

CHAPTER - IVMETHOD

## PART-I

The purpose of the investigation is to study the relationship of measures of career maturity with socio-economic status, intelligence, level of vocational aspiration, participation in extracurricular activities and personality. It is also aimed to test the assumption underlying career development theory that, it is a process of continuous progress along the variables of career maturity (since various studies such as Crites 1965, 1969, Super and Forrest 1972, Super & Thompson 1979 have shown indices of career maturity to have monotonic relationship with time). Career Maturity, in terms of career choice attitudes and career choice competencies is assessed across three grade levels, VIII, X & XII, both in boys and girls. More specifically, the objectives of the study are:

Objectives

1. To study the developmental pattern of career maturity across three school stages (VIII, X & XII) in both sexes.
2. To study the sex differences in career maturity at the three school stages.
3. To study the relationship of career maturity with selected socio-psychological variables, and to find

out the most relevant variables which will predict career maturity at three grade levels in boys as well as girls.

In view of the researches reviewed earlier, and discussion on the need for studying selected, socio psychological variables, following specific hypotheses have been formulated for the study.

#### Hypotheses

1. Career maturity, expressed in terms of career choice attitudes and career choice competencies, namely: Self Appraisal, Occupational Information, Goal Selection, Planning and Problem Solving, will tend to show an increase with increase in educational status in boys as well as in girls.
2. Boys will tend to differ from girls in their maturity of career choice attitudes and career choice competencies at grade levels, VIII, X & XII.
3. Career choice attitudes and career choice competencies are positively related with Socio-economic Status, Intelligence, Level of Vocational Aspiration and Participation in School and out of School Activities at grade levels VIII, X & XII for boys as well as for girls.
4. Career choice attitudes and career choice competencies

are related with fourteen (HSPQ) personality factors at grade levels VIII, X & XII for both boys and girls.

### Variables

Personal, social and psychological variables included in the study are:

|    | Independent Variables                     | Codes |
|----|-------------------------------------------|-------|
| 1. | Grade                                     |       |
| 2. | Sex                                       |       |
| 3. | Socio-economic status                     | SES   |
| 4. | Intelligence                              | INT   |
| 5. | Level of Vocational Aspiration            | LVA   |
| 6. | Participation in-school activities        | PISA  |
| 7. | Participation in-out-of school activities | PIOSA |
| 8. | Personality Factors                       |       |
|    | i) Sociability                            | A     |
|    | ii) Intelligence                          | B     |
|    | iii) Ego strength                         | C     |
|    | iv) Excitability                          | D     |
|    | v) Dominance                              | E     |
|    | vi) Surgency                              | F     |
|    | vii) Super-ego Strength                   | G     |
|    | viii) Adventurousness                     | H     |
|    | ix) Sensitivity                           | I     |
|    | x) Passive Individualism                  | J     |

|       |                  |                |
|-------|------------------|----------------|
| xi)   | Guilt Proneness  | Q              |
| xii)  | Self Sufficiency | Q <sub>2</sub> |
| xiii) | Self Control     | Q <sub>3</sub> |
| xiv)  | Ergic Tension    | Q <sub>4</sub> |

#### Dependent Variables (Career Maturity Measures)

|    |                              |     |
|----|------------------------------|-----|
| 1. | Career Choice Attitudes      | CCA |
| 2. | Career Choice Competencies   |     |
|    | i) Self Appraisal            | SA  |
|    | ii) Occupational Information | OI  |
|    | iii) Goal Selection          | GS  |
|    | iv) Planning                 | PL  |
|    | v) Problem Solving           | PS  |

To examine the hypotheses, stated earlier, suitable measures of career choice attitudes, five indices of career choice competencies, and other independent variables were selected. A random representative sample of students was chosen from among the schools in Delhi. Students were selected from the three classes VIII, X & XII which were considered crucial from the point of view of educational and vocational decision making, and both boys and girls were selected from the three classes to study sex differences. The data was collected from 869 students. The procedure followed in the study is stated below.

### Sample

As mentioned earlier (Chapter III), the sample of the study consisted of students of classes VIII, X & XII which are transitional points in the educational & vocational decision making. An assessment of career maturity across these grades provides information regarding the developmental pattern of career maturity measures during the adolescent years. Identification of factors which may be indicative of, or facilitate, career maturity at these grades will enable the teachers and counsellors to have information about the career maturity of students at these grades and the special areas in which they may need help.

Subjects were selected from all types of schools to have as representative a sample as possible of the school going population of Delhi. It also helped in obtaining students from all socio-economic sections of society. Boys as well as girls were represented in the sample to study sex differences.

The selection of sample was done in two stages. First, the schools were selected from the latest list of schools of Delhi provided by the Directorate of Education of Delhi Administration. The number of schools selected in each category (private, private aided, Government) was in proportion to the total number of schools in each category, (stratified random sampling). Ten schools were selected

from the senior secondary schools of Delhi using the table of random numbers. These included six government schools, two private schools and two private-aided schools. From these schools any one section of classes VIII, X & XII was randomly selected for study. In order to have similar groups at contiguous grade levels, all the three grades were chosen from the same school. The data was collected in two to three sittings, depending on the time given by each school for one session. Grade and sex wise distribution of students, from whom the total data was collected, is presented in table IV-1

Table IV-1

Grade and Sex wise distribution of Students  
Included in the Study

| Grade | Boys | Girls | Total |
|-------|------|-------|-------|
| VIII  | 151  | 142   | 293   |
| X     | 150  | 136   | 286   |
| XII   | 137  | 153   | 290   |
| Total | 438  | 431   | 869   |

Tests

1. Culture-Fair Intelligence Test

Since the sample of the study consisted of boys and girls and students of three Socio-economic status groups and various types of schools, a tool without any cultural

bias was required. Therefore, Culture-fair Intelligence Test, Scale 3, Form B and Scale 2, Form A (Cattell & Cattell 1961, adapted Singh and Rao 1965) was selected for this purpose.

The Culture Fair Intelligence Test aims to single out the most consistent core of basic mental capacity. It can separate the individual's real general ability from the accidental circumstances of better or poorer schooling, local social climate etc., which, at present, introduces a substantial error into assessments and predictions made with conventional intelligence tests. It is a perceptual type of intelligence test, i.e. a test form, involving neither reading nor reference to culturally bound pictures. The test deals with the core of general "selection education capacity". It is a paper and pencil test, consisting of abstract geometrical figures having certain relationship to each other which must be deduced before each item or segment can be satisfactorily completed. Both Forms A and B comprise of subtests each involving different perceptual tasks, so that a composite intelligence test avoids spurious reliance on a single skill (Cattell 1959). There are 50 items in the test. In the arrangement of the subtests a comparatively well known, easy to grasp test has been chosen to start the subject off. In all tests the component items are arranged to occur in order of increasing difficulty.

The test shows an  $r$  with the Stanford Binet of 0.56, with the Otis of 0.73, and with the A.C.E. of 0.59, and a correlation of 0.84 with Wechsler Bellevue.

