subjects (Ss) differed significantly over the three class levels viz. IX, X and XI in subjects such as English, Hindi, Mathematics, Science, Social Studies and in total academic achievement (Table - 7). The mean scores on all above said academic achievement measures were found to be significantly highest for XI class followed by X and then IX classes respectively (Table - 7). It can be said that academic intellectual efficiency in terms of various subjects i.e. English, Hindi, Mathematics, Science, Social Studies and total academic performance develops and changes as children move from lower to higher classes. The content of academic abilities enlarge along with development in chronological age of children.

Mohan (1972) reported that intelligence and academic achievement were positively and significantly correlated. Thus, if intelligence related to academic achievement shows developmental trends, so will academic achievement. Lele et al. (1963b) reported that (i) In the higher Mathematics group, the group achievement of the students was increasing year after year in almost all the S.S.C.E. subjects, (ii) The cumulative increases over years in the higher Mathematics groups were considerable in all the S.S.C.E.
subjects except in S.S.C.E. English and (iii) For all the groups, the ascending order of the S.S.C.E. subjects in terms of mean percent achievement was Mathematics, Science, Grand Total, English and Gujarati + Hindi.

CIE (1962) constructed and standardized an achievement test in Hindi and found that there was a sharp increase in the mean scores from lower to upper grades (VII to Grade IX). Palsane and Pathak (1971) attempted to make an enquiry into rise or fall in educational standards, through the comparison of scholastic achievements in different school subjects at the various grades of secondary school level. Findings of the study were as follow :- (i) In grade VIII, there was a small positive gain in the subjects of English and Algebra, but was not significant. In all other subjects there was a significant loss at .01 level ; (ii) In grade IX, although there was a positive gain in mean in English, the mean difference was not significant. But, in other subjects there was significant mean difference in favour of norms or the year 1958-59 indicating a loss in performance standards. Patel, J.M. (1977) prepared state norms for Delta Class (Standard VII) in language (Hindi), History and Geography. It was found that there was a direct relationship between achievement and age. Ashar (1972) found that norms in basic algebraic skills of boys had higher values than those of girls for all the three grades VIII, IX and X . Purohit et al. (1972) reported that there was a significant increase in students' learning achievement
scores in Hindi of standards IX and X, English of standards IX, and Mathematics of standard X, but a significant downward trend was noted in students' learning achievement scores in English of standard X and Mathematics of standard IX. Kulkarni et al. (1970) reported that in all the states the percentage performance was higher at the primary level than at the middle or higher school levels. At the primary level, performance of the model age group in eleven out of eighteen states was better than that of the higher age groups. At the middle and higher levels also by and large, model age group achieved better than the higher age groups. Patel, B.V. (1978) found that listening comprehension scores increased from class VIII to X. Mishra (1960) investigated that performances in Hindi, Social Studies, and Art & Craft have little relationship to age, while those in English, Mathematics and General Science indicate clear negative trend. Naidu (1960) reported that there was no significant differences in age variables except in Social studies. There were significant differences in the educational achievement in English, Science and Social Studies between those aged 14 years and under and those aged 15 years and above.

It is seen that most of the investigations of vocational maturity, intelligence, aptitudes and academic performance reveal significant age to age developmental differences. These developmental changes are also visible in personality variables.

5. Educational Class Levels and Personality

Personality is one of the important determinant of human behaviour. Personality of each individual is moulded by the
environment, which varies according to different learning and maturation processes. An attempt was made to differentiate the developmental changes of personality in terms of educational class levels pertaining to Eysenckian personality model of Extraversion/Introversion (E/I) and Neuroticism (N). These personality dimensions are discussed separately as under:

a) Educational Class Levels and E/I

In the present study the means in E/I for classes IX, X and XI were found to be significantly different (Table -6). The mean scores of X class were significantly highest on E/I than of IX and XI classes (Table - 6), while significantly lowest mean scores on E/I were found for XI class in comparison to IX and XI classes. Lynn (1964) and Gutman (1966) found that behaviour patterns become more introverted with increasing age. According to S.B.G. Eysenck (1965) extraversion increased in both girls and boys upto 13 years and then decreased. Mohan (1976) reported that extraversion was found to be significantly and negatively related to the age levels 10 to 15 and 20 to 25 years.

b) Educational Class Levels and N

Findings of the present study regarding personality dimension of neuroticism indicated that subjects differed significantly over the three class levels viz. IX, X and XI (Table - 6). The mean scores on N were highest of X class as compared to IX and XI classes respectively, whereas, lowest mean scores on N were found of XI class (Table - 6). Findings of the present study get support in personality theory postulated by Eysenck (1947) that there is a decrease in the scores of
neuroticism with age since neuroticism is taken as an autonomic drive. Eysenck (1965) reported that significantly higher scores on neuroticism for early adolescents, linking the onset of adolescence with greater anxiety and hence greater increase in neuroticism. The younger age groups have higher neuroticism averages (Collard & Goodfellow, 1962). Neuroticism increases with age in girls and decreases in boys (S.B.G. Eysenck, 1965). Gutman (1966) found that neuroticism tended to decrease between young adulthood and middle age i.e. from 17 to 50 years. Brezina (1974) found that N increased with age in girls and decreased in boys in the age group of 10 - 15 years. Neuroticism were found to be significantly related for the age levels, 15 to 20 and 20 to 25 years (Mohan, 1976). Pandey (1978) found a significant decrease in neuroticism from early adolescence to late adolescence.

Conclusion for Developmental Trends

The overview of developmental trends implies that there are changes which occur in physical and mental development. The evidences discussed together with other aspects of maturation and learning have suggested that the nature of vocational and intellectual processes change with growth. Further, the trends suggest that variability is greatest at periods when there are greater individual differences in rates of changes which appear to coincide with rapid changes in the nature of vocational as also intellectual processes. Personality changes also occur over a period of time. Also, these changes are indicative of socialized responses in terms
of acquisition and learning. Changes in mental functioning can be described quantitatively as well as qualitatively. Regarding the quantitative aspects which involve two issues (a) the age differentiation hypotheses and (b) the course of mental growth, which was since long thought to reach a peak in adolescence and then to diminish gradually thereafter. On the other side, changes in the qualitative aspects involve thinking, development of language, memory and perception of an individual. Much of a person's thinking has focussed on reasoning and problem-solving.

