C H A P T E R III

PLAN AND PROCEDURE

3.1. Introduction

The concept of vocational maturity, as pointed out in an earlier chapter, is of relatively recent origin. Very few researchers have tried to study it comprehensively. Among these, the names of Super and Crites must be included. Super, in his longitudinal study, and Crites in his cross-sectional as well as longitudinal studies, have been able to thrash out certain important issues concerning maturity. The present investigator felt that some of these issues need to be studied in a country, where the conditions are widely different from those where the original studies were carried out. The study of vocational maturity of high school students in grades VIII through XI was therefore undertaken. More specifically, the purpose of undertaking this research is (1) to study the nature and growth of vocational maturity in terms of its presumed indices ,,

(2) to study the relationship between the presumed predictors and measures of vocational maturity, (3) to examine the differences in the vocational maturity of boys and girls, and (4) to examine how the developments of vocationally mature and immature individuals differ in some important respects.

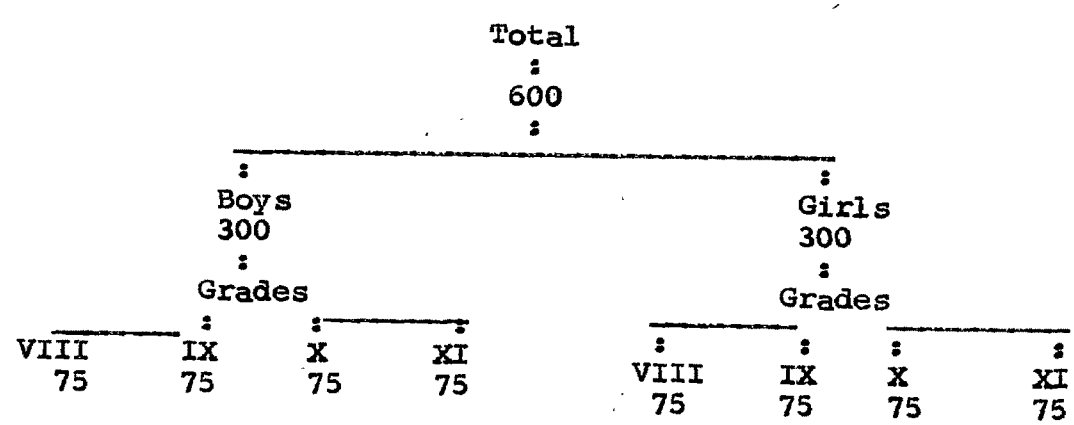
The main objective of the investigator is to identify the indices of maturity for different grades from correlational analysis. Since the period of adolescence is characterized by exploratory activities and since the students included in this study are adolescents, it is hypothesized that the maturity indices will be essentially the same for subjects in grades VIII through XI.

Secondly, some investigators have tried to identify the predictors of vocational maturity by correlating them with the measures of vocational maturity. What is needed in this type of research is to specify the predictors after thorough examination of a large number of variables which might affect maturity development and then to relate them to measures of maturity. In the present investigation, intelligence, school achievement, adjustment, personality, interests, identification, and independence have been correlated with different measures of maturity. It is expected that these variables will be significantly correlated with the measures of vocational maturity.

Thirdly, it is expected that the vocational development of boys and girls would differ in view of differences in sex role identification. This was precisely the reason for the inclusion of both the sexes in the study. Finally, it is expected that the developmental history of vocationally mature and immature individuals would differ markedly.

3.2. Sample

The sample of the present study consisted of 600 high school students selected at random from each of the grades VIII through XI of the Gujarati-medium high schools in Baroda city. The total sample of 600 comprised of 75 boys and 75 girls from each of the grades VIII through XI as shown below :



There are 71 high schools in Baroda city, out of which two are of English - medium, three Sindhi-medium, two of Hindi-medium, one of Marathi medium. These eight schools having medium other than Gujarati were not included in the present

study, as the tests were prepared in the Gujarati language. The sample of the study was drawn randomly from the remaining sixty-three Gujarati-medium high schools in such a way that the population was adequately represented in it.

Baroda city was the capital of the then Baroda State which was ruled by the Gaekwars. During the regime of Maharaja Sayajirao III, Baroda became well-known as a seat of learning and a centre of culture. With his progressive views, the eminent ruler introduced many educational and social reforms. He was very keen on founding a university which was subsequently founded by his grandson Maharaja Pratapsinh Gaekwar in 1949. The Maharaja Sayajirao University was the first unitary, teaching and residential university in Western India. Baroda was a University town in the fifties. With rapid industrialization in the country, it has emerged as an industrial city. There are at present pharmaceutical, chemical, textile, woollen, engineering, glass, fertilizer, and petrochemical industries in Baroda. The present population has crossed 400,000 mark. In the field of higher education also, Baroda has progressed rapidly. Baroda University now claims to have all Faculties except agriculture, and dentistry.

With the rapid expansion of the city, the number of educational institutions is also growing at the same pace to cater to the needs of the community. The total number of high

schools, as stated earlier is 71. These are situated in various parts of the city. The city is divided into six municipal wards or zones but the distribution of the high schools in the six wards is uneven. The sample was therefore selected in such a way that students from all the wards were represented adequately.

There are two schools in Baroda offering Commerce and Technical curricula. Most of the schools provide for the curricula in humanities and sciences. Two schools have home science curriculum. One school offers fine arts curriculum. Since there is considerable demand for science curriculum, all the schools offer Higher Maths., Physics, and Chemistry. Some of the schools have earned a good name in sports and games. Their teams even compete with the university team and the army team. Most of the recently started schools have inadequate facilities for playgrounds. Baroda is a city of parks and gardens. Many schools having no playground of their own, march their students to the public gardens for games. All the schools organise cultural activities like drama, folk-dances and folk-songs. They also celebrate regional and national festivals in order to foster solidarity. All the schools organise tours to places of educational significance.

Organised guidance work is lacking in most of the schools. Some schools have one teacher in charge of guidance work but

he has to do this over and above his teaching work. Such teachers are usually given one hour every week for guidance work. Most of the schools arrange career talks and organise guidance week in synchronization with the government programme.