Test reliability has been evaluated both in terms of the Dependability Coefficient and Homogeneity Coefficient. The test retest reliability of the test for scale-3, as represented in the manual, is .82 (N=200) and for scale-2 it is .85 (N=450).

The split half reliability co-efficients are between 0.70 to 0.92.

Standardized instructions as given in the manual were followed while giving the test. Scale 3, form B was used for classes XII and X, and scale 2, form A was administered to class VIII students. The administration of the test takes about half an hour. The scoring of the answer sheet was done using the stencil key as per instructions given in the manual.

## 2. Jr. Sr. High School Personality Questionnaire (HSPQ)

To study the relationship between certain temperamental traits of personality and career maturity, the HSPQ (Cattell 1963, adapted Kapoor and Mehrotra 1967) was selected. This questionnaire measures fourteen distinct dimensions or traits of personality found by psychologists to come near to covering the total personality. The test was considered appropriate as it gives maximum information in the shortest



possible time about the greatest number of dimensions of personality. These dimensions are functionally independent and psychologically meaningful. There are two forms of the test, Form A and Form B. Form A has been used.

A brief description of the 14 personality factors (Table IV-2) shows that personality dimensions measured by HSPQ have two poles or extremes. The left handed one in descriptions is a score at the low end of the stems (1, 2 or 3) and right handed at the high end (8, 9 or 10). However, one should not assume that high scores are "good" and low scores "bad". This can be true of abilities but in personality each type of temperament usually has both its good and bad points, e.g. in Dimension A, the high scoring warm hearted person is rated as good natured, attentive to people and trustful but his easy goingness means that his promises do not always mean as much as those of a person at the low score pole on A. The latter is precise and dependable in his work but his aloofness and stiffness is not so attractive socially. Thus both good and bad are typically found at either pole on most of the HSPQ personality factors.

Standardized instructions as given in the manual were followed while administering the test. The tester read out the instructions on the cover of the test booklet and students were asked to read silently along with the tester.

Table - IV-2Brief Description of the Fourteen HSPQ  
Personality Factors

| <u>Low Sten Score</u>                                                                                   |                                        | <u>High Sten Score</u>                                                                         |
|---------------------------------------------------------------------------------------------------------|----------------------------------------|------------------------------------------------------------------------------------------------|
| Description (1-3)<br>A boy or girl with<br>low score is:                                                | Alphabetic<br>designation<br>of factor | Description (8-10)<br>A boy or girl with<br>high score is:                                     |
| Reserved, Detached,<br>Critical, Aloof, Stiff                                                           | A                                      | Warmhearted, Out-going<br>Easy-going, Participating                                            |
| Less intelligent,<br>Concrete-thinking,<br>of lower Scholastic<br>mental capacity                       | B                                      | More Intelligent,<br>Abstract thinking,<br>Bright, of Higher<br>Scholastic Mental<br>capacity. |
| Affected by Feelings,<br>Emotionally less Stable,<br>Easily Upset, Changeable,<br>Of lower ego-strength | C                                      | Emotionally Stable,<br>Mature, Faces reality,<br>Calm, of Higher ego<br>strength               |
| Undemonstrative,<br>Deliberate<br>Inactive, Stodgy,<br>Phlegmatic                                       | D                                      | Excitable, Impatient,<br>Demanding, Overactive,<br>Unrestrained                                |
| Obedient, Mild, Easily<br>led, Accomodating,<br>Submissive                                              | E                                      | Assertive, Competitive,<br>Aggressive, Stubborn,<br>Dominant                                   |
| Sober, Taciturn,<br>Serious                                                                             | F                                      | Enthusiastic, Headless,<br>Happy-go-lucky                                                      |
| Disregards rules,<br>Expedient, Has weaker<br>Super-ego strength                                        | G                                      | Conscientious,<br>Persistent, Moralistic,<br>Staid, Has stronger<br>Super-ego strength         |

|                                                                                     |     |                                                                                            |
|-------------------------------------------------------------------------------------|-----|--------------------------------------------------------------------------------------------|
| Shy, Timid, Threat-sensitive                                                        | H   | Adventurous, Uninhibited, Spontaneous, Socially bold                                       |
| Tough - minded, Self-reliant, Rejects illusions                                     | I   | Tender-minded, Sensitive, Clinging, Over-protected                                         |
| Zestful, Likes Group action, Vigorous                                               | J   | Doubting, Obstructive, Individualistic, Reflective                                         |
| Self-Assured, Placid, Secure, Complacent, Untroubled                                | O   | Apprehensive Self-reproaching, Insecure, Worrying, Guiltprone                              |
| Socially group dependent, A 'Joiner' and Sound follower                             | Q-2 | Self Sufficient, Prefers own decisions, Resourceful                                        |
| Uncontrolled, Lax, Follows own urges, Careless of social rules, Has low integration | Q-3 | Controlled, Socially-precise, Self-disciplined, Compulsive, Has high Self concept controle |
| Relaxed, Tranquil, Torpid, Unfrustrated                                             | Q-4 | Tense, Driven, Overwrought, Frustrated                                                     |

The students were asked to answer the examples and were also explained how to mark their answers in the answer sheet.

The test is administered without a time limit but can be completed by all but the slowest readers in about 40-45 minutes. Scoring of the answer sheets was done using the two stencil keys, which give independent scores on fourteen personality factors as per instructions given in the manual.

The reliability co-efficients on a sample of 100 have been reported for both Forms A & B by Kapoor & Mehrotra (1967).

Test-retest co-efficients for all the fourteen factors vary from .51 to .77, split-half from .52 to .93 and parallel form from .31 to .76.

Construct validity on each of the fourteen personality factors is the direct validity, which is the multiple correlation between the items in the factor scale with the pure factor. These correlations range from .58 to .74.

### 3. Socio-Economic Status Scale

In order to measure the socio-economic status of the students, the scale prepared by Jalota, Pandey, Kapoor and Singh (1970) was used.

The instrument gives information about following variables.

- i) Parental Occupation.
- ii) Parental education and education of the brothers and sisters.
- iii) Economic index-income, house type, material possessions.
- iv) Cultural level of the family as judged by expenditure on newspaper, magazine and material possessions.
- v) Level of aspiration, concept of social prestige and belief in caste, determining the tendency toward conservatism or progressivism.

Instructions were given to the students as given in the test booklet and the students were asked to read them along with the investigator.

Different weightage is given to every item and, accordingly, scoring was done as per instructions given in the manual.

The test-retest reliability of the test on 150 subjects with an interval of one month was found to be .89.

Pandey's original scale was also applied to these 150 students. Correlation of scores on this scale with those on Pandey's scale was found to be .92. The concurrent validity of this scale was also established by testing identifiable groups.