Developments of intellectual abilities and personality characteristics are important aspects of the general psychoneuro-physiological growth of an organism. There are three basic theoretical viewpoints of developmental psychology - Psychoanalytic (Freud, 1900); Behaviouristic (Skinner, 1953) and Cognitive (Piaget, 1967). According to Quereshi (1973) these developmental theories have put forth a rationale for intellectual and personality development. Some of these theoretical viewpoints without delineating their historical geneology, attempt to account for changes in the structure and organization of intellectual abilities and personality characteristics during various stages of life. These theories indicated year to year behavioural changes with varying degrees of relative emphasis to both the unfolding process of the biological factors and the moulding influences of the socio-cultural forces. But, there is no one accepted theory of child development. Several other developmental approaches suggested that intellectual
abilities become more differentiated with increasing age (Koffka, 1925; Lewin, 1935; Garrett, 1946; Piaget, 1950 and Gessell, 1954). Also, the theories of Ginzberg et al. (1951); Super (1957) and Crites (1973) hold that there were significant changes in developmental pattern of vocational behaviour. Personality changes in the nervous system cannot be ignored (Eysenck, 1947, 1964, 1967, 1971 and 1975).

B. Background Differences

The word 'Armed' is used in the present research for children belonging to Armed Forces personnel (Defence Services - Indian Army and Indian Air Force), whereas, the word 'Civilian' is used for children belonging to Civilian Population. Environment of Armed Forces personnel and Civilian in which children are socialized may be different. The following discussion deals with relationship of Intelligence, Aptitudes, Vocational Maturity, Academic Achievement and Personality with the background of an individual:

1. Background (Armed - Civilian) and Intelligence

Findings in the present study showed that children of Armed Forces personnel scored significantly higher than children of Civilian parents in intelligence (Table - 5). Differences between children of Armed Forces and Civilian in intelligence were evident through all the classes as seen in the significant interaction effect between grade X background (Table - 5, Conti. Table - 19 and Fig. 23). Also, differences between children of Armed Forces and Civilian with regard to sex in intelligence were seen in the significant interaction
effect between background X sex (Table - 5, Conti. Table - 21 & Fig. 25). Null hypotheses framed in the study could be rejected.

2. **Background (Armed - Civilian) and Aptitudes**

Findings of the present study indicated (Table - 4) that children of Armed Forces personnel scored significantly higher than children of Civilian parentage on aptitudes - verbal reasoning, numerical ability, abstract reasoning, mechanical reasoning, space relations, language usage spelling, language usage sentences and clerical speed & accuracy. Differences between children of Armed Forces personnel and children of Civilian parentage in numerical ability, abstract reasoning, and clerical speed & accuracy were present through all the classes as evident in the significant interaction effect between grade X background (Table - 4, Conti. Table - 11, 12, 18, Fig. 14, 15 and 22). Also, differences between children of Armed Forces personnel and Civilian parentage in language usage II sentences with regard to sex were seen in the significant interaction between background X sex (Table - 4, Conti. Table - 16 and Fig. 19). Null hypotheses framed on aptitudes in the present study could be rejected.

3. **Background (Armed - Civilian) and Vocational Maturity**

Findings of the present study indicated (Table - 3) that children of Armed Forces personnel scored significantly higher than children of Civilian parentage in the measures of vocational maturity - career choice attitudes, self appraisal, occupational information, goal selection, planning, problem solving and career choice competencies total. Differences between children of Armed Forces personnel and Civilian parents
in goal selection, problem solving and career choice competencies total were present through all the classes as seen in the significant interaction between grade X background (Table - 3, Conti. Table - 1, 4, 6, Fig. - 2, 6 and 8). Significant differences between children belonging to Armed Forces personnel and Civilian parentage showed that children of Armed Forces were more vocationally mature than children of Civilian parents. Reed and Lohman (1975) provided some evidence that even at early occupational development stages, students preparing for a military career are different from students preparing for a civilian career. Card (1977) found (i) College ROTC (Reserve Officers Training Corps) Cadets scored higher on both career development or vocational maturity scales (exploration scale and establishment sub-scales Super - 1974) than did college non-ROTC students (Civilian). Anderson (1949) pointed out that stimulation, knowledge, skills, attitudes and values have been patterned by culture and are transmitted to an individual by other persons. Family gives children their first training in social behaviour. Kuthapa (1962) analyzed the values test on the basis of intelligence and temperament among servicemen (Air Force) and Civilian. Significant differences have been found in the values preferred by the two groups on all the tests. Values preferred differ with regard to intelligence and temperament of individuals in two groups.

4. Background (Armed - Civilian) and Academic Achievement

Findings of the present research highlighted that children of Armed Forces personnel were significantly higher than those of
Civilian parents in academic achievement in various subjects like English, Hindi, Mathematics, Science, Social Studies and Total Academic Achievement (Table - 7). Also, differences between children belonging to Armed Forces and Civilian in English were present through all the classes as indicated in the significant interaction between grade X background (Table - 7, Conti. Table -22 and Fig. 26). On the other side, Card (1977) found that there were no significant differences in the academic grades of JROTC (Junior Reserve Officer Training Corps) and Non-JROTC high school seniors. However, ROTC college students reported lower high school and college grades than their non-ROTC classmates.