It can be said that the adolescent or even a young adult about to enter the world of work depends more on his parents, his friends, and acquaintances for his vocational decisions. Owing to unemployment, some become pessimistic about their choice and enter into any occupation in which they find opportunity. In our country, there is paucity of part-time and vacation jobs. Few part-time and vacation jobs which are available, are mainly found in the cities. Our curriculum is also different from that of Britain or the U.S. Curricular decisions are to be made from the delta classes, that is, eighth grade, successively upto eleventh grade. It was, therefore, decided to take students from grades VIII through XI.

In our country, especially in urban areas, women's large scale entry in the labour market is relatively recent in origin. With the advent of independence, women were officially allowed to enter occupations which were not open to them heretofore. Women occupying positions in the Indian

Administrative Service, and Indian Foreign Service, is a point in the case. Also, gradually increasing number of women in the judiciary and technology bears testimony to the statement. At present women in our country are working shoulder to shoulder with men in various occupations. With this in view, it was decided to include female students too in the sample of the study.

Stimulating environment has been found to be associated with vocational maturity. Rural community is slow in adapting to change. Urban community, in contrast, is constantly exposed to changes, particularly of social and technological nature. Variations in supply and demand in labour market have an immediate impact on the urban community. Range of occupations in a rural community is severely limited and hence adolescents and young adults in rural areas are exposed to mostly occupations of conventional nature. In contrast, the youth in the urban areas are exposed to a wide range of occupational stimuli and they are quick to seize the opportunity which helps them in entering the occupation of their preference. Moreover, majority of industries are located in or around the urban areas. Educational facilities in villages generally range from primary school to middle school. Many villages, even today, do not have secondary schools.

Villages schools, which already exist, have a few curricular choices to offer. Those of the progressive and prosperous farmers who realize the importance of education send their children to urban schools. Children from the lower socio-economic group enroll themselves in the rural schools. These are some of the crucial points in deciding to restrict the study to the urban population.

Some relevant census data are presented in Table 1 and 2 to show the distribution of 'workers' by industrial categories and educational levels.

Table 1 : Education Standard of the Population of Baroda City, 1961

Education	Male	Female	Total
Literate without education	31,424 (30.2)	22,757 (37.5)	54,181 (32.9)
Primary or Junior Basic	50,600 (48.7)	32,696 (53.9)	83,296 (50.6)
Matriculation or Higher Secondary	16,294 (15.7)	4,127 (6.8)	20,421 (12.4)
Technical and non-technical diploma not equal to degree	813 (0.8)	35 (-)	848 (0.5)
University degree or post-graduate degree other than technical	2,425 (2.3)	762 (1.3)	3,187 (2.0)
Technical degree or diploma equal to degree or post-graduate degree	2,342 (2.3)	314 (0.5)	2,656 (1.6)
Total	1,03,898 (100)	60,691 (100)	1,64,589 (100)

(Source: Baroda District Census 1951, Census of India, Vol.V, Gujarat, Part X-B, Social and Cultural Tables). (Adopted from the Souvenir-The 2nd Gujarat Economic Conference, Baroda, Jan. 2-3, 1971

Distribution of 'workers' for the nation, the State of Gujarat, and the city of Baroda are presented also in the following Table.

Table 2 : Workers per 1000 Population and per 1000 distribution of Workers in Industrial Categories

		India	Gujarat	Baroda city
Workers per 1000 population		430	411	277
Total workers		1000	1000	1000
I	Cultivators	528	533	10
II	Agricultural labourers	167	148	8
III	(a) Plantations, forestry, fishing, live-stock and hunting	34	39	6
	(b) Mining and Quarrying	5	2	
IV & V	Manufacturing including household industry	95	100	351
VI	Construction	11	11	24
VII	Trade and Commerce	41	48	168
VIII	Transport, Storage and Communication	16	19	85
IX	Other services	62	59	352
Unclassified and general labour		41	41	N.A.

(Source: As reported in Census of India, 1961, Paper No.1 of 1967, Office of Registrar General and Census Commissioner of India, New Delhi).

Since the state and the national figures include the rural population, categories of cultivators and agricultural labourers show the highest percentages. Baroda city has lowest

percentages in these two categories whereas the percentages for categories of other service, manufacturing, industries, and trade and commerce are higher in that order compared to the figures for Gujarat State and the whole of India. It can reasonably be assumed that the distribution of 'workers by industrial categories and educational levels for Baroda would be representative of that for urban population of Gujarat and of India respectively. Census data were examined to ensure whether occupational distribution of Baroda city is fairly representative of that for the whole country. However, the findings of this study would be restricted to Baroda population in view of the non-availability of occupational distribution data for urban population of Gujarat and of India.

3.3. Rationale for Measurement

Very few instruments of vocational maturity have been devised and those which are developed suffer from many shortcomings. As pointed out in the introductory chapter, research in vocational development suffers from lack of proper instrumentation and relevant indices of vocational maturity. In order to fully appreciate the magnitude of the problem of research, it would be worthwhile to thoroughly examine the rationale for measurement provided by researchers conducting major investigations of generally longitudinal nature.

The first systematic attempt was made by Super and his

associates [1] to develop tools and indices for the measurement of vocational maturity. They found three principles of development quite useful for the construction of indices of vocational maturity. These three principles are : (1) development proceeds from random, undifferentiated activity to goal-directed specific activity, (2) development is in the direction of increasing awareness and orientation to reality, and (3) development is from dependence to increasing independence. They examined development in terms of behaviour, characteristic of a given life stage.

Super and his associates prepared a list of characteristics and behaviours which reflect vocational maturity in early adolescence, keeping the principles of development in view. This list was examined in terms of conceptual adequacy, such as logical relevance to vocational development and appropriateness for the ages and life stages of the subjects of the Career Pattern Study, as well as in terms of utility and measurability. The logically refined indices of vocational maturity were classified into five dimensions, viz. Orientation to Vocational Choice, Information and Planning about Preferred Occupation, Consistency of Vocational Preferences, Crystallization of Traits, and Wisdom of Vocational Preferences. Consistency of Preferences was included because vocational counsellors consider it very useful in counselling. Super

and his associates maintain that these dimensions and the indices of vocational maturity are purely hypothetical and suggest that they may be tried out.