#### 4. Occupational Aspiration Scale

In order to measure the occupational aspirations of the subjects, the scale prepared by Grewal (1975), an adaptation of Haller & Miller's (1967) Occupational Aspiration Scale, devised for measuring the occupational aspirations of youth, was used. The scale was prepared by the author after getting the prestige ratings of 150 Occupational titles taken from Dictionary of Occupational Titles of India. Eighty occupations with different prestige values are arranged in a mixed order in eight multiple choice items. The special nature of the scale consists only in the continuum of difficulty. This continuum of difficulty is occupational hierarchy or the social prestige value attached to an occupation. The OAS asks for both short and long range realistic as well as idealistic expressions of the level of occupational preferences, on the basis that the range of an individual's level of aspiration is bounded in two ways (i) by what he views as realistically probable versus idealistically desirable for him and (ii) by the goal which he has for the near future versus distant future. Each of the four combinations (i.e. idealistic short range and realistic short range) are assessed twice. Thereby making the number of items to eight.

The OAS is administered in a group situation in about half an hour. The eight items are prefaced by a set

of written instructions given in the test booklet which the tester reads with the group at the beginning of the test.

Co-efficient of stability was established by test-retest method and is found to be 0.84. The co-efficient of internal consistency between the two halves (realistic short range, idealistic short range assessed twice) was found to be .54. The Indian Scale has been validated against Haller & Miller's Occupational Aspiration Scale. The co-efficient of validity was found to be 0.75.

##### 5. Student Extra-curricular Activities Inventory

To measure student's participation in extra-curricular activities in school and out of school, a checklist of such activities was prepared by the investigator. The following procedure was adopted to prepare the performa.

A list of activities which students largely get an opportunity to engage in at school and other places after school was prepared. To make the list as exhaustive as possible it was given to two teachers from each type of school to check whether the list contained all the activities that the students get an opportunity to engage in the schools. Their suggestions were thus incorporated in the list. The list was also tried on 150 students, 50 each taken from three classes VIII, X & XII of a Central School. Central School was selected for try out purpose because

these are co-educational schools and students of varied socio-economic status study here and students have a fairly good knowledge of English as well as Hindi. The students were asked to give their responses by putting a tick mark (  ) in front of the five responses in the form of a Likert type of scale namely "Always", "Mostly", "Sometimes", "Seldom" and "Never". There are two parts of the form, Part-1, pertains to the activities being engaged in school, and Part-2 measures participation in out of school activities. The students were also asked to add any other activity they engaged in school or after school at the end of each list. After the analysis of the try out data the activities added by students were included in the final list. A three point rating was retained as most of the students either marked under "Some-times", "Mostly" or "Never".

While collecting data on this checklist, instructions were given to the students regarding how they have to mark each item. The students were asked to read with the examiner the instructions given on the test booklet.

The test retest reliability of the questionnaire has been calculated on the three classes separately with an interval of one week. The r's range from .78 to .82.



6. Career Maturity Inventory,  
Attitude Scale (Crites, 1978)

In order to have a suitable measure of attitudes towards career decision making, Crites (1978) CMI Attitude Scale was selected. The scale was translated in Hindi and adapted to suit the needs of the Indian school students. The method followed for adaptation is described in detail in Part-II of this Chapter.

7. Career Maturity Inventory,  
Competence Test (Crites 1978)

To measure the student's extent of knowledge about occupations and competencies in career decision making, CMI Competence Test was used. This test was also translated in Hindi and modified for<sup>use</sup> with Indian students. There are five parts of the test which have been treated independently. These are:

- i) Self Appraisal
- ii) Occupational Information
- iii) Goal Selection
- iv) Planning
- v) Problem Solving.

There are 20 items in each part of the test, which have been reduced to 14 items each part as some of the items did not work with the Indian sample and it also helped in reducing the time of administration of the test. The details of adaptation of this test are also given in Part-II of this Chapter.

## PROCEDURE

Various tests, described above, were administered on a sample of 869 students of classes XII, X & VIII. Before administering the test, rapport was established with students by explaining to them in brief the purpose and aims of the study. They were also told to respond as truthfully as possible to the test items. As mentioned earlier, standardized instructions were given to the students before administering each test. It was also ensured that least intelligent fully understood how the responses are to be made. For that all questions were dealt with fully before starting the test. For all those tests where the answers were to be marked in the answer sheet, students were explained how their answers were to be marked.

## Scoring and Tabulation of Tests

Stencil Scoring was done for Cattell Culture Fair Intelligence Test, HSPQ and Socio-economic Status scale as per instructions given in the manual. The Occupational Aspiration Scale, extra curricular activities form, CMI Attitude scale and competence test were hand scored.

In the Occupational Aspiration Scale, score for each item ranges from 0 to 9. A score of 9 indicates that an occupation from among the highest eight prestige occupations has been preferred and a score of 0 indicates that one of

the lowest eight occupations has been preferred. There are ten alternatives in each of the eight questions and one alternative is to be checked. The total score for this test is the sum of the scores on each of the eight questions.

In Extra-curricular activities form score of 3, 2, 1 was given to the three alternatives, mostly, sometimes, and never respectively. The total score for part-I is sum of scores on each of 23 items and in Part-II on each of 27 items.

In the CMI Attitude Scale, the total number of correct responses is the raw score in response to 50 items. Similarly, in Competence Test, raw score is the total number of correct responses to the fourteen items of one particular part of the test. The following rules of scoring were followed while scoring Attitude Scale and Competence Test.

1. The individual raw score is the total number of keyed responses to the test or part being scored.
2. A correct response is one for which the keyed alternative and only the keyed alternative is marked.
3. A wrong response is one for which an incorrect alternative and no other alternative is marked.
4. An omitted or multiple marked item is treated as a wrong response.

After the scoring, the data was tabulated and transferred on to the cards for computerization.

### Statistical Analyses

The data was subjected to following statistical analyses.

1. For hypotheses one and two, 2x3 analysis of variance was computed in order to study the relationship of sex and grade with career maturity measures. Further 't' test was used to study the significance of differences between different pairs of means, between grades and between sexes.
2. For hypotheses three and four, product-moment correlations were computed between nineteen independent variables and six career maturity measures.
3. Step-wise multiple regression analysis was used to select those predictor variables which would best predict criterion variables at each grade level. With the help of multiple regression analysis it is possible to estimate the contribution of two or more independent variables to the variance in the criterion. Step wise method enables to select the best combination of variables which will contribute maximum to the variance in the criterion and eliminates the superfluous variables.

CHAPTER - IVPART-IIADAPTATION OF CAREER MATURITY INVENTORY

(Crites 1978)\*

To measure the criterion variables related to career choice attitudes and career choice competencies, Crites' Career Maturity Inventory, (1978) comprising of Attitude Scale and Competence Test, were translated in Hindi, and adapted on Indian sample before using them in the study.

Basic assumption underlying vocational behaviour is that it changes systematically in certain ways, with increasing age (Super 1957). The Career Maturity Inventory (CMI) also conceives of occupational choice as a process which progresses through distinct periods (Hansen 1974). The instrument has been developed to assess an individual's readiness for career decision making. Contrary to some cross sectional views of career choice in the past which were non developmental and dedicated to matching men with jobs, the CMI draws on the concept of occupational choice as a process which progresses monotonically with time. To this developmental view of Ginzberg's theory, Super (1955,57)

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\*From Career Maturity Inventory by John O. Crites. Modified and adapted by permission of the Publishers, CTB/McGraw-Hill, Del Monte Research Park, Monterey, CA 9390. Copy right (c) 1978 by McGraw-Hill, Inc., All right reserved, Printed in the U. S. A.

added the concept of career maturity and hypothesized five vocational maturity dimensions (which have already been discussed in chapter-II). Super et al. (1957) further specified the operational meaning of his earlier definition of the "Vocational maturity quotient", differentiating between the changes in vocational behaviour which occur from one life stage to another (VMQ I) and the kinds of vocational behaviour typical of persons at different age levels within a life stage (VMQ II). Crites (1961) subsequently analyzed these separate, and sometimes, contradictory definitions of vocational maturity and proposed, instead, a "model for the measurement of vocational maturity" based upon a synthesis of the age-scale and point scale approaches to the assessment of intelligence.