5. Background (Armed - Civilian) and Personality
   a) Background (Armed - Civilian) and E/I

   There were no significant differences between children of Armed Forces personnel and Civilian parents in extraversion/introversion (Table - 6), while the mean scores were higher for Civilian children. However, differences between children of Armed Forces personnel and Civilian parents in E/I were visible through all the classes as evident in the significant interaction between grade X background (Table - 6, Conti. Table - 8 and Fig. - 10). Null hypotheses framed in the study were retained.

   b) Background (Armed - Civilian) and N

   In neuroticism, the mean scores were significantly higher for children of Civilian parents in comparison to those of Armed Forces personnel (Table - 6). Differences between children of Armed Forces personnel and Civilian parents in N
with regard to sex were seen in the significant interaction between background X sex (Table - 6, Conti. Table - 10 and Fig. 13). Null hypotheses framed in the study could be rejected.

Better parental protection of children of Armed Forces personnel may cause low anxiety among them in comparison to children of Civilian parentage. According to Eysenck (1963) "Differences between people in emotionality or Neuroticism are mediated by inherited differences in the liability and excitability of the autonomic nervous system. Some people are constitutionally predisposed to react strongly with their sympathetic nervous system toward incoming stimuli of various kinds whereas other people are predisposed to react much less strongly". Neuroticism which is conceived of as a predisposition to strong autonomic activation, also produces higher cortical arousal (McLaughlin and Eysenck, 1967). And according to Davies and Tune (1970) "Arousal is a state of an individual which can affect his behaviour". Thus, higher neuroticism scores tended to impair the performance. Hence, it was suggested that perhaps there existed an optimum level of neuroticism for background differences.

Culture is man made part of environment (Herskovits, 1955). Cultures are systems of socially transmitted behaviour patterns (Keesing, 1974). Human behaviour is determined by culture (White, 1948). The patterned regularities in the behaviours of a section of population reflect the presence of certain norms, values and learned meanings. "The behaviourist approach also includes the products of behaviour as a part of the material culture. Both
behavioural as well as ideational approaches agree that culture is acquired and transmitted from generation to generation. These are bi-directional influence processes between on-going cultural forces and reactions to them by the people of an identifiable geographical area. Culture around a work place provides a comprehensive framework for understanding the various facets of work behaviour" (Sinha, 1990). According to Arora (1990) "Shaped by the social structure of the society, the behaviour patterns vary from one society to another. Various conditions and modes of living in different cultures, induce their members to take up jobs, in consonance with their prevailing systems and value structure (Madan, 1984). Findings of the present study suggest that children of Armed Forces personnel outscored their Civilian counterparts in the measures of vocational maturity, academic achievement, intelligence and aptitudes. The high level of intellectual abilities among children of Armed Forces personnel may be attributed to better parental protection, healthy family environment, their experiences at home, at school and mature learning processes as compared to children of Civilian parentage. According to Spiro (1951) a great deal of variability in human behaviour has been found to be related to cultural variation. Individual differences of personality arise through variations in the strength and pattern of cultural experience. Several reports by Wellman and McCandless (1946); Richards (1951); Sontag, Baker and Nelson (1955) suggest that changes in environmental conditions can depress or raise I.Q. level and it is sometimes implied that these changes may be explained by
recourse to personality variables. Anderson (1949) pointed out that stimulation, knowledge, skills, attitudes and values have been patterned by culture and are transmitted to a person by other persons. On personality measures children of Civilian parents have shown significantly higher neurotic tendencies as compared to children of Armed Forces personnel, while on E/I, children of Civilian parents have indicated higher E/I tendencies, though in a insignificant way. The cultural matrix in which intellectual and emotional development of personality taken place is different for the different social milieu as indicated by the present study. The life in Armed Forces and that of Civilians is unique in each case. This difference is owing to the different socialization processes regulated by each social set up. Cattell (1950) pointed out that the cultural environment was taken for granted as far as its detailed variations are concerned. Pandey (1988) reported that there are studies which compare personality characteristics of persons across cultures and those comparing personality make up of people from different nations. In brief, these studies imply that there are cross-cultural and sub-cultural variations in the development of personality of persons from different walks of life.

C. Sex Differences

1. Sex and Vocational Maturity

The process of maturity differs in males and females because of differences in their social roles and maturational degree. School period is a time when sex differences, particularly vocational exert important influences in curriculum
choice and along with it the choice considerations become different in kind for males and females. Consequently, vocational maturity of males and females is likely to be different and same is discussed briefly below:

Findings of the present study indicated that females were significantly higher in career choice attitudes and goal selection as compared to males, whereas there were no significant differences between males and females in self appraisal, occupational information, planning, problem, solving and career choice competencies total respectively (Table - 3). But differences between males and females in planning, problem solving and career choice competencies total were present through all the classes as highlighted in the significant interaction between grade X sex (Table - 3, Conti. Table - 2, 5, 7, Fig. 3, 7 and 9). Findings of the present study partially supported the hypothesis for differences in vocational maturity attributed to sex. Huang, Chin-Li (1974) found that awareness in females was significantly higher in career choice attitudes (CMI) than males. Similar findings on school samples were reported by Alexander (1977) and McDowell (1978). Wilson (1975) concluded that the school females obtained significantly higher scores than males on problem-solving and attitude scale (CMI). Kennedy (1976) found that college females scored significantly higher than males in self appraisal, problem solving and career choice attitudes (CMI).

Several researchers reported insignificant sex differences in vocational maturity (Davis, 1973; Greene,
1974; Smith, 1975; Anderson, 1977; Chand, 1979; Mahy, 1980 and Caston, 1983).

2. Sex and Intelligence

Findings of the present study indicated insignificant differences between males and females in intelligence (Table - 5). However, differences between males and females in intelligence were visible through all the classes as indicated in the significant interaction between grade X sex (Table - 5, Conti. Table - 20 and Fig. 24).


Sex differences in intelligence in favour of females were reported by Premalatha (1962) in non-verbal group test of intelligence; Saraswat (1964) in Jalota's group test of mental ability; Satyamurthy (1965) in general mental ability test - the Rangachar Satyamurthy selection battery; Kanakkar and Mukerjee (1972) and Rao, K.S. (1982) in Raven's progressive matrices test; Usmani (1981) and Magotra (1982) in Joshi's test of general mental ability.

