FACTORS AFFECTING VOCATIONAL CHOICE

The process of vocational choice has been explained by the various approaches. On analysis, it is found that there are more than one variable which influences the vocational choice of the individual. To understand the causation of the choice made, it will be appropriate to understand the variables exerting influences for such decisions. This in turn will enable the individual to make an appropriate decision for his vocation. The knowledge of the variables influencing the choice and its appropriateness will be useful for any guidance worker or counsellor to help the young adolescents at the stage of decision making for a vocational course. Thus, the factors which influence the vocational choice of the individual are discussed here. These factors may be grouped as (1) Environmental or Social, (ii) Psychological or Individual.

(A) Environmental or Social Factors may further be divided into:
   (i) Culture, (ii) Sub-culture, (iii) Home and Family,
   (iv) School, (v) Rural and Urban Background,
   (vi) Sex, (vii) Race and Religion etc.

(B) Psychological or Individual Factors may be classified as:
   (i) Intelligence, (ii) Aptitude, (iii) Personality,
   (iv) Interest and Values etc.

(A) Environmental or Social Factors

Those factors which are outside the individual and exert influence on him as result of his interaction with these factors in one or the other ways may be considered as Environmental factors. It is proposed to discuss first six factors which are considered to be salient in influencing the
occupational choices. Race as a factor in Indian context may not be very significant as there has been not much migration of races as such. The other factor, Religion, will be considered along with other factors.

(I) Culture

The modes of living of a community may be called its culture. It includes all the folk ways, habit patterns, customs and traditions which a society develops to cope with the environment and to interact with others. Ross & Ross (1957) reported the indirect but nonetheless real influences of a culture upon the vocational choice of Mescalero Apoche Indians. They found that these Indians realize that there is need for Service and Business Contact occupations. Some should become beauticians, bankers and waitresses, teachers, nurses, but they choose quite different occupations like office workers, road crewmen, cooks and woodcutters etc. The explanation for this contradiction is found in the cultural background of the Mescalero Apoche Indians. American culture whose values reflect a greater degree of optimism and faith in future the dominant value is the belief that each man has a chance to 'get ahead' to reach the top.

(II) Social Class (Sub-Culture)

Centers (1949) writes "a class is no more or less than what people collectively think, it is". Social class can be referred as social stratification, which indicates that both individuals and groups of individuals are conceived as forming lower and higher differentiation strata or class on the basis of
some specifics or generalised characteristics. The dimensions of social stratification are power, occupation, family, position, local community and status etc.

Crites (1969) found that patterns of vocational choices correspond with job patterns associated with each class in the adult world of work. Ginsberg (1951) found that boys from high income families thought in terms of professional executives kind of occupations while those from lower-income families tended to think in terms of skilled jobs which offered a higher rate of wages than their fathers received. Grunes (1956) found that the lowest class intended to see less distinction between business and professional people. The highest class, on the other hand, seem to make less distinction between the various mechanical and manual jobs. The class differences in perception lead to class differences in vocational decisions. The effect of level of education on vocational choice has been reported by Mohan and Banth (1975). They concluded that the University students prefer the occupational groups in the following order of the Semantic Differential Scale of Occupational Choice:

1. Organisational, 2. Science, 3. General Culture,

The least preferred group is of Arts & Entertainment followed by Business Contact.

* Semantic Differential Scale for Occupational Choices - SDSOC.
Mohan & Banth (1977) reported that choices of students at University have been determined by level rather than groups which shows that University students rate professions according to social status and resultant desirability rather than well thought choices of their own.

(iii) **Home and Family**

Family is viewed as the basic agent of socialisation. According to Roe (1951a) the emotional climate in the home, i.e., interaction between parents and children develops the basic attitudes and interests which they may express in various aspects of daily life and vocational choice. Interaction between family and the child may be of three types (a) emotional concentration on the child, (b) avoidance of the child, (c) acceptance of the child. Parents may be disciplinarian, authoritarian or warm. The types of relationship will lead to development of attitudes and consequently vocational choice.

Jenson and Kirchner (1955), Samson & Steffler (1952) found that there is some association between father's occupation and son's vocational choice. Bordin (1943), Super (1953) found that the identification of children with parents plays a significant role in the selection of an occupation. The interpersonal relationships with the parents also has relationship with the vocational choice. This relationship has been confirmed by studies by Grigg (1959), Nachman (1960). Moser (1952) studied the effect of level of parents' education upon vocational preferences of high school students. The students whose parents had the highest percentage
of college attendance preferred occupational areas with high cultural status. Super (1953) and Crites (1962) found the parental identification is a significant variable in the selection of an occupation. Srivastava and Pale (1970) report that students prefer occupations at a level higher than father's occupational level, (ii) fathers suggest occupation to their sons at a higher level than their own.

(iv) **The School**

School offers variety of experiences through its different types of formal, informal, curricular and co-curricular programmes to children in their formative years. It is an important agent of socialisation and as such its goals and values can have important effect on an individual's career pattern. The nature of the school programmes help the individual child to make a decision for his vocational plans after passing through academic and vocation oriented subjects. Teachers in schools play equally significant role in the choice of occupation of students. Carlin (1960) reported the influence of teachers on the choice of vocation. Wilson (1959) found that, the dominant climate of opinion in a School makes a significant impact upon the students occupational goals. The evidence available suggests that public school boys are increasingly seeking careers in science and technology. Public School boys constituted the longest single group in Delhi I.I.T. in 1968 (Rajgopal & Singh, 1968). Mohan and Walia (1976) reported that students in Government schools gave maximum importance to Social Service followed by Business Contact. Least preference was
given to science group. Mohan and Randhawa (1977) reported that children from Public School prefer 'Arts & Entertainment' while the Government School students prefer 'General Culture' group on Semantic Differential Scale for Occupational Classification.