From the age-scale measurement model, as exemplified by Stanford-Binet, it was proposed that any measure of vocational behaviour which was hypothesized as maturing with time should be comprised only of items that had systematic empirically demonstrated relationship to time. The underlying assumption was that a necessary condition for the measurement of a developmental variable is that indices of it be either linear or monotonic functions of some unit of time, such as chronological age or school grade. From a combination of the best features of these two assessment procedures it was possible for Crites (61) to formulate a "model for the measurement of vocational maturity" defining

vocational maturity as "the maturity of an individual's vocational behaviour as indicated by the similarity between his behaviour and that of the oldest individuals in his vocational life stage (Crites 1961)". Operationally, this variable is measured as follows: (1) an individual responds to an inventory of vocational behaviours which differentiate older from younger age groups within a life stage; (2) the number of behaviours endorsed in the same way as the older group constitutes the individual's raw score (3) the higher this raw score, the greater is his degree of vocational development. In contrast, rate of vocational development refers to the maturity of an individual's vocational behaviour with that of his own age group. This involves interpretation of an individual's raw score according to the appropriate age norms, he is relatively more or less vocationally mature than his peers.

There is another hypothesis which states that the model is more highly differentiated in late than in early adolescence. This means that the loadings of the group factors and variables on degree of vocational development will decrease as vocational maturation occurs during the adolescent years. Super and Overstreet (1960) state the rationale for this hypothesis as follows:

"Through growth and learning, the behavioural repertoire (dimensions of vocational maturity) increases and changes; behaviour becomes more complex and also more differentiated and the developing individual becomes more capable of responding to environmental demands in an efficient and independent manner."

The findings of the study will also indicate whether the model is more differentiated in late, than in early adolescence. Modifying Super's dimensions of vocational maturity, Crites based his model on four distinct dimensions.

- a) Consistency of career choice over time
- b) Realism of career choice in relation to personal capabilities and employment opportunities.
- c) Career choice attitudes
- d) Career choice competencies.

The CMI attitude scale and competence test have been constructed to measure the latter two dimensions.

#### Attitude Scale

According to Crites (1973), "the attitude scale elicits the feelings, the subjective reactions, the dispositions that the individual has toward making a career choice and entering the world of work". The attitude scale gives information as to whether the individual perceives work as a meaningful focus of life or is it viewed as a drudgery? How involved and independent is the individual in the choice process? What considerations are there while selecting a career? These are some of the conative aspects of decision making that are stated in the items of the attitude scale. More specifically, the attitude scale items survey:



- a) Decisiveness in career decision making
- b) Involvement in career decision making
- c) Independence in career decision making
- d) Orientation to career decision making
- e) Compromise in career decision making

The scale consists of fifty statements taken from an initial pool of one thousand items that had been accumulated from statements made by clients during vocational counseling. Score analyses indicate a systematic increase in scores across grades. As grade level increased so did the maturity of attitude toward work. The lower age limit for the attitude scale is set by the sixth grade reading level. Crites recommends senior year in college as the upper age limit (Crites 1973).

The attitude scale yields a total score and takes about thirty minutes to administer.

#### Adaptation of the CMI Attitude Scale

The Attitude scale was first translated in Hindi. Most of the items of the scale are Hindi translations of the original Attitude Scale (Crites 1978). Minor modifications were made, by way of changes in language to make the items easier to understand for the Indian students. Some fresh items were also added. The procedure followed to adapt the attitude scale for Indian students is described below.

The scoring key of the Attitude scale has been derived by Crites on the basis of the response position endorsed by 51 percent or more of grade twelve students in the standardization sample. To see the validity of this scoring key and to see whether the items, as such, are relevant for assessing the vocational attitudes of the Indian school students, the Hindi version of the scale was given to the fifteen experts working in the area of guidance. Along with the fifty items of the Attitude Scale, the judges were given a brief description of the theoretical basis of the formation of the Attitude scale items, and the definitions of the five dimensions on the basis of which the items were included in the scale. Keeping in view those descriptions, the judges were asked to rate each item on the basis of the following guidelines.

1. Whether a true response would be indicative of a mature response to an item or a 'false' one.
2. None of the above.

The ratings of the judges were analyzed and it was found, that there was a high agreement between the judges (70% and above) and the Crites Scoring key (derived on the basis of majority responses of American Standardization sample) on thirty seven items. On eleven items judges disagreed among themselves. These items are 5, 8, 13, 21, 29, 31, 34, 35, 37, 39, 44, (the nos. given are as put in the original scale and the corresponding numbers in the

list of 62 items are 5, 8, 13, 23, 36, 38, 53, 43, 62, 48, 54). On two items, 9 & 32 (9 & 39 in the list of 62 items), there was agreement amongst the judges as to their response position but there was disagreement on these two items with Crites' scoring key, which means that on these two items the Indian judges agreed that a true response was indicative of Career maturity, whereas according to the Crites' scoring key a 'false' response was correct.

In view of the disagreement amongst the judges on some items it was decided to modify some of the items on which judges disagreed. Fresh items were also framed for this purpose. The fresh items were written on the five conative variables on which the items of the attitude scale are based. The fresh statements were taken from the actual counselling case records in consultation with the school counsellors. Care was also taken to frame fresh items on those dimensions of the attitude scale on which there was disagreement amongst the judges (as they were likely to be omitted) so that there was equal representation of the items on all the dimensions. The eleven items (items of the original scale on which the judges disagreed) were modified in consultation with five experts in the guidance area (these were not from the list of earlier judges). As judges felt that these items were a bit difficult for the understanding level of the Indian students, their language was accordingly modified and made simpler, though their meaning

remained the same and they covered the same dimensions. These together with twelve fresh items were again given to the fifteen earlier judges and their ratings were taken on these items in a similar manner as described earlier.

Details of judges ratings are shown in appendix I-1.

After the analysis of these ratings it was found that on the modified items there was high agreement (70% and above) on four more items, which are 8, 29, 34 & 37 (in the list of 62 items these are 8, 36, 53 & 62) and on item Nos. 5, 13, 21, 31, 35, 39, 44 (in the list of 62 items the Nos. are 5, 13, 23, 38, 43, 48, 54) there was still disagreement amongst the judges as to whether true or false was indicative of career maturity.