In discussing criteria of vocational maturity, Super has suggested two points of reference for the evaluation of vocational maturity. According to the first point of reference, vocational maturity can be judged on the basis of the actual life stage in relation to the expected life stage (VM I). According to the second criterion (VM II), comparison of the individual's methods of handling the developmental tasks with those of others handling the same developmental tasks, forms the basis of evaluating vocational maturity, irrespective of whether the tasks are appropriate for his age and life stage. It can be expected on the normative basis that most individuals would be dealing with the developmental tasks appropriate for their age and life stage, which often coincide. In most cases, therefore, tasks of the same life stage form the basis of evaluating vocational maturity by both the criteria (VM I and VM II). However, these criteria are at variance when an individual's development is found retarded by the first criterion (VM I), and normal by the second criterion (VM II).

Prior to Super's discussion on the concept of vocational maturity, Dysinger[2] and Norton[3] have independently

discussed the concept.

Nelson[4], in a study to determine client satisfaction with counselling, reported data on operational definition of vocational maturity based on Super's dimensions of 'Wisdom of Vocational Choice,' yet notably different from it. Nelson classified his clients into two categories : mature and immature. The degree of congruence between expressed and inventoried interests and tested aptitudes formed the basis of classifying individuals as mature or immature. Nelson did not study the relationship between vocational maturity and chronological age of his clients though the data were available.

These two approaches to vocational maturity measurement have inherent weaknesses which limit their applicability and utility. Neither Nelson's categories nor Super's indices have been shown to correlate with chronological age. A good measuring device, according to Crites[5], must yield scores which show either increase or decrease with age, i.e. they must be monotonically related to age during some given period of development. The scores may not correlate with age across the total span of development but they should be systematically related to age during periods of change. Though some aspects of vocational maturity such as the consistency and realism of choice may be measured by non-psychometric methods, choice competencies and attitudes

should be measured by tests and inventories. They are more objective than interview notes and protocols, because they yield data on a higher level of measurement. Nelson's categories are restricted to the evaluation of realism of choice and Super's indexes are limited, at least in the ninth grade, to the appraisal of orientation to vocational choice. This shows that a number of other choice competencies and attitudes were precluded from measurement which need to be measured to give fuller empirical meaning to the concept of vocational maturity.

In this respect, Crites' work has been pioneering in that he has constructed Vocational Development Inventory (VDI), to measure fully the behaviour domains of choice competencies and attitudes in vocational maturity. They are measured by two sub-tests - the Competence test and the Attitude test. The Competence test is divided into five parts. Each part consists of thirty multiple-choice items. The five parts are the Problems test, the Planning test, the Occupational Information test, the Self-Knowledge test, and the Goal Selection test. The Competence test generally involves comprehension and problem-solving abilities pertaining to the vocational choice process. The Attitude test was developed to measure attitudinal and dispositional tendencies which, though non-intellective in nature, may mediate choice behaviour.

The best features of the empirical and rational methods of test construction were incorporated in developing the items for the Attitude test. If only empirical criterion is used, there is a possibility of selecting an item which has no face validity. Similarly, while using only rational approach, there is a possibility of selecting an item which may fail to differentiate between the criterion groups. These two approaches were, therefore, combined.

The term vocational maturity is used as a construct. It has two distinct meanings. According to the first meaning, vocational maturity refers to the internal state or condition of the organism. According to the second meaning, vocational maturity denotes a pattern of interrelationships among a set of variables which could be differentiated from other patterns empirically. The mental processes underlying competence and attitude indicate the first meaning of the construct whereas the predicted moderate intercorrelations among the dimensions of vocational maturity examplify the second meaning of construct.

Crites used, with minor modifications, Flanagan's general model for establishing the rational or logical validity. Three steps suggested by Flanagan are the description of behaviour, analysis of behaviour, and the formulation of item specifications. He used two item types and two response formats to determine their effects upon the power of the items to differentiate between age and grade levels. Sampling design for the

standardization of the Attitude test utilized cross-sectional as well as core samples.

Crites found, from age analysis, that responses to certain verbal statements of vocational attitudes and concepts, which are theoretically relevant to the choice of an occupation, are monotonically related to age during adolescence, irrespective of variations in response format and item type. True-false response format appeared to be preferable to five point scale. Items written in first as well as in third person were found to be related to age and therefore items with both the grammatical styles were used in the Attitude test. From grade analysis also, Crites arrived at conclusions similar to those of age analysis.

His purpose in taking grade as well as age as criterion of vocational development was to study whether significant changes which occur in the maturation of vocational behaviour are more closely associated with the impact of the educational system upon the individual or with the mere passage of time. School is a major agent of socialization and it institutionalizes the developmental tasks, such as choice of a life's work, which society expects the individual to accomplish successfully at certain designated points in time.

Item differentiation based on grade analysis was, therefore, considered more appropriate than that based on age analysis. The

reason is that vocationally mature behaviour is influenced more by school experiences than by sheer passage of time. Secondly, persons of different ages may be found in the same grade and develop more or less the same capabilities. These two reasons formed the basis for the acceptance of grade as the criterion of item differentiation. Although Crites did not statistically test the relative influence of age and grade, the examination of item contents related to age alone or to grade alone or to both, made it possible for him to conclude that grade in comparison to age proves to be more influential.

In order to counteract the generalized tendency to endorse items as true, most of the items were worded in such a manner that the true response to them indicated vocationally immature behaviour. There were some items, the true response to which indicated more mature behaviour. It was observed by Crites that the true responses indicating less mature behaviour showed a decreasing trend. True responses to items indicating more mature behaviour also changed in the expected direction. This led him to conclude that the subjects' true responses were not due to response set as it was due to degree of vocational development.

Crites has taken all possible care in the preparation of the V D I. He is also aware of some of the methodological

problems involved in this kind of measurement. Since the study that he has undertaken is longitudinal, he is still working towards further improvement and refinement of the inventory.

An attempt was made by Vriend [6] to prepare an instrument to measure vocational maturity of high school seniors. Based on an intensive review of literature on vocational maturity he identified six components of vocational maturity (VM) indicators. The instrument prepared to measure these components was designated as the Vocational-Educational Survey (V-EES) for high school seniors. According to Vriend, Vocational Maturity Ratings (VMR) consisted of the sum of the six subscores yielded by the component measures. The six components were very similar to Super's indices of vocational maturity.