(v) Ecological Factor

There are some other factors, i.e., rural and urban background which may be thought to play a role in the vocational choice of the students. Middleton and Grigg (1959) reported that 64 percent of the rural and 77 percent of the urban residents aspired for white collar occupations. Thirty five percent of rural residents and 56 percent of urban residents planned to attend college. Reddy (1973) found that the urban students make more realistic choices than rural students. Thus, the background experiences of specific nature do influence the pattern of occupational choices.

(vi) Sex Differences

Differences in vocational behaviour are related to the sex of the individual also. Lehman and Witty (1936) reported that boys and girls are not equally interested in all the occupations. Singer and Steffire (1956) compared job values and desires of 17 and 18 years males and females. Significant differences were observed. The boys were prone to select those categories of occupations dealing with a desire for a job offering power, profit and independence while girls were more inclined and selected job values characterised by interesting experiences and public service. Lehman and Witty (1936) studied vocational attitude of boys and girls in the age group of 8.5 years to 18.5 years old. Boys showed more preference for
occupations involving travel, movement, physical activity and giving orders. Vohra (1977) found that girls give least preference to Mechanical Engineering courses at the diploma level of Engineering.

From the studies quoted above, it may be said that environmental factors do have influence on the choice of occupation of the individual.

These external factors and conditions change so much from age, place and other environmental conditions that the consistent role of these factors may be of less practical utility to understand the vocational choice. The effect of the environmental factors cannot be concluded accurately because exact measurement of the influence of the said environmental factors on the choice of occupation is yet to be perfected. Many of these factors are not in the control of the individual who is to seek his success, happiness and adjustment on job situations. On the other hand, the psychological framework of the individual does play a significant role in explaining the relationship of the choice and success on his work.

**Psychological Factors in Vocational Choice**

Unlike the environmental variable, psychological factors may be more directly measured and interpreted by the use of psychometric instruments and techniques. Some psychological factors having influence on vocational choice are: (i) Intelligence, (ii) Aptitude, (iii) Personality, (iv) Academic Achievements and
Intelligence:

General ability is the basis as well as the limiting factor of one's daily functioning. It facilitates or hinders the readiness of an individual to make profit from the impact of the varied influences of everyday living. An adequate level of general ability enables a person to profit more effectively. How much a person will learn depends greatly upon his intelligence. It is basic to learning in school, vocational efficiency and interpersonal relationships. Intelligence is a first step in appraising the individual of the kinds of experience which he may profitably undergo.

It is difficult to define intelligence but intelligence can be described as phenomena in action. Measurement of intelligence is made of the behaviour rather than the concept.

Various attempts have been made to explain the functioning of intelligence. Some of these theories are discussed below:

1) General Intelligence Theories:

Unitary Ability, i.e., Single General Capacity: This view holds that although intelligence may be expressed in diverse ways and situations, basically it is a single ability. Spearman was the first person to propose a theory of intellectual structure based on statistical analysis. Later he proposed his two factor theory, i.e., 'g' and 's'. This first factor was a general capacity 'g' which is basically a reasoning factor. The second factor was 's' which is specific in nature and independent of 'g'. There are in fact indeterminate number of factors 's', each independent of the other
as well as from 'g'. Every mental activity utilises at least one s and nearly all mental activities make use of 'g', although 'g' is thought to be present in greater saturation in some activities than it is in some others. The theory emphasises that though more importance may be given to general intelligence, specific factors may also be considered for its explanation.

(ii) Group Factors

This approach explains intelligence on the basis of small and broad common factors. It assumes that the fundamental dimensions of intelligence can be represented by a relatively small number of fairly broad common factors. Thurstone and Kelly have been the chief exponents of this approach. The following six factors called Primary Mental Abilities have approved with some regularity and have been fairly confirmed.

(i) Space, (ii) Perceptual Speed, (iii) Number
(iv) Verbal Comprehension, (v) Word Fluency, and (vi) Rote Memory.

(iii) Hierarchical Theories

This approach conceives intellectual structure as a hierarchy, extended from one or more broad general factors through group factors to more specific factors. Vernon (1950) proposed a model where general ability 'g' is at the apex of the hierarchy. This 'g' is divided into two major groups (i) a Verbal-Educational (V.Ed.) and a Practical Mechanical (KM) Each of this factor is further subdivided finally into specific factors. The hierarchical approach represents an intuitively satisfying collation of data. This approach yields a practical guide to test construction at
different hierarchical levels.

(iv) Guilford's Three-Dimensional Model

Most recent theory is Guilford's (1956, 1959, 1967) model to explain intellectual functioning. The intelligent behaviour is the interaction of 5 operations x 4 contents x 6 products each of which represents a distinct factor that is measured by a separate test. As a result of such interaction he has identified about 120 abilities so far.

(v) Fluid and Crystallised Intelligence

Cattell (1963) has suggested the concepts of fluid and crystallised intelligence. The intelligence which the individual gets from his heredity is termed as fluid. The intelligence which the person acquires from the environment is called crystallised. The crystallised intelligence is what can be influenced by the environmental conditions to some extent. The fluid intelligence is fixed.