On the other side, sex differences in intelligence in favour of males were obtained by Desai, K.G. (1954) in group test of intelligence; Agnihotri (1954) in verbal group test of intelligence; Jai Prakash (1972) in Jalota's general mental ability and Chatterjee's non-verbal test of intelligence; Dave and Dave (1971) in Nafde's non-verbal test of intelligence; Tiwari (1977) and Gupta, K.L. (1977) in Joshi's general mental ability test; Mallin (1964) in Indian Adaptation of Wechler's intelligence scale; Shah, B. (1975) in omnibus test of intelligence; Rao (1975) and Mohan and Bhanot (1976) in Raven's Progressive matrices test.

Above references seem to lend further support to the conclusion that age, area, direction and magnitude of sex differences in intelligence depend primarily upon what test is used.
3. Sex and Aptitudes

All the seven differential aptitudes are discussed separately for males and females as under:

a) Sex and Verbal Reasoning

There were no significant differences between males and females in verbal reasoning (Table - 4), however, mean scores of males were found to be slightly higher in comparison to females. Bennett et al. (1959) reported very little difference between the sexes in verbal reasoning. No sex differences appear to exist on the verbal reasoning (Mohan, 1978). Kaur (1979) found that over achiever boys and over achiever girls do not differ on verbal reasoning.

While Hobson (1947) found that males were higher on V (Verbal Reasoning). Bhatt (1981) indicated that means of males were higher than those of females with regard to verbal reasoning.

Dhabe (1958) reported that females were better in verbal reasoning than males. Anastasi (1958) reported that females were superior in verbal tests in comparison to males. Vernon (1964) indicated that physiologically females mature faster than males. This advantage may be helping them in getting better scores on some abilities e.g. verbal ability. Nayar (1971) found that scores of females were significantly higher on verbal reasoning as compared to males. Waber (1977) indicated that females were superior in verbal abilities. Tapasak et al. (1978) reported females doing better on simple verbal fluency and coding.
b) **Sex and Abstract Reasoning**

Findings of the present study indicated insignificant differences between males and females in abstract reasoning (Table - 4), however, mean scores were found to be slightly higher of males than those of females. Findings of the present study were not consistent with the results of the following studies. Ghosh (1961) reported that males were better than females on Burt's graded reasoning test. Das (1978) found that boys secured higher scores on logical and abstract reasoning test. Ojha (1975) indicated that older males to be superior to females in abstract reasoning whereas at the younger age level females were superior. The performance of boys surpasses girls in abstract reasoning - DAT (Mohan, 1978).

Hobson (1947) found that females made higher scores on R (Reasoning). Havighurst & Breese (1947) found females doing better in reasoning. Amester and Wiegand (1972) found that females scored significantly higher in abstract reasoning in comparison to males. Kaur (1979) reported that over achiever girls got significantly higher scores in abstract reasoning in comparison to over achiever boys group.

c) **Sex and Clerical Speed & Accuracy**

It was found that there were insignificant differences between males and females in clerical speed & accuracy (Table - 4), however, the mean scores were higher of female than of males. Findings of the present study supported studies conducted by Gainer (1962) and Bayley (1965). These studies
indicated insignificant sex differences in mental and motor skills. Also, Bhavsar (1974) found that there was no sex differences in clerical ability.

But, Tyler (1965) reported that females were superior in perceptual speed and dexterity. Satyamurthy (1965) found that females' mean scores on the clerical aptitude test were significantly higher than those of males. Kaur (1979) found that over achiever girls got significantly higher scores on clerical speed and accuracy in comparison to over achiever boys group.

On the other side, Gessell et al. (1940) reported that males were superior in manual skills as compared to females. Naik (1970) found that males' performance in office work aptitude test tended to be higher than that of females of same class.

d) Sex and Language Usage Spelling and Sentences

There were insignificant differences between males and females in language usage spelling and sentences (Table - 4), however, mean scores were higher of males in language usage II sentences, while females were higher than males in spelling. The differences between males and females in language usage II sentences were evident through all the classes as visible in the significant interaction between grade X sex (Table -4, Conti. Table - 15 and Fig. 18). Hughes (1953) found insignificant differences in reading scores of two sexes. Clark (1959) reported that males and females showed similar scores in the reading vocabulary test. Desai (1974) and
Chattopadhyay (1971) found insignificant differences in language development. Ahuja (1976) reported that the mean difference between males and females in silent reading speed, silent reading comprehension and silent reading index were negligible. Patel, B.V. (1978) reported that there were no sex differences with regard to listening comprehension in Gujarati. Srinivasarao and Subrahmanyam (1981) found that there was no significant difference between males and females in reading Telugu (Comprehension and Speed).

A large body of investigators reported that females were higher than males in various language skills. Hobson (1947) found that females made higher scores on \( W \) (Word Fluency). Similar findings were reported by Havighurst and Breese (1947). Herzberg and Lepkin (1954) found that females were significantly higher than males in \( W \) for all ages (sixteen, seventeen and eighteen). Similar findings were reported by Price and Bell (1965). St. Jones (1932) stated that girls very distinctly excel boys in reading. Stroud and Lindquist (1942) reported that females were higher in reading comprehension, work study skills and basic language skills. Boys tend to remain behind girls in acquisition of language skills (McCarthy, 1953). Traxler and Spaulding (1954) found that females performed consistently better than males in spelling and language, but the two groups were about equal in word meaning and paragraph meaning. Saraswat (1964) found that females' vocabulary was richer and better in comparison to males. Desai, V.R. (1970) found that females were consistently superior than males in language apti-
tudes. Kaur (1979) found that severe and moderate over achiever girls were better than severe and moderate over achiever boys in language ability sentences. Agnihotri (1979) found that there was significant difference in language of males and females. Females used more nouns, adjectives and adverbs, but so far as the use of pronouns and verbs was concerned there was no difference in their language.