Gribbons and Lohnes[7] designed the Career Development Study specifically to test some of Super's notions about the content and growth of vocational maturity. They conducted four extensive structured interviews with the 110 Ss at two year intervals providing data on their self-concept imagery in the eighth grade, tenth grade, high school senior year, and two years out of high school. Several Readiness for Vocational Planning (RVP) scales were developed after

evaluating thoroughly the free-response interview protocols. Comparisons of predictive validities for criteria collected in the senior year in high school indicated very similar kinds and degrees of predictive validities for eighth grade and tenth grade RVP score sets. This finding is contrary to the belief held by many theoreticians according to whom children in the eighth grade are lacking sufficient maturity to project their self-images accurately in the future. This is so because eighth graders have not fixed themselves in high school curricula and patterns of academic development pre-figuring post-high-school vocational and educational development. But as reported by Gribbons and Lohnes, some important degree of vocational maturity early in the eighth grade is reality for many of the subjects of their study and presumably, therefore, for many other youngsters who are able to project their self-images in interviews, the dimensions of which have significant predictive validities for subsequent career development.

3.4. Tools

The various tools or tests used in this investigation have been grouped into ytwo categories, viz. tools for the measurement of vocational maturity and tools for the measurement of presumed correlates of vocational maturity. Three dimensions

of vocational maturity were considered for measurement. They are, choice competencies, choice attitudes and consistency of vocational preferences. The presumed correlates of vocational maturity included in this study are intelligence, school achievement, adjustment, personality, interests, identification, and independence.

Tools for the Measurement of Vocational Maturity :

Of the three dimensions of vocational maturity stated above, choice competencies were measured by assigning differential weights to responses to the open-ended questionnaire. For the purpose of deriving scores for consistency of vocational preferences within fields, levels and families, Roe's occupational classification modified by Moser, Dubin, and Shelksy was used. Consistency in respect of time was measured by considering the agreement between vocational preferences at two different occasions. Choice attitude test was developed for the purpose of measuring attitudinal and dispositional tendencies for vocational choice.

(a) Competence Test : The Competence test consisted of eight items which were developed by reviewing the literature, particularly the measurement rationale of Crites, Super, Vriend, and Gribbons and Lohnes. These eight items are pertaining to specificity of vocational choice, curricular choices, realism of curricular choices, use of resources in orientation, awareness

of factors in choice, job-knowledge, self-knowledge, and planning. Responses to the item requiring the subjects to mention curricular choices were used to ascertain the realism of curricular choices. In a preliminary try-out, it was observed that the responses to the two items pertaining to the use of resources in orientation and awareness of factors in choice were highly similar in content. It was therefore decided to combine these two items under the common heading resources and factors in choice. Thus, the final competence test consisted of six scorable items. The responses to the six items were independently scored by three experts who were asked to assign weights of one, two or three according to the degree of specificity, clarity and relevance of the contents.

The responses to the first item which required the subject to mention the occupation of his choice were scored by assigning weights of three to the response indicating highly specific preference, two to a response indicating the field of preference, and one to responses indicating more than one field. In the case of second item, responses which clearly indicated the highest degree of relevance of curricular choices to the preferred occupation were assigned weightage of three, those indicating even a vague relationship between curricular choices and preferred occupation were assigned weightage of two, and those not having a semblance of means-end relationship between curricular choices and preferred occupation were assigned a

weight of one. The third item pertaining to factors and resources in choice, was scored by assigning a weight of three to responses which indicated full knowledge of factors and resources, two to responses which indicated some awareness of the use of factors and resources and one to responses which indicated lack of knowledge of factors and resources. Responses to job-knowledge were given a weight of three, if they indicated a clear sequential description of work in the preferred occupation, two if they indicated incomplete description, and one if they indicated complete lack of job-knowledge. Responses to self-knowledge item were scored by assigning a weight of three if they were most appropriate in terms of preferred occupation, two if they were found less appropriate in terms of preferred occupation, and one if they were found to be completely unrelated. Responses to the item pertaining to planning were scored by assigning a weight of three, if they indicated the sequence of activities leading to the entry into the preferred occupation, two if they indicated lack of knowledge of systematic planning, and one if they were found to be ambiguous or vague.

It can be seen from the method of scoring that increasing specificity, clarity and relevance yield higher scores. Reliability of scoring was ensured in terms of complete agreement among the judges as to the weightage to be given to an item. In case of disagreement, they were asked to discuss

the issue, till consensus was reached. The data yielded by the competence test being similar to those obtained by interview, no attempt was made to find out the coefficient of stability. The maximum possible score on this test is 18 and the minimum is 6, since responses to each item were given weights from one to three.

(b) Consistency of Preferences : Consistency of preferences as an aspect of vocational behaviour is worth studying in view of the fact that it is relevant to vocational development and that it is quite useful to counsellors. It has been suggested by a few investigators that vocational preferences show increasing consistency in the later part of the exploratory stage. However, increasing degree of consistency throughout the exploratory period is highly undesirable, because it may cause rigidity and fixation on the part of an individual with respect to work which later on may turn out to be highly inappropriate. However, consistency is included in this study to ascertain the extent to which it is correlated with other measures of vocational maturity in different grades. Consistency in fields, levels, families and time have been measured in this investigation. Subjects were asked to mention upto four vocational choices which they had thought or deliberated upon. The measurement rationale was adapted from Super's Career Pattern Study. All the four measures of consistency yielded discrepancy scores.

Field : Vocational interests differ as to the degree within themselves, but not among themselves. Interests could be thought of as arranging themselves horizontally according to fields. Roe[8] has suggested eight occupational fields which are named as (1) Physical, (2) Social and Personal services, (3) Persuasive business, (4) Government, industry, (5) Mathematics, physical sciences, (6) Biological sciences, (7) Humanities, and (8) Arts. Moser, Dubin, and Shelsky[9] have proposed eight modified fields as follows : (1) Service, (2) Business contact, (3) Business administration and control, (4) Technology, (5) Outdoor, (6) Sciences, (7) Cultural, and (8) Arts and entertainment.

Eight fields as modified by Moser, Dubin, and Shelsky were used in this investigation for the classification of preferences by fields.

Scoring : The sum of the number of different fields preferred by each subject was computed. The score for Consistency within fields was obtained by subtracting one from the sum. A subject with only one preference received a score of zero which indicated highest degree of consistency. Two choices within the same field were treated as one for computing the field consistency score. Highest possible score was 3.