At present no well accepted framework as to the real nature of intelligence has been developed, although present theories have led to the construction of large number of tests to measure Intelligence. Mental Ability of an individual is one of the most important variable which may effect his vocational thinking. In a number of studies (Grace, 1931; Sparling, 1933) reported that more intelligent individuals have been found to have more appropriate occupational objectives. Wrenn (1935) suggests that brighter students are more persistent in their choices and also more decisive in their selection of an occupation. Witty and Lehman (1931) analysed the relationship of scores on the national Intelligence tests with vocational choice. They found less intelligent boys as compared to
brighter ones expressed "Willingness to Enter" more occupations and selected occupations which are more often selected by younger boys. Proctor (1937) found that children of high level of mental ability entered higher level of occupations while low ability children entered into lower level of occupations. Moser (1949) reported that intelligent student chose occupations that required advanced professional training, while less intelligent selected occupations that required no or little academic training. Perrons (1964) studied the relationship of low and higher ability boys and their vocational choices. Boys with low mean intelligence more consistently selected occupations in the service category whereas boys with higher mean I.Q. selected executive level occupations. Pal (1969) made a comparative study of engineering, law, medical and teacher training students and reported the intellectual level of engineering student was superior than others in the study.

Various studies have been attempted to establish the relationship of intelligence to specific group of occupations. Some of the investigations are reported here.

Harrel and Harrel (1945) found the following mean scores using Army General Classification Test for various occupations:

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Mean</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accountants</td>
<td>130</td>
<td>95-155</td>
</tr>
<tr>
<td>Lawyers</td>
<td>127</td>
<td>98-153</td>
</tr>
<tr>
<td>Engineers</td>
<td>125</td>
<td>100-150</td>
</tr>
<tr>
<td>Teachers</td>
<td>122</td>
<td>70-152</td>
</tr>
<tr>
<td>Draftsmen</td>
<td>121</td>
<td>75-152</td>
</tr>
<tr>
<td>Auto</td>
<td>100</td>
<td>50-150</td>
</tr>
</tbody>
</table>
Mathur (1966) found that mean I.Q. on A£E for Engineering Degree Courses is (117), Medical (111); Diploma in Engineering (107), Law (102) and for Teachers Training (101) in the students.

Dark Gist (1971) located 2433 persons who had been given the Terman Test (Terman Group Test of Mental Ability) in rural Kansas high schools 13 years earlier, when they were of median age of 16 years. They classified them by occupation they pursued later.

Intelligence and Occupation: Percentage of persons in each I.Q. Range

<table>
<thead>
<tr>
<th>I.Q.</th>
<th>Whole</th>
<th>Mean</th>
<th>Below 95</th>
<th>95-104</th>
<th>Above 104</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional (Except Teachers)</td>
<td>158</td>
<td>102</td>
<td>25.32</td>
<td>37.33</td>
<td>37.35</td>
</tr>
<tr>
<td>Sales people, Proprietors</td>
<td>233</td>
<td>96.61</td>
<td>44.61</td>
<td>32.62</td>
<td>23.19</td>
</tr>
<tr>
<td>Skilled</td>
<td>131</td>
<td>96.18</td>
<td>45.80</td>
<td>32.63</td>
<td>21.37</td>
</tr>
<tr>
<td>Semi-skilled</td>
<td>247</td>
<td>93.78</td>
<td>58.30</td>
<td>27.53</td>
<td>14.77</td>
</tr>
</tbody>
</table>

Since the group was largely rural, the average I.Q. may be lower than may be expected for the average of combined sample.

Proctor (1937) found that Intelligence quotient in different types of work varied as shown. Intelligence in high school and occupational level thirteen years later are shown in the table below:
Occupational Mean Intelligence Number
1. Professional 115 130
2. Managerial 108 565
3. Clinical 104 228
4. Skilled 99 12
5. Semi-skilled 97 10

Gribbons & Lohnes (1966) reported on the relationship of occupational preference to measured intelligence. Each grade level students were asked to give three choices. Mental ability was tested and classified into three groups - (1) IQ 115 and above, (2) IQ from 105 to 114, (3) IQ below 105. Like Holden (1961) this study suggests that students at the grade level eight were aspiring to occupational level out of proportion. Most revealing was the finding that over 50% below 105 IQ professed occupations at the professional level. Unlike Holden (1961), however, Gribbons and Lohnes (1966) found that students in the lower IQ ranges persist in their preferences for occupations which require greater level of educational preparation than they may reasonably be expected to attain.

The relationship of Mental Ability to Vocational Plans and Vocational Preference was investigated by Porter (1954). Mental Ability was significantly related to both Vocational Plan (.40) and vocational preference (.36). Boys with higher mental ability tend to select occupations with a higher prestige level making. Perrone (1964) also studied the relationship between high school boys' occupational preference and mental ability. He used an
occupational preference - questionnaire which listed ten occupations under each of Roe's eight occupational groups; Social Service, Business Contact, Organization, Technology, Outdoor, Science, General Culture and Arts and Entertainment. Students were asked which professions they would wish to join. Mental Ability was tested by verbal and non-verbal tests. Results for boys indicated significant differences between the eight occupational preferences categories for both verbal and non-verbal IQ. It was found that boys with lower mean intelligence were more consistently selecting occupations in science category. Boys with higher IQ tended to select science category occupations more often than another group. Holden (1961) investigated the relationship between Intelligence and persistence of the level of career choice. He postulated that people with higher mental ability (IQ) would make more appropriate occupational choices than the low IQ group. Reddy (1973) reported that 52.42 percent of students make realistic choices of occupations in relation to their Intelligence in Class XI. The relationship of rural and urban background with the Intelligence and Occupational Choice was significant. He reported that as far as subjects from urban and rural areas were concerned, there was a significant relationship between the level of their Mental Ability and Occupational Choice. Moreover subjects (55.17 percent) from urban area gave realistic choices in comparison to 47.61 percent from the rural areas. There is no doubt that most people of the average Intelligence can perform the average job but if they find no facility for such work they will get no enjoyment from it and
it will tend to be a weary grind. It has been found that a man who enjoys a particular work tends to continue on the same occupation. Thus, misfit gets no pleasure from what he does and shifts from one type to another.