Given below are the items of the attitude scale which have been modified.

| Item No.<br>in Crite's<br>Scale | Item No.<br>in the<br>list of<br>62 items<br>which was<br>tried out | Item No.<br>in scale<br>which was<br>used in<br>the study | Item description                                                                 |
|---------------------------------|---------------------------------------------------------------------|-----------------------------------------------------------|----------------------------------------------------------------------------------|
| 1                               | 2                                                                   | 3                                                         | 4                                                                                |
| 8                               | 18                                                                  | 16                                                        | If I had lot of money,<br>I would not need to work.                              |
| 29                              | 36                                                                  | 7                                                         | The job I choose has to<br>give me every freedom to<br>do whatever I want to do. |

| 1  | 2  | 3  | 4                                                                                                   |
|----|----|----|-----------------------------------------------------------------------------------------------------|
| 34 | 53 | 42 | I have not been able to decide until now, whether I will go for college education or take up a job. |
| 37 | 62 | 50 | You should not worry about a job as your parents and relatives will get one for you.                |

As mentioned earlier, the attitude scale (CMI) has a scoring key based on the student majority responses of Grade XII students of the standardization sample. Grade XII has been taken as the most mature group by Crites. Thus it is possible to assess an individual's vocational maturity in relation to the most mature person in his age group. According to Crites (1961)

"Now the definition of VM is: degree of vocational development refers to the maturity of an individual's vocational behaviour and that of the oldest Individual in his vocational life stage. Operationally, this variable is measured as follows: (1) an individual responds to an inventory of vocational behaviours which differentiate older from younger age groups within a life stage, (2) the number of behaviours endorsed in the same way, as the older group, constitutes the individual's raw score, (3) the higher the raw score, the greater is his degree of vocational development"

To have a scoring key based on class XII Indian students' majority responses, the modified attitude scale,

with fifty original and twelve modified and fresh items, was given to 105 randomly selected students of class XII, taken from the all types of schools. The students were asked to mark true or false against each item i.e. if they agreed with the statement they were to put a cross under 'Yes' and if they disagreed with the statements, to put a cross under 'No'. An analysis was made to see in which direction student majority are responding to each item. It was found that, out of the original thirty seven and modified four items, the Indian XIIth grade students responses are in the same response direction as the American XII grade students on all the items except two items, 9 & 32 (which have been already discussed). It may be recalled that Judges ratings on these two items did not agree with the Crites scoring key. However, the Indian students (Class XII) agreed with the Judges ratings on these two items, therefore the scoring for these two items was changed from 'false' to true. The other seven fresh items were keyed in the response position endorsed by the fifty one percent or more of the class XII Indian students. These were again in the same response direction as the Judges ratings. Thus, the adapted attitude scale has a scoring key which is based on the Judges ratings as well as the students majority responses i.e. the scoring key meets the rational as well as empirical standards.

After having adapted an Indian scoring key the answers of all 105 students were scored for the 62 items. To see the workability of each item on the Indian sample, it was decided to find out the discrimination index for each item. Flanagan's (1939) procedure for estimating relationship of variables in a bivariate normal population was adopted for this purpose. Steps involved in this procedure were as follows. The scores of this group of 105 class XII students were arranged in order of size and those scoring in the upper 27% and lower 27% were taken out and middle 46% were kept aside. The percentage of correct responses in each of upper 27% and lower 27% were calculated and a measure of relationship (  $r$  ) between them was obtained from the Flanagan's table of values of the product moment co-efficient of correlation in a Normal Bivariate Population corresponding to given proportions of success. (Table XIII Walker & Lev 1953). Thus those items which had significant correlation indicating high item discrimination and judges agreement, were selected. It was decided to select items on the basis of performance of extreme groups in class XII and not any other classes such as Xth or VIIIth because it was thought that students in the Indian set up may not be so mature, vocationally, in the lower classes, and by the time they reach class XII they would have acquired some degree of vocational maturity as they are now at a stage when they are forced to make important educational and

vocational decisions. Moreover the school counsellors are also available only in higher secondary schools. Therefore, it was thought that perhaps class XII, being more mature, their responses would be more appropriate for examining item discrimination than any other class. The correlations between upper and lower 27% groups (see appendix I-2) for each of the 62 items of the Attitude scale show that all the items which had high inter-judge agreement, have high item-discrimination (r) value except three items (5, 23, & 27). Item 23, originally item 21 of the Attitude scale (Crites 1978), which had high inter-judge agreement (100%) but low item correlation was omitted from the scale. Item 5, with high correlation was not selected because of the judges disagreement. Item no. 27 is a fresh item which was not selected because of low discrimination (r) value.

Fifty items which met both the criteria of Judges agreement and high discrimination, were selected out of the sixty-two items.

Following are the seven items which have been omitted from the original attitude scale on the basis of the above two criteria.



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| Item No. in<br>the Grite's<br>Scale | Item No. in<br>the list of<br>62 items<br>which was<br>tried out | Item description                                                                                                                                   |
|-------------------------------------|------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| 5                                   | 5                                                                | You can do any kind of work<br>you want to do as long as you<br>try hard.                                                                          |
| 13                                  | 13                                                               | If I can help others in my work<br>I will be happy.                                                                                                |
| 21                                  | 23                                                               | By the time you are fifteen,<br>you should have your mind<br>pretty well made up about the<br>occupation, you intend to enter.                     |
| 31                                  | 38                                                               | There is only one occupation<br>for each person.                                                                                                   |
| 35                                  | 43                                                               | I want to really accomplish<br>something in my work - to make<br>a great discovery, or earn a<br>lot of money or help a great<br>number of people. |
| 39                                  | 48                                                               | You should choose an occupation<br>which gives you a chance to help<br>others.                                                                     |
| 44                                  | 54                                                               | You should choose a job in which<br>you can some day become famous.                                                                                |

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Following are the new items (translated from Hindi to English) which have been incorporated in the adapted Attitude Scale.

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| Item No. in the list of 62 items which was tried out | Item No. in the scale which was used in the study | Item description                                                                                                                            |
|------------------------------------------------------|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| 19                                                   | 17                                                | You don't gain anything by working too hard.                                                                                                |
| 28                                                   | 24                                                | You should choose a job which requires less hard work.                                                                                      |
| 29                                                   | 25                                                | While choosing a job, along with your own abilities and interests, you should also keep in mind the aspirations and wishes of your parents. |
| 31                                                   | 34                                                | You should choose a job which your friends have chosen.                                                                                     |
| 41                                                   | 26                                                | In order to choose an appropriate job, I guess, one should have knowledge of the world of work.                                             |
| 46                                                   | 36                                                | I don't know how the subjects I am studying in school will help me in choosing a job.                                                       |
| 61                                                   | 49                                                | I have discussed my vocational plans with informed persons.                                                                                 |

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Here, it would be worthwhile to discuss why certain item of the original Attitude Scale (Crites '78) required modification and why certain items of the scale did not work in the Indian set-up with Indian Judges & students and

were thus omitted and some modified items & fresh item worked better. Possibly, the reasons lie in socio-cultural differences between the East and West. In the conservative Indian society decision making is strongly influenced by family expectations. Decisions are made for the individual very early by the head of the family about the intended occupation of the person. Stump, Jordan & Friesen (1967), while speaking of cross cultural considerations in understanding vocational development, speak of the traditional culture of India.