e) **Sex and Numerical Ability**

Findings of the present study indicated (Table - 4) that males scored significantly higher than females in numerical ability. Findings of the present study supported investigations conducted by Eysenck (1975); Heim (1975); Bhavsar (1971); Nayar (1971); Ojha (1975); Eysenck and Wilson (1976); Mohan (1978); Jenson (1980) and Sharma, N. (1980). These studies indicated that males were superior in numerical ability as compared to females. But, Bennett et al. (1959) reported very little difference between the sexes in numerical ability. Kaur (1979) found that over achiever girls and over achiever boys did not differ in numerical ability.

f) **Sex and Mechanical Reasoning**

It was found that males scored significantly higher than females in mechanical reasoning (Table - 4). Differences between males and females in mechanical reasoning were visible through all the classes as indicated in the significant interaction between grade X Sex (Table -4, Conti. Table -13 and Fig. 16). Bennett and Cruikshank (1942) showed that males were higher in mechanical reasoning than females. Similar findings were reported
by Philip (1949); Joshi, D.L. (1960); Mohan and Kumar (1975); Sharma, N. (1980) and Sariwat (1981). Vohra (1977) found that girls give least preference to mechanical engineering courses at the diploma level of engineering. But, Kaur (1979) found that over achiever girls got significantly higher score in mechanical reasoning in comparison to over achiever boys. Whereas, Satyamurthy (1965) reported that in mechanical aptitude, there was no significant sex difference.

g) **Sex and Space Relations**

Findings of the present study indicated (Table - 4) that males scored significantly higher than females in space relations. Differences between males and females in space relations were present through all the classes as seen in the significant interaction between grade X sex (Table - 4, Conti. Table - 14 and Fig. 17). Findings of the present research supported the studies conducted by Hobson (1947); Havighurst and Breese (1947); Smith (1948); Emmett (1949); Tyler (1965); Amester and Wiegand (1972); Maccoby and Jaclin (1974); Eysenck (1975); Heim (1975); Eysenck and Wilson (1976); Wilson and Vandenberg (1978); Waber (1977 and 1979); Shayer and Wylam (1978); Jenson (1980) and Sharma, N. (1980). These investigations indicated that males were significantly higher than females in spatial test. Block and Block (1982) indicated that sex differences in spatial perception favouring males were first detected around age 7 and accelerated to adult level by age 11. Linn and Peterson (1985) concluded that sex differences in spatial ability are large only for mental rotation,
medium for spatial perception and small for spatial visualization. Witken (1949) reported that males showed superiority over females in perceptual analysis.

Hyde (1981) and Plomin and Foch (1982) reported that between 1% and 5% of the variance in performance in the studies of spatial ability reported by Maccoby and Jaclin (1974) can be attributed to sex. In most of the studies, sex accounts for upto 5% of all individual differences in performance in spatial tasks, excluding mental rotation. Although differences between males and females in spatial ability are widely acknowledged, yet considerable dispute surrounds the magnitude, nature and age of first occurrence of these differences (Maccoby and Jaclin, 1974; McGee, 1979; Hyde, 1981; Liben, Patterson and Newcombe, 1981; Harris, 1982 and, Linn and Peterson, 1985).

4. Sex and Academic Achievement

In the present study, six measures of academic achievement were studied viz. English, Hindi, Mathematics, Science, Social Studies and Total Academic Achievement. These variables are discussed briefly between males and females subject-wise as under :-

a) English

Findings of the present study indicated that there were no significant sex differences in scores in English subject (Table - 7).

Acharyulu (1978) found that females were significantly higher in English in comparison to males. The earlier discussion of aptitudes (language English), indicated that females were

b) Hindi

Findings of the present study showed that females were significantly higher than males in the subject of Hindi (Table - 7). Patel (1977) reported that females were significantly higher in Hindi in comparison to males.

c) Mathematics

There were significant differences between males and females in Mathematics, means favouring males (Table - 7). Findings of the present study with regard to sex differences in Mathematics finds support in the studies conducted by Tyler (1965); Lalithama (1975) and Pandey, M.M. (1980). These studies indicated that males were significantly higher than females in Mathematics. Kulkarni et al. (1970) had done a survey of achievement in Mathematics and reported that at all the three levels (Primary, Middle and High School) males scored higher than females. Also, the earlier discussion of aptitudes (numerical), highlighted that males were superior to females in numerical ability. Numerical ability is associated with Mathematics which is regarded as a masculine subject (Mohan and Bhanot, 1976).

On the other side, Sharma, V.S. (1976-2) and Acharyulu (1978) indicated that in Mathematics females were higher than males. While, Gupta, R.C. (1972) reported insignificant sex differences in Mathematics.
Terman and Tyler (1954) found significant sex differences in favour of males in arithmetic reasoning. Das (1978) found that males secured higher scores in achievement in arithmetic. Ashar (1972) found that basic algebraic skills were significantly higher of males than those of females. Bhirud (1975) reported that girls were significantly weaker than boys in Algebra.

Havighurst and Breese (1947) found females doing better in number in comparison to males.

d) Science

There were no significant differences between males and females in Science (Table - 7), however, the scores were higher of males than those of females. Acharyulu (1978) and Desai, K.G. (1981) found that there were no sex differences in achievement in Science.

But, Saxena (1960) reported that males were significantly higher than females in Physics, Chemistry and Science. While, Sharma, V.S. (1976-2) indicated that females were significantly higher than males in General Science.

e) Social Studies

There were insignificant differences between males and females in Social Studies (Table - 7), however, the scores were higher of males than those of females. Differences between males and females in Social Studies were present through all classes as seen in the significant interaction between grade X sex (Table - 7, Conti. Table - 23 and Fig. 27). Acharyulu (1978) indicated that there were no sex differences in achievement in Social Studies. Misra et al. (1973) reported
that there was no difference in achievement in Social Studies through Hindi medium between Hindi Speakers and Non-Hindi Speakers.