**Aptitude**

In addition to general ability and to those special abilities usually thought of as primary factors of Intelligence, there are also a large number of special abilities which lie outside of any combination of special abilities customarily included as components of general ability or intelligence.

In analyzing and predicting behaviour, we often find it convenient to consider a whole cluster of special abilities all of which are seen essential in performance of some specific tasks or series of tasks; such clusters of special abilities are called Aptitudes. Aptitude is the ability to acquire certain behaviours or skills given appropriate opportunity.

To obtain a complete picture of all the existing special abilities and aptitudes one would have to visualise an enormous number of clusters of special abilities, all more or less interconnected. Thus, there will be infinite possible clusters. The vocational behaviour of any human being is composed or governed by number of these special aptitudes.

Every aptitude is measured and interpreted in terms of what an individual has learned to do through the mediation of such special abilities. A test of aptitude has its purpose, the discovery and classification of potential ability. Such tests are
used for selection, classification, placement, promotion, adjustment and counselling in educational, vocational, industrial and other work situations. Institutes particularly professional use tests of aptitude as screening and selection devices in accepting rejecting candidates for admissions and for placement purposes. Aptitude tests attempt to measure potential and used for making predictions concerning future learning and behaviour on job.

A job aptitude is much more comprehensive than the ordinary cluster of special abilities which make a relatively homogeneous single aptitude. As a matter of fact the job aptitude is usually combination of several different but more molecular aptitudes operating under specified conditions of general ability, attitude, interest and past learning. In other words when we speak of aptitude to become clerk, mechanic, a musician, technician or engineer, we look for all the behaviours that a person might have to do, know, like and so on, and put them together to form a job aptitude.

In general, there are four types of tests available for measurement of aptitudes (1) Analogous Type Test, (ii) Work Sample Test, (iii) Component Ability Test and (iv) Differential Tests.

(1) The Analogous Type Tests:

In these tests, the essential activities of the given job are presented, i.e., by duplicating the pattern of the job in miniature or by simulating the job without presenting an exact reproduction of the same. The basic idea underlying these tests is that the job is to be performed as a whole and the intercorrelation:
among the components of the job task is just as important as the components themselves. Thus a test which presents the whole picture as such is more valid. Wisconsin Miniature Test for Engine Lathe Aptitude by Hull (1928) is the typical example of such tests.

(ii) The Work Sample Tests:

These tests require the individual to perform all or part of the working operations of a given job under exactly the same conditions which are same when the job is taken in a normal way under non-testing conditions. Any situation such as fault in radio, scooter, machinery may serve as examples of such test items.

(iii) The Component Ability Test:

The tests which measure a single special ability such as space perception fall under this category, for example: Minnesota Paper Form Test.

(iv) Differential Tests:

The differential test is designed to assess a number of the special abilities which go to make up one or more aptitudes. Such a test is actually a battery of separate tests. An examinee's performance may be analysed in terms of his scores on each component test or the results of the tests may be combined in the form of a single whole score. A differential test battery attempts to measure a number of related distinct abilities. Examples of modern test batteries are: DAT, ACT, MAT, Flanagan Aptitude Classification Test, Guilford Zimmerman Aptitude Survey.

Historically, differential batteries were assembled to predict success at specific jobs or job classifications such as machinists'
apprentices, shoes makers, clothing-industry workers. Rupp (1925) developed tests for selection of apprentices in the metal trades. It consists of 18 tests including space perception, visual discrimination, mechanical ability and technical comprehension.

Special abilities, job aptitudes and intelligence are all important in analyzing and predicting an individual's vocational behaviour. In any guidance or assessment programme of an individual two aspects should be considered - First, how bright is the counselee in relation to other people. Second, what is the counselee's constellation of special abilities, aptitudes and job aptitudes. In case a student wants to join the engineering courses he requires adequate level of general ability, special abilities and cluster of aptitudes that go to make the large job aptitude of an engineer. In case of engineering, the ability to manipulate numbers, perception of space relations - abstract reasoning and mechanical reasoning are important for general, but for special branches - Civil, Electrical and Mechanical Engineering special aptitudes may be required.

According to Bennet, Seashore and Wesman (1951), students who are superior in numerical ability, spatial relations, besides mechanical reasoning will do better in engineering course.

Aptitudes and Job Success

The predictive validity of the aptitude tests is well established. The Differential Aptitude Test Battery is used in a number of prediction problems and such a test battery can yield
scores for predicting a number of different criteria. Deb (1973) reported positive and high correlation of .46 between Engineering Aptitude Test scores and the marks obtained in different subjects of annual examination of engineering college. Chatterjee and Mukherjee (1974) reported the following relationships of DAT and marks in higher secondary boys in India.