"The Hindu does not need to validate himself, for he too knows who he is in regard to his family or caste. His vocation is still determined more by chance than by choice ..... In traditional societies there will be a tendency to channel persons into a vocational career at an earlier age, and this will be done with an air of finality."

Therefore majority of class XII students responded in yes to the item 21. "By the time you are fifteen, you should have your mind pretty well made up about the occupation you intend to enter." There was disagreement between Indian Judges & Crites scoring key on this item as majority of Indian Judges responded true to this item whereas according to Crites key, a false response is correct.

Such items which stress the importance of money and status in a job, rather than the intrinsic satisfaction, also did not go well with neither the students nor the Judges. Ours is an educationally and economically backward

society. Education or profession is a means to an end - money, prestige, power rather than an end in itself. Therefore, the scoring for item 9 (Item-8 in the adapted scale) "the greatest appeal of a job to me is the opportunity it provides for getting ahead", had to be changed from false to true as class XII student majority endorsed this response and even the judges had 100% agreement for a true response to this item. Another item No. 32 for which the scoring had to be changed from false to true is: "There are so many things to consider in choosing an occupation, it is hard to make a decision". This reflects the attitude of the Indian students about taking any kind of decision on their own. Items 35, and 44 are also related to job status which is felt more important by some Judges & majority students. As there was disagreement amongst the judges on these items, these had to be omitted.

Some fresh items, suitable to the Indian culture, were framed which highlighted the role played by parents in decision making. Parental expectations and aspirations have a great importance in the vocational decisions of Indian students. One item was also framed to reflect the prevalent attitude in the Indian students to depend on family contacts, pressures and pulls in obtaining jobs. Item 13 "If I can just help others in my work, I will be happy." and item 39 "you should choose an occupation which gives you a chance to help others" also did not do well on

the selection criteria. There was disagreement amongst the judges on these items. The concept of helping others is very important in economically backward society. The best way to help others, especially the family is to be in a position of wealth or status so that one can help them financially or by providing employment. It is customary in a society like ours to arrange for one's own social security i.e. looking after the aged, ill and unemployed. Those in the family who are better financially help those who are not, as there is no such security provided by the state. Similar findings on the items discussed here have been found by Moracco (1976) in his cross cultural study while studying the vocational maturity attitudes of Arab and American students.

The CMI gives increasing scores over increasing age and grade groups. According to Crites (1961, 1974) "for a vocational behaviour to be termed developmental, it is necessary to demonstrate that it is systematically related to time. Any measure of them must be shown to relate empirically to some index e.g. age, grade tenure etc." The construction of scales to reflect systematic maturation of vocational behaviour over time, and to characterize career decision making as increasing goal directedness, realism and independence (Super & Overstreet, 1960) demanded that the device yield scores which increase or decrease with age or grade. Thus Crites (1965) selected those items which

differentiated among age and grade levels in adolescence in a systematic way. According to Crites such a monotonic relationship was a necessary criterion for the validity of the instruments designed to measure a developmental variable like vocational maturity. This assertion of Crites was in line with Super's proposition who defined vocational maturity as an age related developmental variable. Cross sectional data collected by Crites (1965) for the attitude scale shows increases in test scores with increases in grade levels.

To see whether the modified attitude scale items met the developmental criteria, the 50-item adapted attitude scale was given to 104, 100 & 105 students of class VIII, X & XII to see whether each item was sensitive enough to give developmental scores over these three grades. Item means (see appendix I-4) of every class show that almost all the means indicate a developmental trend. This meets the criterion of every item to be a valid indicator of vocational maturity for the three grades. To further confirm the workability of the new items added to the scale, F ratios were worked out (see appendix I-3) for the new and some modified items and these were found to be significant for all the eleven items.

In brief, the modified and adapted attitude scale items were approved by the experts in the area of guidance regarding their suitability to Indian situation. The key

for the adapted scale was based on class XII Indian students majority responses. The key thus met rational as well as empirical standards. With the key thus modified, the responses on the inventory, collected from grade XII students were subjected to item analysis to get the item discrimination value on the basis of extreme groups for each item. Finally the items selected through this procedure were administered to the three grades to see whether each item met the developmental criteria. Thus the items included in the adapted attitude scale were found to be discriminating psychometrically (on the basis of extreme groups and discriminating between grades (on the basis of developmental levels). Modified and adapted Hindi version of the Attitude scale is shown in Appendix III.

#### Reliability

A test - retest reliability with an interval of one month was calculated with Indian samples drawn from classes XII, X and VIII, with N=40. The obtained correlations ranged from .78 to .82, these are reported in Table IV-3.

Table IV-3

#### Reliability co-efficients of the Attitude Scale

| Class | N  | r   |
|-------|----|-----|
| XII   | 40 | .82 |
| X     | 40 | .80 |
| VIII  | 40 | .78 |

### Validity

The translated and modified items were given to Indian judges. The judges ratings indicated that items were relevant to assess career attitudes of Indian school students. There was 100% agreement between judges ratings and student-majority-responses when they were asked to indicate what they considered to be the more mature response to each item. Thus, it further established the validity of the scale, that is, the agreement between the empirical scoring key and a rationally derived one. The items of the attitude scale showed developmental scores over the three grades as the means of the items of the three grades demonstrated. This also establishes the validity of the items in the Indian sample.

### Competence Test

Whereas the Attitude Scale measures conative aspects of career decision making, the competence test measures the cognitive aspects. The cognitive aspects are appraisal of the student's job related capabilities (strengths & weaknesses), knowledge about the world of work, adeptness in matching personal characteristics to occupational requirements, foresight in planning for a career and effectiveness in career development. Thus, there are five parts of the test, which are:

1. Self appraisal (knowing yourself)
2. Occupational Information (Knowing about jobs)



3. Goal selection (choosing a job)
4. Planning (Looking ahead)
5. Problem solving (what should they do?)

Thus, competence test measures the information, comprehension and problem solving competencies which are critical to realistic career choice.

The item contents of the competence Test (Crites 78a) were developed in two ways:

- a) The item stems were developed from realistic descriptions of hypothetical problems, plans or jobs drawn from Counselling case records, biographies, personal experience and other real life sources.
- b) The item alternatives were framed from the responses of seventh through twelfth grades to the open - ended statements.

Crites represents different ethnic groups in the item stems and counteracts sexual stereotypes associated with many occupations. In each item of the competence test there is a short description of a person, following it are four statements about that person. The students are required to select one correct statement on the basis of the description. The original Competence test takes 20 minutes for each part. The total time for administration of the test is about 2 hours.

#### Adaptation of Competence Test

There are 20 items in each part of the test. Since 100-item test was too long it was decided to shorten the

test, but initially the complete test with all items, was tried out on students of class XII. Before that the items were translated in Hindi. Certain modifications were required in the items as certain job descriptions, school situations and problems were not suitable to the Indian occupational structure and social set up. While modifying the items, caution was taken to adhere to the principles of the original item construction. It was also kept in mind to represent various social groups in the item descriptions and to counteract the sexual stereotypes associated with certain occupations.