Level : Occupations also differ in terms of prestige, income, authority, independence, amount of education, and amount of intelligence. Occupations can be viewed as arranging themselves in a hierarchical or vertical dimension. This vertical dimension along which occupations can be placed at different points in terms of criteria mentioned above, refers to the level of occupation. Roe originally proposed eight occupational levels which were later reduced to six by Moser, Dubin and Shelsky. The six levels are : (1) Professional and managerial (higher), (2) Professional and managerial (regular), (3) Semi-professional and low managerial, (4) Skilled, (5) Semi-skilled, and (6) Unskilled.

For the purpose of this study, these six levels were used. The difference between the level number of highest preference and that of lowest-level preference constituted the score for this index. The maximum score on this index was 5 as the level numbers range from 1 to 6. A subject with only one preference obtained a score of 0 which is the minimum possible score indicating the highest degree of consistency within levels.

Family : On the basis of intercorrelations of the occupational keys for Strong's inventory, occupations could

be grouped according to families. These families could be named according to the interests, characteristics of men in them, and according to the activities in which men are engaged. Super[10] has proposed to the following eight occupational families : (1) Scientific, (2) Social welfare, (3) Literary, (4) Material, (5) Systematic (clerical), (6) Contact, (7) Artistic, and (8) Musical.

In order to obtain the score of consistency within families, the field and level scores were summated. The highest possible score was 8 (3 + 5), and the lowest possible score was 0.

Time : This additional index was included following Crites' construct of vocational maturity. The subjects were asked to give their vocational preferences in the inventory which was prepared for the purpose of measuring maturity. After a period of four weeks, they were asked to give their vocational preference. If the subject gave same preference as before, he was given a credit of 0 indicating no discrepancy in temporal terms. If he gave a preference which differed in terms of field, level,or family, he received a score of 1, which indicated discrepancy in temporal sense. Scores, thus, ranged from 0 to 1.

(c) Attitude Test : Items for the attitude test were prepared by referring to the measurement rationale of Super, Crites and Vriend. The Attitude Test of Vocational Development Inventory standardized by Crites[11] formed the main source from which items were adapted with modifications to suit Indian setting. These items, one hundred in number, were written in Gujarati so as to use the test with Gujarati-speaking high school students. Items were so worded as to suit the vocabulary of students of eighth grade. Ten randomly selected students of eighth grade were asked to read the item pool thoroughly and point out the difficult words. All of them reported Gujarati equivalents of occupation and vocation as difficult. It was, therefore, decided to explain these words clearly before administering the test.

Three experts who were either teaching vocational guidance courses or were actually involved in vocational and educational counselling were asked to judge the hundred items for their relevance to the test. They were asked to indicate irrelevant, ambiguous or vague items. Items which were judged relevant for the test by all of the judges were retained. Sixty items survived through this procedure.

Crites[12], as reported earlier, had studied the item type and response format as variables affecting the responses. His results indicated that the item type did not have any

effect on the responses whereas true-false response format was found to be more effective than the Likert-type five-point scale. With this in view, items were written both in first and third person for the present study. Also true-false response format was used. Most of the items when responded in false category indicated maturity of vocational attitudes. Majority of the items were keyed in the false direction to counteract the tendency to give true responses.

The sixty-item test was tried out on a sample of 371 subjects, selected randomly from grades VIII through XI from the Gujarati-medium schools of Baroda city. Both boys and girls were included in the sample. School is thought to bring about significant changes in the maturation of vocational behaviour and hence grade was also included as a criterion along with age. The vocationally mature response was given a credit of 2 and the immature response a credit of 1. The data obtained in the try-out were subjected to grade analysis and age analysis. Gradewise and agewise means and SDs are presented in Tables 3 and 4 respectively.

Grade analysis in Table 3 shows that 43 items have significant F ratios. It also shows a general trend of increasing means from grade VIII through XI.

Age analysis in Table 4 shows that there are only 19 significant F ratios. Also, as in the case of grade-analysis, a general trend of increasing item means from age 12 to 16 is

Table 3. Means, Standard Deviations, and F values of attitude test items for boys and girls combined in grades VIII through XI

Item No.	Grades								
	VIII		IX		X		XI		F
	M	SD	M	SD	M	SD	M	SD	
1.	1.02	0.14	1.03	0.14	1.00	0.00	1.00	0.00	0.89
2.	1.03	0.20	1.05	0.24	1.02	0.14	1.03	0.20	0.64
3.	1.19	0.36	1.16	0.37	1.15	0.35	1.17	0.39	0.14
4.	1.59	0.49	1.72	0.45	1.63	0.49	1.48	0.51	2.85 *
5.	1.99	0.10	1.92	0.28	1.94	0.22	1.83	0.36	3.55 *
6.	1.17	0.39	1.36	0.47	1.23	0.42	1.28	0.44	3.79 *
7.	1.12	0.32	1.28	0.45	1.16	0.35	1.17	0.39	4.56 **
8.	1.16	0.36	1.21	0.40	1.16	0.35	1.17	0.39	0.49
9.	1.42	0.49	1.34	0.48	1.26	0.46	1.17	0.39	2.93 *
10.	1.11	0.30	1.27	0.44	1.16	0.35	1.52	0.49	9.20 **
11.	1.31	0.47	1.42	0.50	1.47	0.51	1.55	0.51	2.80 *
12.	1.91	0.30	1.92	0.28	1.93	0.24	1.83	0.36	1.05
13.	1.65	0.46	1.72	0.45	1.67	0.48	1.83	0.36	3.12 *
14.	1.53	0.49	1.59	0.49	1.63	0.49	1.69	0.46	2.68 *
15.	1.10	0.28	1.18	0.37	1.11	0.30	1.28	0.44	2.73 *
16.	1.72	0.45	1.50	0.50	1.54	0.49	1.41	0.50	5.03 **
17.	1.33	0.48	1.33	0.48	1.34	0.46	1.31	0.46	0.01
18.	1.06	0.26	1.09	0.28	1.11	0.30	1.41	0.50	10.41 **
19.	1.61	0.50	1.54	0.50	1.79	0.41	1.76	0.42	6.27 **
20.	1.33	0.48	1.47	0.49	1.53	0.49	1.55	0.51	5.49 **
21.	1.60	0.50	1.72	0.45	1.65	0.49	1.83	0.36	2.83 *
22.	1.17	0.39	1.21	0.42	1.26	0.46	1.34	0.48	2.71 *
23.	1.17	0.39	1.30	0.46	1.23	0.42	1.45	0.49	3.62 *
24.	1.33	0.48	1.38	0.50	1.44	0.51	1.52	0.49	2.68 *
25.	1.57	0.50	1.73	0.44	1.62	0.48	1.69	0.46	2.74 *
26.	1.05	0.24	1.07	0.26	1.04	0.22	1.14	0.33	1.21
27.	1.85	0.36	1.90	0.32	1.91	0.26	1.86	0.36	0.72
28.	1.20	0.41	1.26	0.44	1.12	0.32	1.10	0.32	3.18 *
29.	1.76	0.44	1.91	0.28	1.86	0.36	1.86	0.36	3.40 *
30.	1.87	0.33	1.68	0.46	1.82	0.39	1.66	0.46	5.51 **