Abstract Reasoning and Marks : .25
Mechanical Comprehension (Spatial Relations and Mechanical Reasoning) and marks : .28 Regression Coefficient

It can be said that the battery possesses a considerable degree of predictive ability. Prasad (1960) conducted a factorial and validation study of psychological tests for entrants to I.T.Is. The purpose was to see the efficacy of the test battery related to cognitive domain. Reliability coefficients of the first criterion variable of final examination marks for all the four groups of students were found to be .68, .86, .91 and .62 for fitters, electricians, mechanical draughtsmen and motor mechanics. The factor analysis of prediction and criterion variables resulted into factors of intelligence and practical manual visual for fitters' groups; a factor aptitude for electrician group; and visual and spatial relations for draughtsmen.

DAT has been used to measure the prediction for the engineering subjects performance. The subject must be superior in Numerical Ability and outstanding as compared to other in Space Relation and Mechanical Reasoning (Manual DAT, 1958). Various other studies present evidence of effectiveness of DAT scores in predicting the future performance of students in vocational high schools.
Scores earned by tenth grade students were predictive of twelfth grade performance on the College Entrance Examination Board Scholastic Aptitude Tests (Manual DAT L & M Form 1968). Doppelt, Seashore and Odgers (1959) reported that the ratings of the instructions correlated well on Automachine with the scores on Abstract Reasoning and Numerical Ability. In the study on Psychological Aptitude in Training Command, AAF (1945) it was found that 90% of candidates who had scored high (8 or 9 Stens) on pilot aptitude tests completed their training successfully. On the other end of scale only 40% who had scored low (3, 2 stens) completed their training successfully.

Mathur (1971) found that Numerical Ability predicts achievements in three subjects of science group. The correlation varies from .64 to .74 and other tests of Mechanical Reasoning, Space Relations were found valid predictors for some of the subjects of these three areas of study. Engineering students are best on Numerical Ability, Space Relations, Mechanical Reasoning and are followed by non-degree technical students; skilled mechanical, electrical and building trade (Civil) employees (Jackson and Anne).

Leffel (1939) found that boys who planned to enter technical professions or semiprofessions made significant higher scores on O'Rourke Mechanical Aptitude Test. It was found that engineers were particularly high on Numerical Ability, Abstract Reasoning and Mechanical Reasoning (Super and Crites, 1962).

Parmeswaran, Reddy, and Rao (1968) investigated the aptitude of College students of first year engineering and science
and arts students. Engineering students were superior to arts students. Engineering group was significantly superior indicating a higher degree of scholastic scientific and engineering aptitudes. On the whole, responses to vocational interests revealed patterns in line with the courses of study for engineering and science groups. But a considerable degree of preference was expressed for jobs entirely unrelated to courses of study. Sharma (1971) made a study on the statistics of abilities in adolescence period. He reported the growth curves for numerical and mechanical abilities have similar growth characteristics, and the growth curves of Mechanical and Spatial are also similar to each other.

Shuman (1935) studying supervisory workers in three aircraft propeller plant found significant correlations for some of these tests with supervisors ratings on production, handling of workers, account keeping and overall opinion, biserial correlations with the Bennett tests was .47 and with Otis .39 and for Minnesota Paper Form Board .47. In another longitudinal study (Bennett, Seashore and Wesman, 1955) percentile equivalents of average scores of students tested in 1947 in relation to occupational field in 1955 are reproduced below:

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>VR</th>
<th>MA</th>
<th>AR</th>
<th>SR</th>
<th>MR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineers</td>
<td>22</td>
<td>84</td>
<td>89</td>
<td>86</td>
<td>81</td>
<td>86</td>
</tr>
<tr>
<td>Draughtsmen</td>
<td>21</td>
<td>47</td>
<td>47</td>
<td>50</td>
<td>67</td>
<td>53</td>
</tr>
<tr>
<td>Technician</td>
<td>49</td>
<td>42</td>
<td>45</td>
<td>45</td>
<td>48</td>
<td>53</td>
</tr>
<tr>
<td>Businessmen</td>
<td>21</td>
<td>57</td>
<td>58</td>
<td>54</td>
<td>36</td>
<td>45</td>
</tr>
<tr>
<td>Salesmen</td>
<td>39</td>
<td>56</td>
<td>49</td>
<td>58</td>
<td>50</td>
<td>52</td>
</tr>
<tr>
<td>Supervisors</td>
<td>21</td>
<td>43</td>
<td>44</td>
<td>43</td>
<td>52</td>
<td>46</td>
</tr>
<tr>
<td>Factory workers</td>
<td>37</td>
<td>43</td>
<td>27</td>
<td>34</td>
<td>52</td>
<td>54</td>
</tr>
<tr>
<td>Building Labourers</td>
<td>21</td>
<td>32</td>
<td>33</td>
<td>45</td>
<td>50</td>
<td>33</td>
</tr>
</tbody>
</table>
The constellation of special abilities, aptitudes are important to be considered for success in jobs. On reviewing the important studies it becomes clear that the aptitude is not related to the success on job but saves lot of time and effort as it can predict whether the individual who is likely to undertake a job course will be successful.