After the items were translated and modified, they were discussed at length as to their suitability and relevance in the Indian school situations with five experts working in the area of guidance, such as experienced school counsellors, persons engaged in the development of occupational information literature, and experts in the measurement and evaluation in guidance. The guidance experts were asked to give their views on the following.

1. Suitability of the item stems and the response alternatives to the Indian school situations.
2. Suitability of the items, language etc. for the understanding level of the students from class VIII to class XII.
3. Suitability of the items for the competencies being measured.

Some modifications, suggestions given by the judges were incorporated in the items. The suggestions which were vague were clarified with the judges by holding discussions with them.

The five parts of the Hindi translated Comptence Test were administered to 40 students of class XII of a local school. The items which discriminated between the upper 27% and lower 27% students were selected. As there are twenty items in each part, fourteen items from each part were selected on the basis of their discrimination values and suitability of items in Judges opinion.

The following are the five parts of the competence test.

#### Self Appraisal

This test is based on the assumption that individuals who can accurately appraise the career relevant capabilities of others are good self appraisers. The items describe the psycho social characteristics of a young person in the later years of adolescence. The content of item stems has been drawn from actual counseling case records at senior high school and first year college (Crites 1973). The content for the answer alternatives have also been taken from the original test. There are four types of alternatives which presumably vary in degree of accuracy in appraising oneself.

The answer alternatives of this test reflect

1. a dependency upon others
2. a need for certainty
3. over estimation of one's capabilities
4. accurate self appraisal
5. Don't know

Wherever any change has been made in the answer alternative in this test, the above classification was kept in mind.

Fourteen items out of twenty original items were selected on the basis of correlations between upper 27% and lower 27% students on whom the test was tried (see appendix I-5). In this part all the selected items are Hindi translations of the original items with minor changes in the names of persons and school activities. Item - 12 has been slightly modified.

#### Occupational Information (Part - II, Knowing about jobs)

Just as self appraisal is important and basic to career decision making so is the knowledge of the world of work.

Much as the individual learns more about himself (or herself) as he (or she) grows older, he or she also gathers more information about jobs and occupations, consequently, accuracy and extent of job knowledge should

differentiate the more from less vocational mature, (Crites, 1964).

In this test certain modifications were required in the items. Those occupations which were not available or popular in India were replaced by those which are popular here, hence the occupations were chosen from those held by 75% of the labour force in India (Registrar General of India (Census) 1971). Thus, some occupational descriptions have been changed. For giving authentic occupational descriptions and narrative, 'guide to careers' and other occupational information booklets and pamphlets such as Bulletin on Job Opportunities in India (1967, 1969) brought out by Directorate General of Employment and Training, Ministry of Labour, and the 'National Classification of Occupations' (1968) were consulted. In this test also there are five answer alternatives provided. These are occupational titles which have been selected from Field and Level Occupational classification of Ann Roe, so that the incorrect alternatives are in either the wrong field or level or both.

Finally three experts working in the area of occupational Information were asked to see the suitability of the item descriptions and answer alternatives in the Indian situation, The criteria for suitability of items to Indian conditions was that the included occupations were

those which were frequently chosen occupations, those in which employment opportunities are good and for which information material is available.

In this part also, all the twenty items were tried out on the Indian sample, and those fourteen items were selected which showed discrimination between the scores of upper 27% and lower 27%. Majority of the selected fourteen items showed (see appendix I-6) high items discrimination. There were, however, three items with marginal discrimination values (items 22, 31, 40). These items were discussed with the judges and in their opinion, these were relevant and suitable and were therefore retained.

In this test, in item 37, changes were made in the response alternatives. In all the other selected items, there are minor changes in the names of the occupations and names of persons.

#### Goal Selection

In this test there are descriptions of hypothetical persons whose characteristics are given in detail. The individual has to choose an occupation for the person described. Thus this test assesses the ability to correctly match people with jobs.

The more vocationally mature person not only has greater knowledge about self and work but relates one to

the other. He (or she) has thought about how his (or her) capabilities relate to the demands and requirements of jobs. He (or she) attempts to "bridge the gap" between himself (or herself) and the world of work, to achieve a "Synthesis" as Super (1957) puts it, of the major factors involved in occupational choice (Crites 1964).

A person who is able to select a goal appropriate to his/her capacities would be considered vocationally mature. The underlying assumption of this test is that this competency can be assessed by presenting the personal and demographic attributes of hypothetical persons and have the students choose appropriate occupations for them.

Certain modifications were made in this test to make the items suitable for Indian students. Changes in school activity or home activity, which are not engaged in by our students were replaced by such descriptions which are found in an Indian home or school set up (e.g. one item stem says that "Sam works Summers as a helper on a building crew." Now the practice of part-time work in summers is not prevalent in India in the students of higher secondary schools. Thus modifications were made in such descriptions). Item 57 has been modified in this test. In all the other selected items minor changes in the occupational terminology, such as names of persons and school activities were made.

Fourteen items out of twenty were chosen (see Appendix I-7) in this subtest following the method of selecting items mentioned earlier.

### Planning

Research by Super & Overstreet (1960) found that the single most significant factor among the various indices of vocational maturity was planning. Planning is important for success in vocational life i.e. planning how the goal is to be achieved. According to Crites, this concept refers to ..... The tendency of the individual to think about the means which are necessary to attain a desired end. Does he (or she) simply select a vocational goal and neglect specification of the intermediate steps which lead to it? Or does he plan out the entire sequence from its initiation to its completion? As the individual becomes more vocationally mature, he (or she) should relate means to ends more frequently ..... (Crites, 1964).

There are many aspects of planning.

1. The time spent in planning activities
2. The specificity of planning
3. The relevance of means to ends in planning.
4. The ordering of the steps in planning.

Generally, it is the latter which is referred to in contemporary career development theory, and it is this aspect of planning which has been selected for measurement



in this part. Here, a hypothetical person has a goal and three unordered steps necessary to attain it are given. One has to put these steps in correct order. In the answers there are four different sequences given, out of which correct one has to be selected. The correct alternative usually has the following sequence.

1. Obtaining the relevant training
2. Gaining employment in the occupation
3. Taking advanced examinations or certification in the field.

In this part also certain items required modifications. Such occupations which are not popular e.g. long distance truck driver, department store buyer, cook etc. were replaced by occupations which are more popular and those in which students normally seek employment. While translating and modifying the items, care was taken to follow the principles adopted in original item construction and in framing the answer alternatives, the sequence of correct alternative was kept in mind.

While giving the ordering of the steps in the items, occupational information literature was consulted and items were discussed with experts.

For this part, fourteen items were selected (see Appendix I-8) on the basis of the procedure mentioned

earlier. In this test, items 63, 64, 70, 71, 73, 74, 75 have been modified where the occupations have been replaced by prevalent occupations in India, while giving the ordering of the steps the sequence of alternatives is as in the original items.