Patel (1977) and Sharma, H.R. (1981) found that females were significantly higher than males in History and Geography. De (1979) reported that males were higher than females in Geography.

f) **Total Academic Achievement**

There were no significant differences between males and females in Total Academic Achievement (Table - 7), however, the scores were higher of males than those of females. Satyanandam (1969); Mishra, C.P. (1977); Poulose & Satyanarayan (1978) and Jain (1981) reported insignificant sex differences in academic achievement.

On the other side, Abraham (1969) found that males were superior to females in their academic achievement. Chatterji and Mukherjee (1970) reported that average performance of males in school examination was significantly better than those of females in five out of seven subjects. Thakur (1972) found that group performance of males was superior to that of females in all branches (different subjects). Aruna (1981) found that academic achievement of males (Scheduled Caste and Scheduled Tribe taken together) was superior to that of females. Mishra (1987) found that males were found to be better in academic achievement as compared to females.

Dhillon (1979) found that academic achievement of females participants emerged significantly superior than males participants.
In conclusion referred to above, several main lines of explanation were discussed for sex differences in academic achievement. It is evident that it would be difficult to account for both (males and females) kinds of achievement differences by any hypothesis of general intellectual inferiority or superiority. But, males' superiority in Mathematics and females in language skills are widely accepted facts.

5. Sex and Personality

In the present study Eysenck's personality model of E/I and N was studied and discussed separately and briefly between males and females as under:

a) Sex and E/I

Findings of the present study indicated that males scored significantly higher than females in E/I (Table - 6). These significant mean differences in E/I are consistent with literature (Schalling et al., 1963; Kanekar and Mukerjee, 1972; Hosseini et al., 1973; Eysenck and Eysenck, 1975; Tarkkonen et al., 1981; Khan, 1986 and Nancy et al., 1988). Eysenck (1959) reported that in extraversion, men are found slightly more extraverted than women. Similar findings are reported by Eysenck (1964); Gutman (1966); S.B.G. Eysenck (1965) and Mohan et al. (1968).

On the other side, Mohan and Kumar (1975) found significant sex differences in E/I, females scored higher in extraversion. Mikel (1983) reported that female runners were significantly more extravert than male runners. Krishna (1973) found that males showed greater predisposition to conservatism,
neuroticism, introversion, insecurity, poor adjustment at home, and less sense of responsibility than their female counterparts.

Gabrays (1983) reported that extraversion and neuroticism as well as sex and age played a significant role in the performance of attention and memory task. MANOVA yielded significant roles for sex, age and interaction between sex and age of subjects (Ss) in extraversion and neuroticism. Further, it was suggested that findings support in view that cortical arousal factors are more important in understanding memory processes than autonomic responsivity.

Some studies also reported no differences in extraversion in terms of sex differentiation (Mohan and Purang, 1969; Gupta, 1971 and Mohan, 1976).

b) Sex and N

In the present study there were no significant differences between males and females with regard to N, though the mean scores were higher of females (Table - 6).

Neuroticism which is conceived of as predisposition to strong autonomic activation, also produces higher cortical arousal (Mclaughlin and Eysenck, 1967). According to Davis and Tune (1970) "arousal is a state of an individual which can affect his behaviour". From the angle of Neuroticism arousal has motivational potentials equivalent to 'drive'. Taylor's (1953) manifest anxiety has been found to correlate very highly with neuroticism (Bending, 1957 and Eysenck, 1963a). Also, neuroticism or Drive (Anxiety) are similar terms.

Eysenck (1959 and 1964) reported that females have slightly higher scores in neuroticism than those of males.
Kumar (1984) reported that there were no significant differences between males and females in neuroticism.

On the other side, a large group of researchers reported significant differences between males and females in N, favouring females (S. B. G. Eysenck, 1965; Gutman, 1966; Mohan et al., 1968; Mohan and Furang, 1969; Gupta, 1971; Hosseini et al., 1973; Mohan and Kumar, 1975; Mohan, 1976; Lojk et al., 1979 and Tarrier et al., 1980). Eysenck (1965) believed that females become emotionally more unstable with increasing age, whereas males remain at much the same level or become somewhat more stable. Khan (1986) reported that males were more stable emotionally than females. Mikel (1983) found that male runners tended towards higher neuroticism scores than did male industrial worker, and female runners had significantly higher neuroticism scores than did female industrial workers. Various researchers reported that females scored significantly higher than males in anxiety (Gurin et al., 1960; Bladsoe, 1973; Maya, Kumari, 1976; Gupta, J.P., 1978; Carroll and Maxwell, 1979 and Patel, G.M., 1979).

3 x 2 x 2 Interactions

1. Planning (C M I)

The interaction effect between grade X background X sex on planning was found to be significant (Table - 3, Conti. Table - 3, Fig. 4 and 5). It indicated that:

a) Mean scores of female children belonging to Armed Forces personnel increased from IX to XI classes, while mean scores of male children belonging to Armed Forces personnel increased from X to XI classes;
b) Differences between IX and X classes were very small among children of Armed Forces personnel;
c) Male and female children of Armed Forces personnel were found to be similar at the IX class;
d) At the X and XI classes female children were higher than male children of Armed Forces personnel and
e) The mean scores of children of Civilian parents increased from IX to XI classes of females whereas the mean scores of males were similar at IX and X classes, but mean scores increased from X to XI classes for males.

2. Extraversion/Introversion

Significant interaction effect between grade X background X sex on E/I (Table - 6, Conti. Table - 9, Fig. 11 and 12) indicated that -
a) At IX and X classes the mean scores were higher of male children of Armed Forces personnel than female children of Armed Forces personnel;
b) At XI class the mean scores were higher of female children of Armed Forces personnel than male children of Armed Forces personnel;
c) At XI class the mean scores were higher of female than of male children belonging to Armed Forces personnel, while scores increased from IX to X of male children of Armed Forces personnel, but the scores were found to be similar at X and XI classes for male children belonging to Armed Forces personnel;
d) The mean scores of children of Civilian parents at IX and X classes were different and females were higher at both class levels;
e) Male children of Civilian parents were higher than female children at XI class and
f) The mean scores of IX and X classes were similar of male and female children of Civilian parents, but the mean scores decreased from X to XI classes of both sexes.