**Occupational Choice and Personality**

The knowledge of individual differences in Intelligence and aptitudes have established that these factors are related to choice and success of persons in different occupations. Human beings equally differ in their adjustments and behaviour patterns in life and work situations, for which one of the important reason may be their personality pattern. The choice and success of people in various work situations may also be related to the Personality characteristics of the individuals. Andrew (1971) reported significant results to support Holland's premise that people search out environments and hence vocations that are compatible with their personalities. Some personality patterns play significant role in the choice and success of occupations of the individual. Although those who follow a particular occupation may tend to show certain personality patterns more often than other patterns, but there will be many individuals in the occupations who do not have the modal pattern. Certain types of people are generally unsuited to some kinds of occupations. It may be true that there is more than one job at which any one could work contentedly, but it is also probably true that only one or two kinds of occupations would prove suitable to each person.
Personality traits are really the way we behave and adjust to various situations in life and at work. The essential thing is, therefore, that work should be selected on the basis of the individual's personality. Obviously some types of work will need one or more of these traits in good measure. The job description of technician or engineer at diploma holder level may need traits of persistence and hard work, social motive and emotional stability.

Some studies have demonstrated that personality factors play important role in choosing a job. Panekar (1968) observed that authoritarians subjects considered possibility of unauthorised extra earnings, social status of the job and scope for showing authority and power as more important consideration in choosing a job.

Shartle (1934) made study on workers with job study skills considered equal to foremen but who were believed incapable of supervising others. The successful foremen differed significantly from the non-successful one's. Successful foremen had less withdrawal from other, less indifference to the actions of the others and fewer antagonistic reactions towards other.

Harrison & Jackson (1952) evaluated Mechanical Engineers (who had not yet been assigned stable position) on the basis of Ability, Aptitude, Interest and Personality tests. The evaluation on tests was compared with job performance. The Supervisors ratings were required to say whether they agreed highly, mostly, slightly or not at all with evaluation report. The results are given below:
Speer (1948) has done interesting research on different patterns among persons selected for various aspects of fire protection engineering on 1000 freshmen at the Illinois Institute of Technology. Students with high scores in Mechanical, Science, and Social Service but low persuasive scores tended to enter engineering. O'Connor (1938) listed the following characteristics common to engineering executive: Structural visualisation, objective personality, vocabulary and accounting aptitude.

Mishra (1962) found that the personality factors of high and low achievers in engineering education differed on traits such as: anxiety, judgement, neuroticism, social adjustment and total emotionality. Dodge (1937), Darley and Hagenah (1955) reported that salesmen tend to be somewhat more dominant than clerks; accountants are most dominant, self-sufficient and stable; engineers and skilled workers are the least so.

Dank (1971) tested two patterns of personality associated with Holland's personality theory, i.e., consistency and homogeneity. Conclusions were drawn, that consistency and homogeneity dimensions do not effectively discriminate either when employed individually or in combination, between relatively efficient and relatively inefficient personalities in a normal population.

<table>
<thead>
<tr>
<th>Agreement Level</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>High Degree of Agreement</td>
<td>39.0 %</td>
</tr>
<tr>
<td>Predominant Agreement</td>
<td>51.3 %</td>
</tr>
<tr>
<td>Slightly Agreement</td>
<td>7.9 %</td>
</tr>
<tr>
<td>Non-Agreement</td>
<td>0.9 %</td>
</tr>
</tbody>
</table>
Luery (1971) undertook an investigation to test the validity of several formations derived from Holland’s theory of vocational choice. Significant relationship was found between personality types derived from college major and 1970 VPI high point code. Non-significant difference was found between the number of individuals who showed a stable personality type through their working career and the number of consistent personality codes are shown by these individuals.

A general tendency has been to discover the relationship between major types of personality and academic achievements. However, some work is available showing the relationship of Eysenck’s personality dimensions with vocational success. Jessup Gilbert and Helen (1971) reported the following scores on Extraversion and Neuroticism of the potential trainees in air force pilot training.

<table>
<thead>
<tr>
<th></th>
<th>E</th>
<th>N</th>
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<tbody>
<tr>
<td>Mean</td>
<td>14.10(12.07)</td>
<td>7.85(9.08)</td>
</tr>
</tbody>
</table>

The following scores on EPI are shown in case of pass and repeated groups of pilots.

<table>
<thead>
<tr>
<th></th>
<th>Pass = 60</th>
<th>Repeated = 31</th>
<th>Pass = 47</th>
<th>Repeated = 27</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extraversion Score</td>
<td>13.85</td>
<td>14.48</td>
<td>14.49</td>
<td>15.41</td>
</tr>
<tr>
<td>Neuroticism Score</td>
<td>7.22</td>
<td>9.32</td>
<td>8.16</td>
<td>9.96</td>
</tr>
</tbody>
</table>

The results show that the failure in flying training is less in stable persons. The failure rates in the study are given below:

* Shows the mean score of general population.
Failure rate $N/I = 60\%$ 
$S/I = -14\%$ 
$N/E = -37\%$ 
$S/E = -32\%$

These results show that high score on Neuroticism is hindering factor in performance on vocational course.

Bao (1966) found that nurses, teachers and medical students show a comparatively higher neuroticism score while engineers and science group show a lower score on neuroticism. Arts students were more extraverted than other student groups. Parkash et al. (1967) reported that introverts are more suited for linguistic and literary professions and biology while introverts were suited for executive jobs. Eysenck (1967) reported that executives in general business groups had higher score on introversion. Muthayya (1970) found that Administrators at senior positions showed higher scores on introversion. Mohan and Mohan (1977) (in press) also found that scores of three groups of executives were more on introversion.