#### Problem Solving

In part five of the test there are problems given which are generally faced by individuals in the process of decision making and the assumption is that the more mature an individual the more capable he or she is in solving problems that arise in decision making in an integrative, socially acceptable and personally satisfying way. The problems range from insufficient ability for the chosen occupation, conflict with parents, insufficient economic means to enter the occupation and limitations imposed by emotional and physical handicaps. Certain situations and problems required modifications and change in this part also, due to the changed social set up. The modified items were discussed with various guidance experts and counsellors working in the schools to see the suitability of items in the Indian social set up. Care was taken to see that each item presented such a problem which a student in the Indian school or home situation is expected to cope with.

The answer alternatives in this test are different responses to a task which is posed for the individual. The most 'effective' response is the correct one. Following Goldfried and D'Zurilla (1969) 'effectiveness' is defined as follows:

"In any given situation where a solution to a problem or some decision is required, the most effective response would be one which would best resolve the problematic nature of the situation and also tend to maximize other positive consequences - long term as well as short term consequences and social as well as personal consequences - and minimize negative ones".

The answer alternatives of items in this subtest generally follow the coping mechanisms of compensation, consultation, denial and compliance with the alternative 'don't know' as a possible expression of confusion or indecisiveness. The best solution to the problem is one which minimizes denial and distortion of reality, trial and error and escape (leaving the field) and maximizes the formulation of creative alternatives or the utilization of consultative expertise and resources.

In this test also fourteen items out of twenty were selected on the basis of the item correlations of the extreme groups (see Appendix I-9). Items, eighty six and ninety two were modified. The occupations and problems

posed were replaced by occupations prevalent in India and such problems which may be faced in the Indian home or school set up.

To determine whether the modified and translated items of the competence test showed incremental scores across the three grades, means and SD's were calculated for each item for every part at each grade level from 104, 100 and 105 students of class VIII, X and XII to see whether the items gave a developmental trend. Most of the item means for each grade level (see Appendix I-11) show an increasing trend across grade levels. This provides evidence of the validity of items for the three grades taken up for study. F values were worked out for those items which have been modified (see Appendix I-10). All F values are significant except for items eight, forty and forty five, for which the F values are slightly below the .05 level of significance. These items were discussed with experts and in their view these items were relevant, suitable and interesting, and there was consensus amongst them that they should be retained.

The adapted competence test in five parts is shown in Appendix III.

#### Reliability

For adapted competence test, split half reliability has been calculated for all the five parts for the three

grade levels with  $N = 40$ . The obtained correlations range from .54 to .88. These are reported in Table IV-4 .

Table IV-4

Reliability Co-efficients of the Competence Test.

|            | <u>XII</u><br>r | <u>X</u><br>r | <u>VIII</u><br>r |
|------------|-----------------|---------------|------------------|
| Part - I   | .88             | .57           | .62              |
| Part - II  | .55             | .70           | .55              |
| Part - III | .56             | .79           | .54              |
| Part - IV  | .75             | .80           | .55              |
| Part - V   | .55             | .57           | .61              |

All values are significant at .01 level.

### Validity

#### i) Content Validity

Most of the items of the adapted competence test are original competence test (Crites 1978) items with only slight modifications in terminology. The items are theoretically meaningful and they are theoretically related to grade as an index of time. In the adapted competence test from initial pool of twenty items per part fourteen items per part were selected on the basis of discrimination criteria between upper 27% and lower 27% students. They also meet the developmental criteria as shown by increasing

item means across the three grades; XII, X and VIII for each item. Thus the modified competence test measures the variables which change systematically between grades VIII to XII.

The modified items have also been discussed at length with experts in the guidance area regarding the suitability of items and responses for the Indian school students.

ii) Criterion related Validity

Evidence on the relationship of the parts of the competence test to grade not only validates the prediction from their content that such career behaviours mature with time, but it also supports their criterion related validity. A necessary, although not sufficient criterion for any measure of a developmental variable is that it bears a systematic relationship to time (Crites, 1961; Wohlwill 1970). Thus condition was built into the competence test (Crites 1978a) by selecting only items which were developmental functions of grade.

iii) Construct Validity

The construct which the parts of the competence test were designed to measure is the career choice competencies factor in the model of career maturity. The variables which make up this factor are theoretically interrelated,

the hypothesized  $r$ 's ranging between the .40's and .60's. It follows, therefore, that if the parts are valid measures of this construct, they should be inter-correlated to approximately the same extent. Corroborative findings have been obtained in studies by Westbrook on ninth graders (Westbrook, 1976a, 1976c, 1976d) and eleventh graders (Gasper & Omvig, 1976). These findings reveal that measures of career choice competencies correlate highly with each other as on an average median  $r$  is approximately .60 which supports Crites model (1965, 1973, 1978). Holland's data on 432 eleventh grade students (reported by Crites 1978) yields  $r$ 's between the Attitude scale and Competence Test largely in .31 to .41. Both findings indicate that "model is more highly differentiated in late than in early adolescence".

Other studies (American College Testing program 1974, Crites 1973; Forrest & Thompson, 1974; Gasper & Omvig 1976; Westbrook & Parry - Hill, 1973, 1975, Westbrook & Mastie 1974) have found correlations ranging from .47 to .67 with a mean of .60 which is the approximate theoretical expectation. In a recent study of Westbrook, Cutts, Madison & Arcia (1980) on 312 ninth graders and 200 technical college students, it was found that most of the career choice competencies have more in common with each other than they have with career choice attitudes and that career choice competencies are fairly, highly positively related to each other.

To test the degree of interrelationships between the five parts of the adapted competence test, the intercorrelations between parts of the competence test were studied when the test was administered on the main sample of class XII, X and VIII students numbering 290, 286 & 293. The intercorrelations among the five parts are shown below.

Table IV-5

Intercorrelations among five parts of Competence test for three grade levels

| Grades | Competence Test Parts |     |     |     |     |     |     |     |     |     |      |
|--------|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
|        | 1-2                   | 1-3 | 1-4 | 1-5 | 2-3 | 2-4 | 2-5 | 3-4 | 3-5 | 4-5 | Mean |
| XII    | .06                   | .08 | .24 | .22 | .32 | .15 | .12 | .29 | .23 | .25 | .20  |
| X      | .36                   | .36 | .42 | .43 | .41 | .32 | .29 | .42 | .41 | .41 | .38  |
| VIII   | .39                   | .37 | .34 | .36 | .55 | .43 | .41 | .50 | .48 | .48 | .43  |

The intercorrelations in the VIII & X classes are in the range of .30 to .42 as hypothesized by Crites (1978a) with an average  $r$  of .38 and .43 but for class XII some of the correlations are rather low. The average  $r$  is .20 which is also lower than expected. Since the inter correlations are higher in the lower grades than in upper grades, it agrees with Crites (1974a) assumption that "model is more highly differentiated in late than in early adolescence"



Crites (1973) further stated that

"more specifically this means that the loadings of the group factors and variables on degree of vocational development will decrease as vocational maturation occurs during the adolescent years ..... The rationale for this expected developmental trend in vocational maturation is that the uniform effects of childhood experiences give way to the varied and complex influences of adolescence, the consequence being the increasing specificity of career decision making processes".

Thus the findings on the Indian sample for adapted competence test support the construct validity of the test.