(continued)

Table 3 (continued)

Item No.	Grades VIII M	VIII SD	IX M	IX SD	X M	X SD	XI M	XI SD	F
31.	1.90	0.32	1.84	0.37	1.91	0.26	1.83	0.36	1.11
32.	1.31	0.47	1.38	0.50	1.45	0.51	1.59	0.48	2.97*
33.	1.42	0.49	1.44	0.50	1.47	0.51	1.38	0.49	0.35
34.	1.47	0.51	1.59	0.49	1.42	0.49	1.45	0.49	2.69*
35.	1.16	0.36	1.21	0.42	1.26	0.46	1.41	0.50	2.95*
36.	1.51	0.49	1.75	0.45	1.78	0.41	1.69	0.46	7.46**
37.	1.61	0.50	1.67	0.46	1.62	0.48	1.59	0.48	0.41
38.	1.24	0.41	1.32	0.46	1.47	0.51	1.24	0.42	4.68**
39.	1.20	0.41	1.46	0.50	1.40	0.49	1.41	0.50	5.79**
40.	1.75	0.45	1.69	0.47	1.74	0.42	1.66	0.46	0.57
41.	1.05	0.24	1.06	0.24	1.05	0.24	1.10	0.32	0.42
42.	1.10	0.28	1.14	0.33	1.13	0.32	1.03	0.20	0.97
43.	1.51	0.49	1.56	0.50	1.62	0.48	1.69	0.46	2.70*
44.	1.58	0.49	1.49	0.51	1.53	0.49	1.59	0.48	0.72
45.	1.19	0.36	1.28	0.45	1.34	0.46	1.38	0.49	2.73*
46.	1.62	0.50	1.58	0.48	1.43	0.50	1.48	0.51	2.82*
47.	1.23	0.41	1.31	0.47	1.24	0.44	1.28	0.44	0.89
48.	1.47	0.51	1.55	0.49	1.62	0.48	1.69	0.46	2.93*
49.	1.33	0.48	1.53	0.49	1.54	0.49	1.62	0.49	4.34**
50.	1.62	0.50	1.66	0.48	1.73	0.44	1.83	0.36	3.11*
51.	1.35	0.49	1.48	0.48	1.54	0.49	1.62	0.49	3.15*
52.	1.47	0.51	1.61	0.49	1.53	0.49	1.66	0.46	3.82*
53.	1.08	0.24	1.08	0.24	1.05	0.24	1.10	0.32	0.69
54.	1.43	0.50	1.66	0.46	1.57	0.50	1.66	0.46	4.42**
55.	1.15	0.36	1.23	0.41	1.26	0.46	1.31	0.46	2.67*
56.	1.15	0.36	1.27	0.46	1.20	0.40	1.38	0.49	3.04*
57.	1.47	0.51	1.69	0.47	1.71	0.45	1.69	0.46	7.11**
58.	1.38	0.48	1.51	0.49	1.58	0.49	1.59	0.48	2.99*
59.	1.44	0.50	1.56	0.50	1.44	0.51	1.76	0.42	4.09**
60.	1.54	0.49	1.72	0.45	1.69	0.46	1.69	0.46	3.14*

* Significant at the .05 level

** Significant at the .01 level

Table 4 : Means, Standard Deviations, and F Values of Attitude Test Items for Boys and Girls combined at Age levels 12+ through 16+

Item No.	Age in Years										F
	12+		13+		14+		15+		16+		
	M	SD	M	SD	M	SD	M	SD	M	SD	
1.	1.03	0.17	1.03	0.17	1.02	0.10	1.00	0.00	1.00	00	0.74
2.	1.03	0.17	1.07	0.25	1.04	0.22	1.00	0.00	1.03	0.22	1.28
3.	1.24	0.41	1.12	0.33	1.17	0.37	1.15	0.35	1.23	0.42	1.00
4.	1.68	0.46	1.69	0.46	1.64	0.47	1.63	0.49	1.63	0.48	0.25
5.	2.00	0.00	1.92	0.27	1.71	0.98	1.90	0.28	1.86	0.33	2.27
6.	1.24	0.41	1.27	0.45	1.29	0.47	1.28	0.45	1.29	0.45	0.12
7.	1.12	0.32	1.27	0.45	1.16	0.37	1.12	0.32	1.17	0.37	2.11
8.	1.18	0.37	1.23	0.42	1.17	0.37	1.16	0.36	1.14	0.36	0.54
9.	1.53	0.50	1.34	0.47	1.29	0.47	1.37	0.47	1.20	0.40	2.47*
10.	1.06	0.25	1.24	0.42	1.22	0.40	1.24	0.40	1.29	0.45	1.62
11.	1.33	0.45	1.42	0.49	1.46	0.49	1.38	0.50	1.49	0.49	0.72
12.	1.91	0.28	1.90	0.30	1.91	0.22	1.97	0.17	1.86	0.33	3.43**
13.	1.74	0.41	1.64	0.48	1.75	0.44	1.62	0.48	1.71	0.47	1.30
14.	1.50	0.50	1.59	0.49	1.67	0.47	1.63	0.49	1.66	0.46	1.01
15.	1.06	0.25	1.17	0.37	1.16	0.37	1.16	0.36	1.14	0.36	0.67
16.	1.68	0.46	1.66	0.47	1.53	0.51	1.44	0.50	1.43	0.49	3.21*
17.	1.33	0.45	1.36	0.48	1.37	0.48	1.25	0.44	1.31	0.47	0.88
18.	1.00	0.00	1.12	0.33	1.06	0.25	1.21	0.40	1.20	0.40	4.10**
19.	1.59	0.48	1.61	0.49	1.60	0.53	1.79	0.42	1.71	0.47	2.34
20.	1.32	0.45	1.49	0.50	1.47	0.51	1.40	0.48	1.54	0.66	1.17
21.	1.74	0.41	1.61	0.49	1.68	0.47	1.74	0.41	1.66	0.46	0.45
22.	1.30	0.44	1.21	0.41	1.18	0.39	1.21	0.40	1.29	0.45	0.78
23.	1.15	0.35	1.30	0.46	1.25	0.44	1.25	0.44	1.31	0.47	0.94
24.	1.53	0.50	1.37	0.48	1.51	0.50	1.43	0.49	1.46	0.49	1.27
25.	1.79	0.42	1.55	0.50	1.72	0.44	1.63	0.49	1.51	0.51	3.16*
26.	1.00	0.00	1.51	0.50	1.02	0.25	1.13	0.35	1.14	0.36	32.39**
27.	1.77	0.40	1.19	0.39	1.90	0.28	1.91	0.28	1.91	0.30	75.75**
28.	1.15	0.35	1.70	0.45	1.10	0.32	1.12	0.32	1.14	0.36	44.64**
29.	1.76	0.40	1.36	0.48	1.89	0.30	1.84	0.35	1.94	0.26	31.88**
30.	1.85	0.37	1.84	0.36	1.72	0.44	1.69	0.46	1.83	0.37	2.34