The knowledge of relationship between personality characteristics and attraction value of jobs is not only useful theoretically but also important for practical considerations. One of the perspective from which the problem of choosing the jobs can be apprehended, is by investigating the psychological characteristics and the process of motivation that govern the choice. Choice of a job emerges as a result of interplay of a multiplicity of factors (Pandey, 1975). The value of a job, felt by the chooser is determined by occupations and jobs which differ in their attraction.
value for persons with differing patterns (Thompson, 1947).
Choice of a job with security and sympathetic boss by a neurotic could be traced to his strong need for security and support. Extroverts may give importance to jobs with social aspects and their interaction. Personality patterns have significant influences on the success of the person on the work and occupational situations. The various jobs do demand the typical behaviour, adjustment and working characteristics. People who do possess the desired attributes will tend to be more suitable than those who possess these characteristics to less degree.

**Interests, Value and Vocational Choice**

Like Personality, Interest also plays a significant role in the choice and success of occupation in the life of the Individual. Interests and values serve as motivating forces on the performance of the individual on work. Zytowski (1970) uses work values as a team which describes internal state or motivating force of a person in his needs and characteristics.

When used as variables in occupational decision making, interests are the manifestation of liking or preferences for certain types of activities. Occupational interest may be of two types: Expressed and Inventoried. Expressed interests imply to a verbal profession of interest in an activity, task or
occupation, whereas the inventoried interests are inferred from recorded responses to items on some type of measurement instruments. But both the types of interests are not highly interrelated to be considered interchangeable (Crites, 1969). Nelson (1971) reported that expressed and inventoried interests are low to moderately correlated. Many studies which have investigated students occupational choices and preferences fall under the 'expressed interests' category. Super and Crites (1962) have pointed, "... some questions concerning vocational preferences one so put as to elicit information concerning expectations, some so as to ascertain preferences and some to evoke fantasies. The degree of realism varies with the question asked." There are various variables which determine the interests of the individuals: age, sex, social status of family and educational aspirations.

Davis, Hagan, and Strouf (1962) and O'Mara (1962) confirm that interests play dominating and influential role for the occupational preferences of young children. Interests seem to crystallize and remain fairly stable between 15 years to 25 years age level (Cattell, 1968).

Studies on relation of sex and the vocational choice of the individual reveal occupational interests associated with the sex of the person (Lehman-Witty 1936), Edmiston and Starr (1948)
and Powell and Bloom (1962). It has been reported (Super & Crites, 1962) that men tend to be more interested in physical activity, mechanical and scientific matters and politics. Whereas women are interested in jobs such as art, music, literature, people, clerical work, teaching and social work. Tyler (1964) points out that interests measure the direction rather than the strength of a person’s interests. This is evidenced in cases where a legitimate interest in an occupational order has little effect on grades earned in subjects which lead to the occupation. Since interests provide characteristics patterns of choice and rejection may serve as means for assessing individuality and help self understanding.

Strong (1943) reported that the interests of engineers, physicists and mathematicians are more like each other than those of mathematics - science teachers and industrial art teachers. Strong (1943), Hunter (1942), and Johnson (1942) showed a substantial relationships between interest scores on SVIB in the college and field of subsequent employment, that 60% of these students had occupations of their interests later. Strong (1951) in another study quoted 86% of agreement between interest scores of 345 men while they were in college and their occupations ten years later.

Patterns of Education and Vocational interests of adolescents were studied (Singh, 1967) and the findings revealed
that Educational and Vocational interests of adolescents were not in agreement with the courses they are undergoing, and thus educational courses of subjects for study and vocational interests were not directly related. The coefficient of correlation between educational and vocational interests, between educational courses of subjects offered and groups liked most, between groups offered and vocational liking were -.089, -.10 and -.60 respectively. In other words, high school students were studying courses which they did not quite like and seemed not to be in line with their vocational preferences.

A study of Marsolf of 279 freshmen students at a normal school grouped by major field of study showed only a few differences from other freshmen on the Kuder Business Education Major. Their scores were higher in clerical and computational interests. Related to interests value is significant factor which also effects the vocational choice and success on job. According to Katz (1969) values represent feelings about outcomes on results such as the importance, purpose or worth of an activity. He uses values on expressions and culturally influenced manifestations of needs. Values are similar to interests in certain respects of usage of range of descriptors for various types of work activity. In one way, it may be said that the interests affect the orientation or direction of a choice in occupational decision making while values affect the degree to which the occupation may be important or satisfying to the individual.
Schwarzweller (1960) reported detailed study in relationship of values and vocational behaviour. In case of boys, values on creative work, work with people, service to society are positively related to high status occupations (Professionals, semi-professional and managerial). Low status occupations (clerks, skilled, semi-skilled and unskilled) were significantly associated with material comforts, hand work and external conformity. Singers and Stefflre (1954) compared the job values and desires of high school seniors. A desire for a job offering power, profit and independence is more characteristic of boys than that of girls. Occupational values characterized by interesting experience and social service were more often selected by girls than boys.

Since this categorisation is largely based upon factorisation of interests which in turn have been usually based upon occupational differentiation, it is clear that occupation will show differences which are related to their group category.

The data on Allport-Vernon (1960) study of Values show the relationships with these occupational groups more clearly. High Aesthetic Values occur only in groups VII and VIII and negative ones in all others. Economic values are higher for Groups III and IV and low in others. Political values are high in II and III low in I and VI and not consistent in VII and VIII.