3. Language Usage Spelling

Significant interaction effect between grade × background × sex (Table -4, Conti. Table - 17, Fig. 20 and 21) revealed that -

a) Male children of Armed Forces personnel were higher than female children at IX class level;
b) Male and female children of Armed Forces personnel were similar at X class level;
c) Female children of Armed Forces personnel were higher than male children at XI class level;
d) Mean scores increased from IX to XI classes of both male and female children of Armed Forces personnel;
e) Female children were higher than male children of Civilian parents at IX and X classes;
f) Differences were wider at X class between male and female children of Civilian parents;
g) Male children were higher than female children of Civilian parents at XI class level and
h) Mean scores increased from IX to XI classes of both male and female children of Civilian parents.
D. Inter-relations amongst Abilities (Intelligence and Aptitudes), Academic Achievement, Personality and Vocational Maturity Variables

In the present study seventeen measures viz. intelligence, aptitudes - verbal reasoning, numerical ability, abstract reasoning, mechanical reasoning, space relations, language usage spelling, language usage sentences, clerical speed & accuracy, academic achievement - English, Hindi, Mathematics, Science, Social Studies, and total academic achievement, and personality - extraversion/introversion (E/I) and neuroticism (N) were studied to see the trend of relationships with vocational maturity and same are being discussed briefly as under :-

1. Intelligence and Vocational Maturity

From the examination of correlational analysis (Table - 11), it was clear that intelligence correlated positively and highly significantly with all the seven vocational maturity measures viz. career choice attitudes, self-appraisal, occupational information, goal selection, planning, problem-solving and career choice competencies total for the total sample respectively. Findings of the present study were in line with studies conducted by Scheri (1973); Seaward (1977); Chand (1979); Somers (1981); Simpson (1983) and Saxena (1984). These studies imply that general intelligence was positively and significantly correlated with vocational maturity.
2. Aptitudes and Vocational Maturity
   a) Verbal Reasoning and Vocational Maturity

   Verbal reasoning was positively and significantly correlated with all the seven vocational maturity measures namely - career choice attitudes, self-appraisal, occupational information, goal-selection, planning, problem solving and career choice competencies total respectively for the total sample (Table - 11). Asley-Foster (1978) found that verbal aptitude was significantly related to each of the four vocational maturity measures (attitudes, self-appraisal, planning and problem solving).

   b) Relationships of Numerical Ability, Abstract Reasoning, Mechanical Reasoning, Space Relations, Clerical Speed and Accuracy, Language Usage Spelling and Sentences with Vocational Maturity

   All the measures of vocational maturity namely - career choice attitudes, self-appraisal, occupational information, goal selection, planning, problem solving and career choice competencies total were positively and significantly inter-correlated with numerical ability, abstract reasoning, mechanical reasoning, space relations, clerical speed & accuracy, language usage spelling and sentences respectively for the total sample (Table - 11). Thereby, null hypotheses framed earlier could be rejected. It appears that aptitudes as measured by DAT, being part of ability, reflect the same trend of relationships with vocational maturity as with intelligence. In fact these aptitude tests are related to intelligence (Bennett, et al., 1959 and Mohan, 1978).
3. Academic Achievement and Vocational Maturity

It was evident from Table - 11 for the total sample that all the measures of academic achievement i.e. English, Hindi, Mathematics, Science, Social Studies and total academic achievement positively and significantly correlated with all the measures of vocational maturity namely - career choice attitudes, self-appraisal, occupational information, goal selection, planning, problem solving and career choice competencies total respectively. Thus findings of the present study referred to above indicated that marks in academic subjects do influence the vocational behaviour pattern of students. Education plays a significant role in development of learning processes which forms the basis for future vocational opportunities. There was ample evidence to prove above said. The investigations of Brandt (1976); Karayanni (1977); Osgood (1978); Chand (1979) and Robinson (1981) indicated that academic performance was positively and significantly related to vocational maturity.

4. Personality and Vocational Maturity

a) E/I and Vocational Maturity

Extraversion/Introversion was negatively and significantly correlated with all the measures of vocational maturity namely - career choice attitudes, occupational information, planning, problem solving and career choice competencies total respectively (Table - 11), with the exception of self appraisal which was not approached statistical significance, for the total sample. Above said findings implied that E/I tendencies significantly influence vocational maturity of the students in
negative direction. Chauhan (1975) found negative correlations between extraversion and vocational maturity for males, the opposite was the case for females. Ahuja (1985) found positive correlations between measures of vocational maturity and extraversion.

b) N and Vocational Maturity

Neuroticism was negatively and significantly correlated with all the seven measures of vocational maturity namely - career choice attitudes, self appraisal, occupational information, goal selection, planning, problem solving and career choice competencies total respectively for the total sample (Table - 11). There was no direct evidence available between the relationships of neuroticism and vocational maturity. But some indirect evidence was available on vocational choices. Madan (1984) found that personality factor N was significantly and consistently related to vocational choices of Science and Arts students at the post graduate level. Vohra (1978) reported that correlation between N and choice for technology groups levels 1, 2 and 3 (Roe's classification) is very low.