(continued)

Table 4 (continued)

Item No.	Age in Years										F
	12+		13+		14+		15+		16+		
	M	SD	M	SD	M	SD	M	SD	M	SD	
31.	1.88	0.35	1.78	0.41	1.89	0.30	1.85	0.37	1.80	0.40	1.42
32.	1.33	0.45	1.73	0.45	1.37	0.48	1.53	0.50	1.37	0.48	9.86**
33.	1.53	0.50	1.44	0.50	1.44	0.50	1.41	0.49	1.43	0.49	0.29
34.	1.53	0.50	1.41	0.49	1.55	0.75	1.50	0.50	1.46	0.49	1.14
35.	1.15	0.35	1.47	0.50	1.18	0.39	1.19	0.39	1.14	0.36	9.07**
36.	1.53	0.50	1.31	0.46	1.78	0.40	1.71	0.45	1.77	0.42	17.21**
37.	1.65	0.47	1.69	0.46	1.62	0.49	1.68	0.46	1.63	0.48	0.36
38.	1.21	0.40	1.50	0.50	1.37	0.48	1.35	0.49	1.26	0.42	3.39**
39.	1.21	0.40	1.34	0.47	1.49	0.50	1.37	0.47	1.34	0.48	2.88*
40.	1.85	0.37	1.51	0.50	1.73	0.46	1.81	0.39	1.63	0.48	6.71**
41.	1.09	0.27	1.47	0.50	1.04	0.22	1.09	0.26	1.11	0.33	24.27**
42.	1.15	0.35	1.14	0.35	1.13	0.33	1.07	0.28	1.06	0.22	0.87
43.	1.62	0.48	1.46	0.50	1.62	0.49	1.56	0.50	1.60	0.49	1.85
44.	1.50	0.50	1.46	0.50	1.53	0.51	1.54	0.51	1.69	0.45	1.39
45.	1.24	0.41	1.21	0.41	1.23	0.44	1.13	0.35	1.14	0.36	0.92
46.	1.65	0.47	1.48	0.50	1.59	0.50	1.44	0.50	1.34	0.48	2.88*
47.	1.24	0.41	1.34	0.47	1.24	0.42	1.24	0.40	1.34	0.48	1.08
48.	1.79	0.42	1.54	0.50	1.60	0.53	1.54	0.51	1.54	0.66	1.84
49.	1.38	0.49	1.50	0.50	1.53	0.49	1.53	0.50	1.49	0.49	0.61
50.	1.56	0.49	1.65	0.76	1.72	0.33	1.68	0.46	1.74	0.45	1.10
51.	1.44	0.50	1.48	0.50	1.42	0.50	1.49	0.49	1.57	0.50	0.66
52.	1.62	0.48	1.57	0.50	1.58	0.48	1.65	0.47	1.46	0.49	1.03
53.	1.03	0.17	1.09	0.28	1.08	0.25	1.06	0.24	1.06	0.22	0.45
54.	1.30	0.44	1.58	0.49	1.63	0.48	1.59	0.47	1.63	0.48	3.18*
55.	1.27	0.43	1.16	0.36	1.23	0.44	1.12	0.32	1.11	0.33	1.72
56.	1.18	0.37	1.18	0.39	1.23	0.44	1.21	0.40	1.23	0.42	0.30
57.	1.47	0.50	1.58	0.49	1.74	0.44	1.69	0.46	1.60	0.49	3.07*
58.	1.36	0.46	1.46	0.50	1.57	0.49	1.53	0.50	1.46	0.49	1.57
59.	1.42	0.46	1.47	0.50	1.48	0.51	1.59	0.47	1.43	0.49	1.03
60.	1.47	0.50	1.64	0.48	1.73	0.46	1.66	0.48	1.63	0.48	2.14

* Significant at the .05 level
** Significant at the .01 level

observed.

Comparison of significant F ratios in both the analyses reveals that 14 items have significant F ratios in both grade and age analyses. It is also observed that 29 items are related to grade only, 5 items are related to age only, and 14 items are related to both grade and age.

It was stated earlier, that school makes an impact on the vocational development of the individual. Moreover, individuals differing in age yet studying in the same grade are equipping themselves to cope with the same developmental tasks. Thus, sheer passage of time does little to contribute to the individual's vocational development, as the latter involves more of learning or acquistion than native capacity.

It was with this view that the grade analysis was considered as the basis for the selection of items in the final test form. Thus 43 items which had significant F ratios in the grade analysis were selected for inclusion in the final test. In the final form, each vocationally mature response was given a credit of one. In other words, the total number of vocationally mature responses constituted the score of the individual.

Reliability of the test was measured by test-retest method. Fifty randomly selected subjects were given the final form

of 43 items and were retested after two months. Reliability coefficient of the test was .701, which appears to be quite satisfactory.