Moiser and Kudr (1949), using the Kuder Preference Record compared 577 male subjects in 20 occupational groups, mostly in Group III and IV, with 450 unselected males in five attitudes.
1. Taking the lead in activities
2. Dealing with practical problems, rather than imaginary or glamorous ones.
3. Thinking and speculating
4. Relations far from conflict
5. Activities involving authority and power.

Groups

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Chem. Engg.</td>
<td>2+ Mech.</td>
<td>4+</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>3</td>
<td>Pl. Mgr.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>4</td>
<td>Foreman</td>
<td>Electrician</td>
<td>Carpenter</td>
<td>1-3-1</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

Comparison of Allport-Vernon Values for Students in Different Engineering Specialists (Kahn): Metallurgical, Electrical, Chemical Mechanical, Civil are lower than X on

<table>
<thead>
<tr>
<th>Civil</th>
<th>Religious*</th>
<th>Political</th>
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<tbody>
<tr>
<td>Metallurgical</td>
<td>Econo*</td>
<td>Econo*</td>
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<tr>
<td></td>
<td>mics</td>
<td>mics</td>
</tr>
<tr>
<td>Electrical</td>
<td>Religio*</td>
<td></td>
</tr>
<tr>
<td>Chemical</td>
<td>Polit.</td>
<td>Asst.</td>
</tr>
</tbody>
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*Difference with critical Ratio over 2 org.
Poe and Berg (1952) have studied steel industry production supervisors at an intermediate level. They hypothesized that those rated high and those rated low in performance would reveal personality difference. But data did not support this.

Factors influencing the vocational choice of the educated were studied by Syed (1967). He reported that Engineers as a group did not take even a tentative decision to enter into a professional even after high school but took this decision only at the college level. Value systems, power and authority, monetary consideration did not exert influence in their occupational choices. In case of engineering students, economic value engaged the highest single value variable and religion as the lowest variable. The studies relating the values which influence the vocational choice of the professional courses students bring out that theoretical values are found in students of education. Students of Business courses had economic values (Triplett, 1934). Drama students had values for Aesthetics (Golden 1940). Jordan (1949) and McArthur (1954) report that in some instances the values of subculture outweight an individuals interest even in the selection of vocational field.

Pal (1969) reported that engineering students were found to have high scores on economic values. Vohra (1977) also found that students in technician courses have high economic value.
Academic Achievements and Vocational Choice

The academic achievements of the students are related to the choice and success in the occupational courses. At the same time the marks in the specific area of subjects in the total school achievement will influence the vocational choice. So, the nature of the academic courses and the achievements in these and will influence the vocational choice. It has been found that the minimum marks required for entering the degree courses in engineering should be first division but for the diploma level it is 45% in the post-matriculation. These students must have the background of Science and Mathematics subjects for their admission to the vocational courses. Similarly student admitted in Medical groups also generally have very higher marks in the academic subjects. It may be that the high marks do indicate the calibre of the person in pursuing the professional activity.

Broadley (1943) studied the correlates of vocational choices in relation to the pupils achievements at the high school level. He found that there was an increase in the number of high marks as we pass from the selection of unskilled to professional courses. The pupils who chose the 'higher' vocations received higher marks and pupils who preferred the lower vocations had lower marks.

Many investigations have used academic achievements of school or college and studied their relationship to future success in the occupations. Ayyagar (1941) studied the relationship between...
the average marks, minimum marks for passing and the percentage in the examination among the school going students. Reliability and validity of school marks was studied by Gayan (1955). Jamuar (1961) assessed the utility of secondary school examinations record as a criterion for admission too.

Baddy (1971) reported that there was relationship of occupational choices and achievements of the students. Realism in terms of subjects achievements standpoint consists in the subject capacity to a particular course of study which will lead to the job of his choice. In contradiction to the aforesaid findings, Winget (1973) found that the academic achievement level of students did not play significant role in the students' ability to determine his career goal. Mohan & Randhava (1977) found similar results that the marks in the school subjects did not play significant influential role in the selection of career education.

Studied reviewed above show the significance of the relationship of marks to vocational choices whereas some studies report that there is no relation as such. However, it is evident from the admission patterns in the various courses in India that the marks in academic subjects do influence the vocational behaviour
pattern of the subjects. The students passing the higher secondary courses with science subjects have many alternatives. But the students scoring very high marks will tend to join engineering group of studies at the college level. Sharma and Garg (1971) reported that students scoring higher marks these days apply for science and commerce courses.

The review of the psychological factors - Intelligence, Aptitude, Personality, Interests and Academic Achievements in determining the vocational choice as well as vocational success suggest that these factors are important and do play a determining role in the educational, vocational selection and its success. Mierzwa (1963) selected five representative types of data - abilities, interests, environmental information, temperament and personality, to study the relationship among multiple variables. A type of statistical analysis while permits comparisons among all five variables was used. The results indicated that most important indicator or predictor of occupational choice was interests, followed by environment, ability, temperament and personality. Even though the study was restricted to high ability boys, the results provide empirical support for the concept of multi-determinant of career choice. It implies that it is necessary to use various systems of data in combinations or simultaneously, in order to understand and predict career choice.

Another study has been reported by Madaus and O'Hara (1967) in which the relationship among measures of general values, work values, aptitudes and interests were investigated. Interests played the maximum role as determinant of occupational selection in
comparison to personality, values or aptitude.

These studies are the trend setters for understanding the vocational choice and its related aspects. Though the review reveals that a considerable amount of work has been done in the area of making vocational success more tangible, yet a large number of potent variables need exploration. More research is called for finding the possible correlates of success in middle level skilled technical professions.