E. Conjoint Effect of Personality, Abilities and Academic Achievement Variables on Career Choice Attitudes and Career Choice Competencies Total (Vocational Maturity)

This part of the study was related to step up regression analysis. There were two models and discussed as under :-
Model - 1

The value of $R^2_{\text{CCA}} = .4959$ (Table -12) shows that 49.59% of the variance is attributable to the conjoint effect of personality, abilities and academic achievement variable taken together. The remaining 50.41% of the variance of career choice attitudes is attributed to other factors not taken into consideration in the present investigation. The value of multiple $R$ is higher than individual correlations between the dependent (career choice attitudes) and independent variables (personality, abilities and academic achievement) (Table - 12). F-test shows that for the criterion (dependent), measures of career choice attitudes, addition of the predictor variables namely - VR, Hin., INT, Sci., L.U. II Sent., E/I, MR, CSA, S. Stu., AR, SR, Math., NA, N, L.U. I Spell., TAA and Eng. are found to be highly significant at .01 level respectively (Table - 12). Thus, these variables have emerged as potential predictors. VR appears as the most significant potential predictor. Personality dimension of E/I is also equipped with comparatively high predictive efficiency than personality dimension N. The predictive efficiency of E/I and N highlights that introverts and stables were more mature. The conjoint effect of the independent variables is higher than their separate predictions. The abilities (Intelligence and Aptitudes) and academic achievement indicate positive directions, while personality dimensions show negative directions.
Model - 2

The value of $R^2_{\text{CCCT}} = .5432$ (Table -13), shows that 54.32% of the variance is attributable to the conjoint effect of personality, abilities and academic achievement variables taken together. The remaining 45.68% of the variance of CCCT is attributable to factors not measured in this investigation. The value of multiple $R$ is higher than individual correlations between dependent (career choice competencies total) and independent variables (personality, abilities and academic achievement) (Table - 13). F-test shows that for the dependent variable CCCT, addition of the predictor variables - VR, AR, MR, Hin., Sci., E/I, Math., L.U. II Sent., L.U. I Spell., INT, S. Stu., Eng., SR, TAA, N, NA and CSA are found to be highly significant at .01 level respectively (Table - 13). Thus, these variables have emerged as potential predictors. VR appears as the most significant potential predictor. Personality dimension of E/I is also equipped with comparatively high predictive efficiency than personality dimension N. The predictive efficiency of personality dimensions indicates that introverts and stables were more mature. The abilities and academic achievement variables indicate positive directions, whereas, personality dimensions highlight negative directions. The conjoint effect of independent variables is higher than their separate predictions.

By comparing Model - 1 and Model - 2 (Summary Tables - 14 and 15 respectively), it has been concluded that -
a) The percentage of contribution (combined strength) of personality, abilities - intelligence and aptitudes, and academic achievement variables being higher of CCCT (54.32%) than of CCA (49.59%);

b) VR appears the most significant predictor of CCA and CCCT in positive direction. The percentage of contribution being higher of CCCT (43.80%) than of CCA (38.30%);

c) Hindi appears as significant predictor of CCA and CCCT in positive direction. Its percentage of contribution being higher of CCA (4.28%) than of CCCT (1.01%);

d) AR appears as significant predictor of CCA as well as CCCT in positive direction. Its percentage of contribution being higher of CCCT (4.34%) than of CCA (0.17%);

e) MR appears as significant predictor of CCA and CCCT in positive direction. Its percentage of contribution being higher of CCCT (1.54%) than of CCA (0.60%);

f) INT appears as significant predictor of CCA and CCCT in positive direction. Its percentage of contribution being higher of CCA (1.72%) than of CCCT (0.16%);

g) Science appears as significant predictor of CCA and CCCT in positive direction. Its percentage of contribution being higher of CCCT (1.90%) than of CCA (1.69%);

h) Personality variable E/I appears significant predictor of CCA and CCCT in negative direction. Its percentage of contribution being higher of CCA (0.66%) than of CCCT (0.41%);

i) L.U. II Sentences appears as significant predictor of CCA as well as CCCT in positive direction. Its percentage of contribution being higher of CCA (0.85%) than of CCCT (0.32%);
j) Mathematics appears as significant predictor of CCA and CCCT in positive direction. Its percentage of contribution being higher of CCCT (0.38%) than of CCA (0.14%);
k) L.U. I Spelling appears as significant predictor of CCA and CCCT in positive direction. Its percentage of contribution being higher of CCCT (0.16%) than of CCA (0.02%);
l) Social studies appear as significant predictor of CCA and CCCT in positive direction. Its percentage of contribution being higher of CCA (0.30%) than of CCCT (0.10%);
m) SR appears as significant predictor of CCA as well as CCCT in positive direction. Its percentage of contribution being higher of CCA (0.16%) than of CCCT (0.06%);
n) Personality variable N appears significant predictor of CCA and CCCT in negative direction. Its percentage of contribution being higher of CCA (0.10%) than of CCCT (0.03%);
o) English appears as significant predictor of CCA and CCCT in positive direction. Its percentage of contribution being higher of CCCT (0.07%) than of CCA (0.01%);
p) Total academic achievement appears as significant predictor of CCA and CCCT in positive direction. Its percentage of contribution being higher of CCCT (0.04%) than of CCA (0.01%);
q) CSA appears as significant predictor of CCA and CCCT in positive direction. Its percentage of contribution being higher of CCA (0.46%) than of CCCT (0.00%) and
r) NA appears as significant predictor of CCA as well as CCCT, in positive direction. Its percentage of contribution being higher of CCA (0.12%) than of CCCT (0.00%).
The present findings are in line with several studies of regression analysis. Harkness (1973) found that I.Q. scores appeared as the most significant single predictor of a child's occupational knowledge. Lawrence and Brown (1976) concluded that intelligence was a significant predictor of career choice attitudes (CMI). Intelligence emerged as one of the best predictors of vocational maturity (Super and Overstreet, 1960; Agarwal, 1981 and Chodzinski, 1983). Pavlak (1981) concluded that grade point average (GPA) along with other variables were the best predictors of IX grade vocational attitudinal maturity (CMI). Phillips and Strohmer (1982) found that only a combination of the scholastic achievement variable and a lack of dependent decision style was even moderately predictive of vocational maturity. Saxena (1984) concluded that intellectual and personality variables conjointly contribute better towards the prediction of vocational maturity than their separate predictions. The total percentage of contribution, attributed by the conjoint effect of intellectual and personality variables for the prediction of vocational maturity, is higher of the variance of career choice competencies than that of career choice attitudes.

Up to now, the main findings of the present study have been discussed in detail along with other scientific investigations. The overall summary and conclusions are reported briefly in Chapter - VII.