Instruments used for the Measurement of Presumed Predictors of Vocational Maturity :

(a) Intelligence : It was pointed out earlier that the sample of this investigation was Gujarati-speaking. It was, therefore, decided to use Desai-Bhatt Group Test of Intelligence which is standardized in Gujarat on Gujarati-speaking population. The test is constructed for students of VIII through XI grades. There are 110 items including 10 practice items. Time allowed for the 100 items is forty minutes. Split-half and test-retest reliabilities of the test are .93 and .84 respectively. For verbal test and non-verbal tests as criteria, respective validity coefficients are .88 and .77. Both percentile norms and mental age norms are given. For the purpose of this study, mental age norms were used.

(b) Achievement : This was measured in terms of school achievement as reported in the cumulative cards. Since it was decided not to use achievement scores in different curricular areas, the overall school achievement constituted the score. The total score of all subjects was converted into percentages.

Tests from the Adolescent Adjustment Test Battery standardized at the Department of Psychology, M.S. University of Baroda, Baroda, under I.C.M.R. scheme, were used for the measurement of social adjustment, family adjustment, personality and interests. The Battery was standardized on a sample of about 2500 adolescent boys and girls. Adequate representation was given to age, grade, community (urban-rural) and geographical regions of the State. Norms for various tests are given in terms of stanine grades.

(c) Social Adjustment : The test consists of 40 items. Number of responses indicating social maladjustment constitutes the score on this test. Overall mean and S.D. are 11.29 and 0.140 respectively. Reliability coefficient of the test is 0.805.

(d) Family Adjustment : This test consists of 35 items. like Social Adjustment Inventory, number of responses indicating maladjustment comprise the score of family adjustment. Overall mean and S.D. of the standardization sample are 9.28 and 0.137 respectively. Reliability coefficient of the test is 0.812.

(e) Bernreuter Personality Inventory : This is a Gujarati version of 30-item inventory prepared by Indian Statistical Institute. This inventory gives scores on

four scales of Neurosis, Self-Sufficiency, Introversion-Extraversion, and Dominance-Submission. The same response is weighted differentially for different scales. The weights range from -5 to +5. The total score was based on the algebraic summation of weights.

The overall mean and S.D. of standardization sample for the Neurosis scale are representatively 6.69, and 9.1. The reliability coefficient of the Neurosis scale is 0.9697. For the Self - Sufficiency scale, the overall mean and S.D. are -11.78, and 8.7 respectively. The coefficient of reliability of the Self-Sufficiency scale is 0.9367. The Introversion - Extraversion scale has the overall mean and S.D. of - 10.52 and 9.24 respectively and its reliability coefficient is 0.9508. In respect of the Dominance - Submission scale, the overall mean and S.D. of 0.118, and 16.88 respectively are reported. Its coefficient of reliability is 0.9238.

(f) Interest Inventory : Based on Allport - Vernon-Lindzey's Study of Values. This inventory consists of two parts having 30 and 15 items respectively. It is a scale for measuring

dominant interests in personality. Six areas of interest are represented by the items in both the parts. The inventory yields six scores, one for each interest. The maximum possible score for each interest is 60 and the minimum possible is 20.

Mean and S.D. of the standardization group for theoretical interest are 42.35, and 6.33 respectively. Reliability coefficient of theoretical interest is 0.712. For economic interest, the mean and S.D. are respectively, 41.40, and 5.7. Its reliability coefficient is 0.6144. In case of aesthetic interest, the mean and S.D. of the standardization sample are 36.53, and 7.29 respectively. Coefficient of reliability for aesthetic interest is 0.7403. Sample mean and S.D. for social interest are 42.71, and 5.71 respectively. Its reliability coefficient is 0.6283. Overall mean and S.D. of the sample in respect of political interest are respectively 41.42, and 5.65. Coefficient of reliability in respect of political interest is 0.6083. Mean and S.D. of the standardization group for religious interest are 34.65 and 8.33 respectively. Its coefficient of reliability is 0.827.

(g) Test for Measuring Identification : It consisted of 20 items, against each of which four columns were provided for mother, father, teacher, and peer. Subjects were asked to assign numbers one through five in each of these columns for

each item according to the degree to which the subject had imitated or adapted the characteristics or behaviour from each of the identification models . A score of one indicated no identification at all and a score of five indicated maximum identification. The sum of numbers assigned by the subject in each column constituted the score. Thus, the test yielded four scores respectively for mother, father, teacher, and peer identification. Maximum possible score for each of the identification models was 100 and the minimum possible score was 20.

(b) Test for Independence Orientation : The test comprised of ten items. The subject was asked to encircle any one of the numbers from one through five according to the degree to which each of the items concerned him. Items were so worded that 5 indicated the maximum independence and 1 indicated the minimum independence. Thus, the maximum possible score was 50 and the minimum score that a subject could receive was 10.

3.5. Method of Administration

It was stated earlier in this chapter that the sample was randomly selected from the high schools in Baroda city. It was decided to administer the tests of vocational maturity and those of the presumed predictors to the subjects in small groups so as to ascertain whether the instructions were carried out by the subjects. The test administration was divided into

three sessions. In the first session, intelligence test was administered. The instructions, practice items, and the test proper required in all fifty minutes. In the second session, adjustment, personality, and interest inventories were given. There was no time limit for these inventories but they could be completed in about 90 minutes. In the third session, identification test, independence test, and vocational maturity tests were administered. For these tests also, there was no time limit, but they could be completed in about one hour. The purpose of administering the instruments in three sessions was to sustain the interest and motivation of the subjects and to avoid the feelings of fatigue or boredom.

Data thus obtained were scored manually and tabulated. These data were processed on IBM 1401 Computor. The analysis and interpretations of the data are presented in the chapters to follow.

3.6. Summary

The present investigation was undertaken to study vocational maturity of high school students in grades VIII through XI. The purpose of this investigation was to study the nature and growth of vocational maturity in terms of its

presumed indices. It was also thought worthwhile to study the relationships between the presumed predictors and measures of vocational maturity. Examining the differences in the vocational maturity of boys and girls was an important aspect of this study. It was also decided to examine various aspects of development with respect to which vocationally mature and immature individuals differ. 75 boys and 75 girls selected at random from each of the grades VIII through XI of Gujarati-medium high schools in Baroda city comprised the total sample of 600 high school students. Justification for selecting urban boys and girls from grades VIII through XI as subjects was also given. Discussion of measurement rationale of relevant studies was made. Tools or tests used in this investigation were described after grouping them in two categories. Data collected for the standardization of the attitude test were discussed.

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